

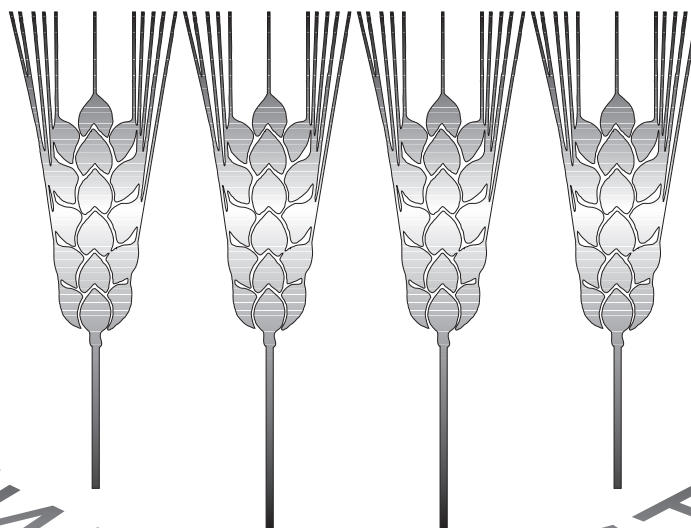
# MUTATION BREEDING

## NEWSLETTER

Joint FAO/IAEA Division  
of Nuclear Techniques  
in Food and Agriculture  
and FAO/IAEA Agriculture and  
Biotechnology Laboratory, Seibersdorf  
International Atomic Energy Agency  
Vienna



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### INDEX ISSUE No. 21–44

This is the third issue of Mutation Breeding Newsletter Index. The previous two issues were published in 1984 and covered numbers 1–10 and 11–20, respectively. The presented Index covers numbers 21–44. To simplify the use of all three Indexes we retained, as much as possible, the previous structure and key words (mutant varieties, other mutants mentioned, varieties treated, other varieties mentioned, mutagens used, breeding objectives, and country). However, it should be considered that Latin names of species, their taxonomic relationships and common names have been left as published in Mutation Breeding Newsletters (MBNLs), following author's classification. Synonym species names, as well as names of the same variety but with different spelling or with typing error are presented in brackets. It should be noted that over this period of time the transcription rules from other alphabets to English have been changed a few times, especially in relation to Chinese and Russian languages, which leads to duplications or misunderstandings in preparation of successive issues of MBNL.

We would like to thank Dr. I. Szarejko from the Department of Genetics, Katowice, Poland for her help in preparation and editing of the presented Index. The Index will also be available through our website

<http://www.iaea.org/programmes/nafa/d2/index.html>

(click on Publications/Newsletters). We hope that now, in the era of the renaissance of applications of mutation techniques, this Index will become a very useful tool for plant breeders, geneticists and molecular biologists searching for information on mutated lines, mutagens and applied doses.

*M. Maluszynski*  
Editor

## A

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|                             |                                                                                                                                              |                                       |             |
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| Tallness                    | 37/21                                                                                                                                        | Japan                                 | 21/12       |
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|                           |                                              |
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| Gamma rays                                                   | 31/10                 |
| X-rays                                                       | 31/10                 |
| Breeding objectives                                          |                       |
| Flower colour                                                | 31/10                 |
| Flower shape                                                 | 31/10                 |
| Keeping quality                                              | 31/10                 |
| Countries                                                    |                       |
| Canada                                                       | 31/10                 |
| The Netherlands                                              | 31/10                 |
| <b>Bermuda grass</b> see <i>Cynodon</i>                      |                       |
| <b>Beta vulgaris</b>                                         |                       |
| Mutant varieties                                             |                       |
| Mangel Tsenta                                                | 41/24                 |
| Timiryazevskaya                                              | 31/10                 |
| Timiryazevskaya 87                                           | 41/24                 |
| Timiryazevskaya odnos                                        | 41/24                 |
| Timiryazevskaya okrug                                        | 41/24                 |
| Umanskii polusakharnyi                                       | 41/24                 |
| Varieties treated                                            |                       |
| Ekkendorfer                                                  | 31/10                 |
| F <sub>1</sub> Ekkendorfskaya zheltaya x<br>Perventes        | 41/24                 |
| F <sub>1</sub> Ekkendorfskaya zheltaya x<br>single seed line | 41/24                 |
| F <sub>1</sub> Leitevitskaya x Perventes                     | 41/24                 |
| Other varieties mentioned                                    |                       |
| MS sugar beet line                                           | 41/24                 |

|                                                    |                                      |  |                                          |                     |
|----------------------------------------------------|--------------------------------------|--|------------------------------------------|---------------------|
| Mutagens used                                      |                                      |  | <b><i>Brachycome multifida</i></b>       |                     |
| Chemical mutagens                                  | 31/10                                |  | Mutagens used                            |                     |
| EI                                                 | 41/24                                |  | Colchicine                               | 33/3                |
| Gamma rays + chemical mutagens                     | 41/24                                |  | X-rays                                   | 33/3                |
| Breeding objectives                                |                                      |  | Breeding objectives                      |                     |
| Disease resistance                                 | 41/24                                |  | Flower colour                            | 33/4                |
| Dry matter content                                 | 31/10                                |  | Flower size                              | 33/4                |
| Insect resistance                                  | 41/24                                |  | Leaf size                                | 33/4                |
| White rhizocarp                                    | 41/24                                |  | Morphological changes                    | 33/4                |
| Yield                                              | 31/10; 41/24                         |  | Plant architecture                       | 33/4                |
| Countries                                          |                                      |  | Plant size                               | 33/4                |
| USSR                                               | 31/10; 41/24                         |  | Countries                                |                     |
|                                                    |                                      |  | FRG                                      | 33/4                |
| <b>Bitter gourd</b> see <i>Momordica charantia</i> |                                      |  | Other information                        |                     |
|                                                    |                                      |  | <i>In vitro</i> cultures                 | 33/3                |
| <b>Black currant</b> see <i>Ribes nigrum</i>       |                                      |  | <b><i>Brassica campestris</i></b>        |                     |
| <b>Black gram</b> see <i>Vigna mungo</i>           |                                      |  | Mutant varieties                         |                     |
| <b>Blue Daisy</b> see <i>Brachycome multifida</i>  |                                      |  | Haya-natane                              | 21/12               |
| <b>Blue lupin</b> see <i>Lupinus angustifolius</i> |                                      |  | Other mutants mentioned                  |                     |
| <b>Bougainvillea</b> sp.                           |                                      |  | 17-5-83                                  | 33/10               |
| Mutant varieties                                   |                                      |  | 70-7-82                                  | 33/10               |
| Los Banos variegata                                | 37/21; 39/8                          |  | BINA-1                                   | 29/14               |
| Mahara variegata                                   | 43/39                                |  | BINA-2                                   | 29/14               |
| Pallavi                                            | 31/10; 39/8                          |  | Varieties treated                        |                     |
| Poultoni Variegata                                 | 33/21                                |  | Michinoku-natane                         | 21/12               |
| Suvarna                                            | 33/22                                |  | YS-52                                    | 29/14; 33/10        |
| Varieties treated                                  |                                      |  | Other varieties mentioned                |                     |
| Cherry Blossom                                     | 39/8                                 |  | Sampad                                   | 29/15               |
| Lady Hudson of Ceylon                              | 33/22                                |  | Sonali Sarisha                           | 29/15               |
| Los Banos Beauty                                   | 37/21; 39/8                          |  | Tori 7                                   | 29/15               |
| Mahara                                             | 39/8; 43/39                          |  | Mutagens used                            |                     |
| Polultoni                                          | 33/21                                |  | Colchicine                               | 21/12               |
| Roseville's Delight                                | 31/10; 39/8                          |  | EMS                                      | 29/14               |
| Other varieties mentioned                          |                                      |  | Gamma rays                               | 29/14; 33/10        |
| Archana                                            | 39/8                                 |  | Breeding objectives                      | 21/12               |
| Marietta                                           | 39/8                                 |  | <i>Alternaria brassicacae</i> resistance | 29/14; 33/10        |
| Mutagens used                                      |                                      |  | Earliness                                | 21/12               |
| Colchicine                                         | 33/22                                |  | Plant architecture                       | 33/10               |
| Gamma rays                                         | 31/10; 33/21, 22; 37/21; 39/8; 43/39 |  | Yield                                    | 21/12; 29/15; 33/10 |
| Spontaneous mutation                               | 39/8                                 |  | Countries                                |                     |
| Breeding objectives                                |                                      |  | Bangladesh                               | 29/15; 33/10        |
| Bract colour                                       | 33/22                                |  | Japan                                    | 21/12               |
| Chlorophyll variegated leaves                      | 31/10; 39/8                          |  | <b><i>Brassica juncea</i></b>            |                     |
| Variegated leaves                                  | 33/21; 37/21; 43/39                  |  | Mutant varieties                         |                     |
| Countries                                          |                                      |  | Agrani                                   | 42/26               |
| India                                              | 31/10; 33/21, 22; 37/21; 39/9; 43/39 |  | RL 1359                                  | 31/11               |
|                                                    |                                      |  | RL 514                                   | 31/11               |
|                                                    |                                      |  | Safal                                    | 42/27               |
|                                                    |                                      |  | Shambal                                  | 34/27               |
|                                                    |                                      |  | TM-2                                     | 43/39               |
|                                                    |                                      |  | TM-4                                     | 43/39               |
|                                                    |                                      |  | TM-18                                    | 31/3                |
|                                                    |                                      |  | Other mutants mentioned                  |                     |
|                                                    |                                      |  | RS.104                                   | 31/3                |

|                              |               |                                     |                |
|------------------------------|---------------|-------------------------------------|----------------|
| RS.64                        | 31/3          | M11                                 | 33/22          |
| RS.84                        | 31/3          | Varieties treated                   |                |
| TM-1 (Trombay Mustard-1)     | 25/3; 43/39   | 92-B10                              | 43/8, 9        |
| TM-4                         | 25/3; 28/9;   | Ariana                              | 35/13          |
|                              | 31/3          | Bienvenue                           | 35/13          |
| TM-9                         | 25/3; 28/9    | D083                                | 43/8, 9        |
| TM-12                        | 25/3; 28/9    | F <sub>1</sub> Chuannongchangjiao x | 32/20          |
| TM 17                        | 28/9; 31/3    | Qianyou 23                          |                |
| Varieties treated            |               | Gloria                              | 41/25          |
| BAU-M/14                     | 34/27         | Jet-Nef                             | 41/25          |
| Lethbridge                   | 31/3          | Oro                                 | 33/22; 35/8    |
| RL-9                         | 43/39         | Primor                              | 35/13          |
| YS-52 (YS 52)                | 42/26, 27     | Rapid cycling <i>B. napus</i>       | 35/13          |
| Other varieties mentioned    |               | Rapora                              | 35/13          |
| RLM 619                      | 31/11         | Shengliyoucail                      | 25/9           |
| Varuna                       | 25/3; 31/3;   | Shenli                              | 32/20          |
|                              | 11; 43/39     | Tower                               | 44/33          |
| Mutagens used                |               | WRG-42                              | 35/12          |
| EMS                          | 34/27; 35/29  | Other varieties mentioned           |                |
| Gamma rays                   | 35/29; 42/26, | Regent                              | 33/22          |
|                              | 27            | Mutagens used                       |                |
| X-rays                       | 43/39         | EMS                                 | 33/22; 35/13   |
| Breeding objectives          |               | EMS ( <i>in vitro</i> )             | 22/14; 35/13;  |
| Aphid tolerance              | 31/11         |                                     | 43/8           |
| Blight resistance            | 42/26, 27     | Fast neutrons ( <i>in vitro</i> )   | 43/10          |
| Bold sees                    | 31/1; 34/27   | Gamma rays                          | 25/9; 32/20;   |
| Dwarfness                    | 28/9          |                                     | 35/13; 41/24;  |
| Earliness                    | 28/9; 31/3,   |                                     | 44/33          |
|                              | 11; 42/26     | Gamma rays ( <i>in vitro</i> )      | 35/13; 43/10,  |
| Glucosinolate content        | 35/29         |                                     | 12             |
| Oil content                  | 25/3; 31/11;  | MNH                                 | 41/25          |
|                              | 42/27; 43/39  | MNH ( <i>in vitro</i> )             | 43/10          |
| Plant type                   | 31/11; 34/27  | MNNG ( <i>in vitro</i> )            | 22/14          |
| Pod architecture             | 43/39         | Somaclonal variation                | 35/29          |
| Seed colour                  | 43/39         | UV ( <i>in vitro</i> )              | 43/10          |
| Yellow seed                  | 25/3; 28/9;   | Breeding objectives                 |                |
|                              | 31/3          | Adaptability                        | 44/33          |
| Yield                        | 31/11; 42/27; | <i>Alternaria brassicicola</i>      | 35/13, 14      |
|                              | 43/39         | resistance                          |                |
| Countries                    |               | Cold tolerance                      | 25/9; 32/20    |
| Australia                    | 35/30         | Disease resistance                  | 25/9; 32/20;   |
| Bangladesh                   | 34/27; 42/26, |                                     | 41/25          |
|                              | 27            | Earliness                           | 44/33          |
| India                        | 25/3; 28/9;   | Early maturity                      | 32/20          |
|                              | 31/3; 43/39   | Eriuc acid content                  | 33/22; 35/29   |
| <b><i>Brassica napus</i></b> |               | Fatty acid composition              | 35/8           |
| Mutant varieties             |               | Glucosinolate content               | 33/22; 35/29   |
| Abasin-95                    | 44/33         | Insect resistance                   | 41/25          |
| Binasharisha-3               | 44/33         | Linoleic acid content               | 33/22          |
| Binasharisha-4               | 44/33         | Linolenic acid content              | 33/22          |
| Ganyou No. 5                 | 25/9; 32/20   | Lodging resistance                  | 43/9           |
| H86-166                      | 35/29         | Long silique                        | 43/8, 9        |
| Hua-Yellow No. 1             | 41/25         | Oil content                         | 41/25; 44/33   |
| Ivanna                       | 41/25         | <i>Phoma lingam</i> resistance      | 22/14; 35/14   |
| Stellar                      | 33/22         | Plant regeneration <i>in vitro</i>  | 43/10, 12      |
| Tismenitskii                 | 41/25         | <i>Sclerotinia</i> resistance       | 32/20          |
| Xiuyou No. 1                 | 32/20         | Short stature                       | 32/20; 43/8, 9 |
| Other mutants mentioned      |               | Viability                           | 41/25          |
|                              |               | White rust resistance               | 32/20          |

|                                                      |                                       |                                                                        |                       |
|------------------------------------------------------|---------------------------------------|------------------------------------------------------------------------|-----------------------|
| Yield                                                | 25/9; 32/20;<br>41/25; 44/33          | Breeding objectives                                                    |                       |
| Countries                                            |                                       | Cabbage head                                                           | 33/5                  |
| Bangladesh                                           | 44/33                                 | Disease resistance                                                     | 33/5                  |
| Canada                                               | 33/22                                 | Downy mildew resistance                                                | 33/6                  |
| China                                                | 25/9; 32/20;<br>35/29; 41/25;<br>43/9 | Early maturity                                                         | 25/10; 30/20;<br>33/5 |
| FRG                                                  | 35/8, 14                              | Storage quality                                                        | 25/10; 30/20;<br>33/5 |
| India                                                | 22/17                                 | Yield                                                                  | 25/10; 30/20;<br>33/5 |
| Pakistan                                             | 44/33                                 | Countries                                                              |                       |
| Poland                                               | 43/11, 12                             | China                                                                  | 25/10; 30/20;<br>33/6 |
| UK                                                   | 35/14                                 |                                                                        |                       |
| USSR                                                 | 41/25                                 |                                                                        |                       |
| Other information                                    |                                       | <b>Brome grass see <i>Bromus inermis</i></b>                           |                       |
| Microspore cultures                                  | 35/13; 43/8                           |                                                                        |                       |
| <i>In vitro</i> culture                              | 43/10, 12                             | <b><i>Bromus inermis</i></b>                                           |                       |
| <i>In vitro</i> selection                            | 35/14                                 | Mutant varieties                                                       |                       |
| <b><i>Brassica oleracea</i> var. <i>acephala</i></b> |                                       | Fakel 89                                                               | 41/25                 |
| Mutant varieties                                     |                                       | Varieties treated                                                      |                       |
| Vekha                                                | 41/25                                 | Morshanskii                                                            | 41/25                 |
| Other mutants mentioned                              |                                       | Mutagens used                                                          |                       |
| 19 <sup>P-2</sup>                                    | 23/6                                  | DMS                                                                    | 41/25                 |
| 20 <sup>P-2</sup>                                    | 23/6                                  | Breeding objectives                                                    |                       |
| Varieties treated                                    |                                       | Disease resistance                                                     | 41/25                 |
| Kjose 17                                             | 23/6                                  | Winterhardiness                                                        | 41/25                 |
| Mozgovaya zel. vol.                                  | 41/25                                 | Countries                                                              |                       |
| Other varieties mentioned                            |                                       | USSR                                                                   | 41/25                 |
| Balkan                                               | 23/6                                  |                                                                        |                       |
| Mutagens used                                        |                                       | <b>Buckthorn see <i>Hippophaea rhamnoides</i></b>                      |                       |
| Chemical mutagen                                     | 41/25                                 |                                                                        |                       |
| Gamma rays                                           | 23/6                                  | <b>Buckwheat see <i>Fagopyrum esculentum</i>; <i>F. sagittatum</i></b> |                       |
| Breeding objectives                                  |                                       |                                                                        |                       |
| Concentrated head                                    | 23/6                                  | <b>Burdock see <i>Arctium lappa</i></b>                                |                       |
| Disease resistance                                   | 41/25                                 |                                                                        |                       |
| Heterosis                                            | 23/6                                  |                                                                        |                       |
| High stalk                                           | 23/6                                  | <b>C</b>                                                               |                       |
| Insect resistance                                    | 41/25                                 | <b><i>Cajanus cajan.</i></b>                                           |                       |
| Mechanized harvest                                   | 23/6                                  | Mutant varieties                                                       |                       |
| Countries                                            |                                       | Co.3 (Co 3)                                                            | 28/13; 29/20          |
| Bulgaria                                             | 23/6                                  | Co.5 (Co 5)                                                            | 28/13; 29/20          |
| USSR                                                 | 41/25                                 | TAT 5                                                                  | 28/19                 |
| <b><i>Brassica pekinensis</i></b>                    |                                       | TAT 10                                                                 | 28/20                 |
| Mutant varieties                                     |                                       | Trombay Vishakha-1                                                     | 23/16                 |
| Baica                                                | 25/10                                 | Other mutants mentioned                                                |                       |
| Beica No. 9                                          | 33/5                                  | HY-1                                                                   | 42/8                  |
| Longbai No. 1                                        | 30/20                                 | HY-2                                                                   | 42/8                  |
| Other mutants mentioned                              |                                       | HY-3                                                                   | 42/8                  |
| 79-21-2                                              | 33/6                                  | HY-4                                                                   | 42/8                  |
| Varieties treated                                    |                                       | HY-5                                                                   | 42/8                  |
| Kerr/Feichenghuaxin                                  | 25/10                                 | TT-2                                                                   | 28/20                 |
| F <sub>2</sub> Ke No. 2 x Feichenghuaxin             | 33/5                                  | TT-8                                                                   | 28/20                 |
| F <sub>4</sub> line of cross Jiayou x                | 30/20                                 | Varieties treated                                                      |                       |
| Tonghua                                              |                                       | CIP-2836                                                               | 24/8                  |
| Mutagens used                                        |                                       | Co.1 (Co 1)                                                            | 28/13; 29/20          |
| Gamma rays                                           | 25/10; 30/20                          | Hy-2                                                                   | 21/5                  |
| Radiation                                            | 33/5                                  | ICP-7409                                                               | 24/8                  |

|                                        |                                                                         |                                             |                                        |
|----------------------------------------|-------------------------------------------------------------------------|---------------------------------------------|----------------------------------------|
| ICPL 265                               | 35/24                                                                   | Caixiao                                     | 32/20                                  |
| Pusa 601                               | 42/8                                                                    | Caixui                                      | 32/20                                  |
| Pusa 85                                | 42/8                                                                    | Xuhong                                      | 32/21                                  |
| T-21                                   | 23/16; 24/8;<br>28/19, 20                                               | Varieties treated                           |                                        |
| Other varieties mentioned              |                                                                         | Dahuahong                                   | 30/20, 21                              |
| Hy-3C                                  | 21/5                                                                    | Mutagens used                               |                                        |
| RSHP-55                                | 21/5                                                                    | Gamma rays                                  | 32/20, 21                              |
| Mutagens used                          |                                                                         | Breeding objectives                         |                                        |
| DES                                    | 24/8                                                                    | Flower colour                               | 32/20, 21                              |
| EMS                                    | 24/8; 28/13;<br>29/20; 42/8                                             | Countries                                   |                                        |
| Fast neutrons                          | 23/16; 28/19,<br>20                                                     | China                                       | 30/20, 21                              |
| Gamma rays                             | 21/5; 24/8;<br>28/13; 29/20;<br>35/24; 42/8                             | <b><i>Canavalia virosa</i></b>              |                                        |
| HZ                                     | 24/8                                                                    | Mutagens used                               |                                        |
| Breeding objectives                    |                                                                         | Gamma rays                                  | 41/11                                  |
| Bold seed                              | 28/13; 29/20                                                            | Breeding objectives                         |                                        |
| Day-length insensitivity               | 28/13; 29/20                                                            | Conavanine content                          | 41/11                                  |
| Drought tolerance                      | 28/13; 29/20                                                            | Countries                                   |                                        |
| Dwarfness                              | 21/5; 24/8                                                              | India                                       | 41/11                                  |
| Early maturing                         | 24/8; 28/13;<br>28/19, 20;<br>29/20; 35/24                              | <b><i>Capsicum annuum</i></b>               |                                        |
| <i>Fusarium udum</i> resistance        | 35/24                                                                   | Mutant varieties                            |                                        |
| Harvest index                          | 21/5                                                                    | Frairi KS 80                                | 37/22                                  |
| Plant architecture                     | 24/8                                                                    | Gornooriahovska kapia                       | 44/33                                  |
| Plant type                             | 21/5; 24/8                                                              | Horgoska slatka-X-3 (H.S-X3)                | 33/22                                  |
| Protein content                        | 42/9                                                                    | Ljulin                                      | 24/9                                   |
| Seed characters                        | 24/8; 28/13                                                             | Nush 51                                     | 41/25                                  |
| Seed size                              | 21/5; 28/19,<br>20                                                      | Orangeva Kapia                              | 39/9; 41/26                            |
| Short stem                             | 35/24                                                                   | Pirin                                       | 41/26; 43/28                           |
| Sterility mosaic disease<br>resistance | 35/24                                                                   | Other mutants mentioned                     |                                        |
| Yield                                  | 21/5; 28/13;<br>29/20; 42/8                                             | Zlaten medal ms-8                           | 44/33                                  |
| Countries                              |                                                                         | Varieties treated                           |                                        |
| India                                  | 21/5; 22/12;<br>23/16; 24/8;<br>28/14, 19, 20;<br>29/20; 35/24;<br>42/9 | Albena                                      | 43/28                                  |
| Other information                      |                                                                         | Kurtovska kapia                             | 41/26; 43/28                           |
| <i>In vitro</i> cultures               | 22/11                                                                   | Lastochka                                   | 41/25                                  |
| <b><i>Calathea crocata</i></b>         |                                                                         | Palmulagu                                   | 42/17                                  |
| Mutant varieties                       |                                                                         | Pasardzhinshka kapia<br>(Pasardjshka kapia) | 39/9; 41/26                            |
| Esther                                 | 31/11                                                                   | Pusa Jwala                                  | 37/7                                   |
| Mutagens used                          |                                                                         | Zlaten medal                                | 24/9                                   |
| X-rays                                 | 31/11                                                                   | Other varieties mentioned                   |                                        |
| Breeding objectives                    |                                                                         | GO-201B                                     | 44/33                                  |
| Flower colour                          | 31/11                                                                   | Mutagens used                               |                                        |
| Flower shape                           | 31/11                                                                   | Chemical mutagens                           | 37/7                                   |
| Countries                              |                                                                         | EI                                          | 41/25                                  |
| The Netherlands                        | 31/11                                                                   | EMS                                         | 37/22; 42/17;<br>43/28                 |
| <b><i>Canna indica</i></b>             |                                                                         | Gamma rays                                  | 24/9; 33/22;<br>41/26; 43/28;<br>44/33 |
| Mutant varieties                       |                                                                         | Physical mutagens                           | 37/7                                   |
|                                        |                                                                         | Radiation                                   | 21/9                                   |
|                                        |                                                                         | X-rays                                      | 39/9; 41/26                            |
|                                        |                                                                         | Breeding objectives                         |                                        |
|                                        |                                                                         | Beta caroten content                        | 38/9; 41/26                            |
|                                        |                                                                         | Capsaicin content                           | 37/7                                   |
|                                        |                                                                         | CMV resistance                              | 33/22                                  |
|                                        |                                                                         | Dwarfness                                   | 21/9                                   |
|                                        |                                                                         | Earliness                                   | 24/9; 44/33                            |

|                                                   |                                  |                                                                                 |       |
|---------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------|-------|
| Fruit colour                                      | 21/9; 42/17                      | <i>communis</i>                                                                 |       |
| Fruit size                                        | 21/9                             | <b>Celery</b> see <i>Apium graveolens</i>                                       |       |
| Lack of anthocyanin                               | 41/26                            | <b>Centipedegrass</b> see <i>Eremochloa ophiuroides</i>                         |       |
| Long storage                                      | 24/9                             | <b>Chamomile</b> see <i>Matricaria chamomilla</i>                               |       |
| Male sterility                                    | 24/9                             | <b>Chickpea</b> see <i>Cicer arietinum</i>                                      |       |
| Powdery mildew resistance                         | 41/26; 43/28                     | <b>Chinese cabbage</b> see <i>Brassica pekinensis</i>                           |       |
| Provitamine A content                             | 41/26                            | <b>Chinese matgrass</b> see <i>Cyperus malaccensis</i>                          |       |
| Quality                                           | 41/25                            | <b>Chinese potato</b> see <i>Coleus parviflorus</i>                             |       |
| <i>Verticillium dahliae</i> tolerance             | 37/22                            | <b>Chinese chestnut</b>                                                         |       |
| Vitamin C content                                 | 42/18                            | Mutagens used                                                                   |       |
| Yield                                             | 24/9; 41/25; 42/17; 44/33        | Fast neutrons                                                                   | 27/13 |
| Countries                                         |                                  | Breeding objectives                                                             |       |
| Bulgaria                                          | 24/9; 39/10; 41/26; 43/29; 44/33 | Dwarfness                                                                       | 27/14 |
| India                                             | 37/7; 42/18                      | Dense planting                                                                  | 27/14 |
| Italy                                             | 21/9; 37/22                      | Yield                                                                           | 27/14 |
| USSR                                              | 41/25                            | Countries                                                                       |       |
| Yugoslavia                                        | 33/22                            | China                                                                           | 27/14 |
| <b>Carica papaya</b>                              |                                  | <b>Chrysanthemum</b> see <i>Chrysanthemum</i> or <i>Dendrathera grandiflora</i> |       |
| Mutant varieties                                  |                                  | <i>Chrysanthemum</i> sp. or <i>Dendrathera grandiflora</i>                      | 35/27 |
| Pusa Nanha (Pusa nanha)                           | 29/8; 30/20                      | Mutant varieties                                                                |       |
| Varieties treated                                 |                                  | Agnisikha                                                                       | 37/22 |
| Ranchi                                            | 30/20                            | Alankar                                                                         | 23/16 |
| Other varieties mentioned                         |                                  | Apricot Deholta                                                                 | 31/12 |
| Pusa Delicious                                    | 29/7                             | Apricot Impala                                                                  | 31/13 |
| Pusa Dwarf                                        | 29/7                             | Babette gelb                                                                    | 31/11 |
| Pusa Giant                                        | 29/7                             | Baigiku rainbow (orange)                                                        | 32/21 |
| Pusa Majesty                                      | 29/7                             | Baigiku rainbow (peach)                                                         | 32/21 |
| Mutagens used                                     |                                  | Baigiku rainbow (pink)                                                          | 32/21 |
| Gamma rays                                        | 29/8; 30/20                      | Baigiku rainbow (red)                                                           | 32/21 |
| Breeding objectives                               |                                  | Baigiku rainbow (white)                                                         | 32/21 |
| Dwarfness                                         | 29/8                             | Baigiku rainbow (yellow)                                                        | 32/21 |
| Reduced plant size                                | 30/20                            | Basanti                                                                         | 23/16 |
| Countries                                         |                                  | Batik                                                                           | 43/40 |
| India                                             | 29/7; 30/20                      | Blue Redemine                                                                   | 31/15 |
| <b>Carnation</b> see <i>Dianthus caryophyllus</i> |                                  | Bronce Kalinka                                                                  | 35/33 |
| <b>Carthamus tinctorius</b>                       |                                  | Bronze Byoux                                                                    | 31/11 |
| Varieties treated                                 |                                  | Bronze Redemine                                                                 | 31/15 |
| Giza-1                                            | 29/16                            | Cheri Deholta                                                                   | 31/12 |
| Mutagens used                                     |                                  | Colchi Bahar                                                                    | 31/12 |
| Gamma rays                                        | 29/16                            | Copper Marconi                                                                  | 31/15 |
| Gammara rays (callus)                             | 28/6                             | Coral Refla                                                                     | 31/15 |
| Breeding objectives                               |                                  |                                                                                 |       |
| Callus radiosensitivity                           | 28/6                             |                                                                                 |       |
| Seed number                                       | 29/16                            |                                                                                 |       |
| Countries                                         |                                  |                                                                                 |       |
| Egypt                                             | 29/16                            |                                                                                 |       |
| Japan                                             | 28/6                             |                                                                                 |       |
| <b>Carrot</b> see <i>Daucus carota</i>            |                                  |                                                                                 |       |
| <b>Cassava</b> see <i>Manihot esculenta</i>       |                                  |                                                                                 |       |
| <b>Castor bean</b> see <i>Ricinus</i>             |                                  |                                                                                 |       |

|                         |               |                         |               |
|-------------------------|---------------|-------------------------|---------------|
| Cosmonaut               | 26/12         | Orange Impala           | 31/13         |
| Cream Deholta           | 31/12         | Orrange Lymon           | 31/14         |
| Cream Impala            | 31/13         | Orange Mario            | 23/20; 26/15  |
| Cristiane               | 43/40         | Orange Refla            | 31/15         |
| Dark Mario              | 23/20; 26/15  | Pale Remember           | 31/16         |
| Dark Gaby               | 31/13         | Peach Deholta           | 31/12         |
| Dark Lymon              | 31/14         | Pearl Cindy             | 35/32         |
| Dark Red Marconi        | 31/15         | Pink Impala             | 31/13         |
| Dark/Rolyal Randez-Vous | 31/16         | Pink-Orizuru            | 42/27         |
| Dark Torino             | 31/17         | Raktima                 | 44/33         |
| Enzett Axilla Gelb      | 37/22         | Red Marconi             | 31/15         |
| Enzett Balina Rot       | 37/22         | Red Lymon               | 31/14         |
| Enzett Balina Wiess     | 37/22         | Repin Rosa              | 44/33         |
| Enzett Dilana Gelb      | 37/23         | Salmon Byoux            | 31/11         |
| Enzett Dilana Rosa      | 37/23         | Salmon Impala           | 31/13         |
| Enzett Heli Bronze      | 37/23         | Salmon Lymon            | 31/14         |
| Enzett Heli Gelb        | 37/23         | Shabnam                 | 31/17         |
| Enzett Mellit Gelb      | 37/23         | Sharad Har              | 43/43         |
| Enzett Minos Bronze     | 37/23         | Sheela                  | 31/17         |
| Enzett Niva Bronze      | 37/23         | Sonali                  | 42/27         |
| Enzett Niva Gelb        | 37/23         | Subarna                 | 42/27         |
| Enzett Niva Lachs       | 37/24         | Surekha Yellow          | 42/27         |
| Franky Lane             | 31/13         | Torino                  | 31/17         |
| Funny Redemine          | 31/15         | Tulika                  | 31/17         |
| Funny Rendez-Vous       | 31/16         | White Cindy             | 35/32         |
| Goldbronze Deholta      | 31/12         | White Redemine          | 31/11         |
| Golden Byoux            | 31/11         | White Refla             | 31/16         |
| Golden Cremon           | 34/27         | White Rememeber         | 31/16         |
| Golden Deholta          | 31/12         | White Ronny             | 31/17         |
| Golden Geos             | 23/19; 26/15; | Yellow Bettina          | 31/11         |
|                         | 35/33         | Yellow Cindy            | 35/32         |
| Golden Luck             | 31/14         | Yellow Lymon            | 31/14         |
| Hoof Lane               | 31/13         | Yellow Redemine         | 31/15         |
| Ingrid                  | 43/40         | Yellow Refla            | 31/16         |
| IRB 88-30               | 43/40         | Yellow Rendez-Vous      | 31/16         |
| IRB 88-47               | 43/40         | Yellow Samba            | 31/17         |
| IRB 88-59               | 43/41         | Yellow Torino           | 31/17         |
| IRB 88-60               | 43/41         | Varieties treated       |               |
| Jungu                   | 43/41         | Babette white           | 31/11         |
| Ki-uzushio              | 32/21         | Bettina white           | 31/11         |
| KU 1                    | 34/27         | BFA-seedling T 83/404/2 | 31/14         |
| Kumkum                  | 31/13; 34/34  | (bronze)                |               |
| Lady Amber              | 43/41         | Bravo                   | 35/10         |
| Lady Bronze             | 43/41         | Byoux                   | 31/11         |
| Lady Pink               | 43/41         | Cindy                   | 35/32         |
| Lady Rose               | 43/42         | Clone 1230              | 24/15         |
| Lady Salmon             | 43/42         | Cremon                  | 34/27         |
| Lady Yellow             | 43/42         | D-5                     | 23/16; 31/17; |
| Lemon Deholta           | 31/12         |                         | 37/22         |
| Lilac Byoux             | 31/11         | Dark Delta              | 31/12         |
| Lilac Cindy             | 35/32         | Delta                   | 31/12         |
| Main Lane               | 31/14         | E-13                    | 23/16         |
| Man Bhawan              | 23/16; 33/16  | Flirt                   | 23/16; 33/16; |
| Marconi                 | 31/14         |                         | 42/27; 43/41  |
| Navneet                 | 37/24         | Gaby pink               | 31/13         |
| Navneet Yellow          | 43/42         | Geos                    | 23/19; 26/15; |
| OHB-14                  | 43/42         |                         | 35/33         |
| OHB-8                   | 43/43         | Himani                  | 31/17         |

|                                |                |                               |                |
|--------------------------------|----------------|-------------------------------|----------------|
| Hangzhou                       | 34/27          |                               | 35/32, 33;     |
| Horim                          | 35/10          |                               | 43/41, 42      |
| Impala                         | 31/13          | X-rays ( <i>in vitro</i> )    | 35/10          |
| Indianapolis                   | 35/10          | Breeding objectives           |                |
| Kalinka                        | 35/33          | Disease tolerance             | 34/27          |
| Kalyani Mauve                  | 37/24          | Early flowering               | 35/10          |
| Lalima                         | 43/41          | Flower colour                 | 23/16, 19, 20; |
| Lilac Cindy                    | 35/32          |                               | 24/14; 26/15;  |
| Lymon                          | 31/14          |                               | 31/11, 12, 13, |
| M-24                           | 31/17          |                               | 14, 15, 16,    |
| M-71                           | 31/13          |                               | 17; 32/21;     |
| Mario                          | 23/19; 26/15   |                               | 33/16; 34/27;  |
| Navneet                        | 43/42          |                               | 35/10, 27, 32, |
| Neptune                        | 39/6           |                               | 33; 37/22, 23, |
| Nimrod                         | 26/12          |                               | 24; 38/12;     |
| Ohira                          | 38/12          |                               | 42/27; 43/40,  |
| Pearl Delta                    | 31/12          |                               | 41, 42, 43;    |
| Penny Lane                     | 31/13          | Flower shape                  | 44/33          |
| Pink cultivar                  | 31/14, 15      |                               | 24/14; 26/12;  |
| Pink seedling                  | 31/17          |                               | 31/13, 17;     |
| Princess Anne Bright Golden    | 39/6           |                               | 35/27; 38/12;  |
| Ratna                          | 42/27          | Flower size                   | 39/6           |
| Redemine                       | 31/15          | Growth type                   | 34/27          |
| Refla                          | 31/15, 16      | Leaf shape                    | 24/14; 39/6    |
| Remember                       | 31/16          | Low temperature tolerance     | 24/15          |
| Rendez-Vous                    | 31/16          | Petal size                    | 39/6           |
| Repin                          | 43/40          | Plant height                  | 39/6           |
| Richmond                       | 35/10; 43/41,  | Short stem                    | 31/13          |
|                                | 42             | Countries                     |                |
| Ronny Pink                     | 31/17          | Belgium                       | 31/14, 15, 17  |
| Samba white                    | 31/17          | Brazil                        | 43/40; 44/33   |
| Seikuono-kurnenai              | 32/21          | FRG                           | 23/19, 20;     |
| Sei-Orizuru                    | 42/27          |                               | 24/15; 26/15;  |
| Sharad Bahar                   | 31/12          |                               | 31/111, 13,    |
| Sharad Mala                    | 43/43          |                               | 14, 17; 35/32, |
| Shyamal                        | 44/33          | GDR                           | 33             |
| Surekha                        | 42/27          | India                         | 37/22, 23, 24  |
| Taihei                         | 43/40, 41, 42, |                               | 23/16; 26/12;  |
|                                | 43             |                               | 31/12, 13, 17; |
| Uzushio                        | 32/21          |                               | 33/16; 34/34;  |
| Westland                       | 35/10          |                               | 37/22, 24;     |
| White Delta                    | 31/12          |                               | 42/27; 43/40,  |
|                                |                |                               | 41, 42, 43;    |
| Mutagens used                  |                |                               | 44/33          |
| Colchicine                     | 31/12          | Ireland                       | 39/6           |
| EMS ( <i>in vitro</i> )        | 24/13          | Japan                         | 32/21; 38/12;  |
| Gamma field                    | 38/12          |                               | 42/27; 43/40,  |
| Gamma rays                     | 23/16, 26/12;  | Poland                        | 41, 42, 43     |
|                                | 31/11, 13, 14, |                               | 35/10; 43/41,  |
|                                | 16, 17; 33/16; |                               | 42             |
|                                | 34/27; 37/22,  | The Netherlands               | 31/11, 12, 13, |
|                                | 23, 24; 42/27; |                               | 14, 15, 16     |
|                                | 43/40, 41, 42, | Thailand                      | 34/27          |
|                                | 43; 44/33      | Other informationend          |                |
| Gamma rays ( <i>in vitro</i> ) | 24/13; 32/21;  | <i>In vitro</i> cultures      | 38/12          |
|                                | 35/10; 39/6    |                               |                |
| X-rays                         | 23/19, 20;     | <b><i>Cicer arietinum</i></b> |                |
|                                | 26/15; 31/11,  | Mutant varieties              |                |
|                                | 12, 13, 14,    | CM 72                         | 23/17; 39/3    |
|                                | 15, 16, 17;    | CM-88                         | 43/43          |
|                                |                | Hyprosola                     | 33/7           |

|                           |                          |                                |                                                                            |
|---------------------------|--------------------------|--------------------------------|----------------------------------------------------------------------------|
| Kiran (RSG-2)             | 26/12                    | Chaffa                         | 22/2                                                                       |
| Line 3                    | 43/43                    | L-550                          | 22/3                                                                       |
| NIFA-88 (CM-1918)         | 37/3; 24                 | C-235                          | 22/4                                                                       |
| NIFA-95                   | 44/34                    | Mutagens used                  |                                                                            |
| Pusa 408 (Ajay)           | 29/21                    | EMS                            | 35/26; 41/6                                                                |
| Pusa 413 (Atul)           | 29/21                    | Gamma rays                     | 23/17; 29/21;<br>33/7; 34/19;<br>37/3; 4, 24;<br>41/6; 43/19;<br>43; 44/34 |
| Pusa 417 (Grinar)         | 29/21                    |                                |                                                                            |
| Other mutants mentioned   |                          | Gamma rays + EMS               | 43/43                                                                      |
| BGM 403                   | 21/6                     | Neutrons                       | 26/12                                                                      |
| BGM 405                   | 21/6; 22/2               | Sodium azide                   | 22/9; 35/26                                                                |
| BGM 408                   | 21/6; 22/2,3             | Breeding objectives            |                                                                            |
| BGM 413                   | 21/6; 22/2,3             | Bushy plant type               | 35/26                                                                      |
| BGM 415                   | 22/3                     | <i>Ascochyta rabiei</i> blight | 22/2; 23/17;<br>29/21; 37/24;<br>41/6                                      |
| BMG 416                   | 22/3                     | resistance                     |                                                                            |
| BMG 417                   | 22/3                     | Blight resistance              | 21/4; 37/3;<br>44/34                                                       |
| BMG 418                   | 22/3                     | Chlorophyll deficient          | 35/26                                                                      |
| BMG 419                   | 22/3                     | Cold resistance                | 41/6                                                                       |
| BMG 421                   | 22/3                     | Collar rot resistance          | 22/3; 29/21                                                                |
| CM-1918                   | 37/3                     | Disease resistance             | 21/5; 35/26;<br>39/3; 43/43                                                |
| CM 359                    | 21/4                     | Earliness                      | 21/5; 34/19;<br>35/26                                                      |
| CM 438                    | 34/19                    | Early maturity                 | 26/12; 37/3;<br>4, 24                                                      |
| CM 68                     | 21/4                     | Flower colour                  | 35/26                                                                      |
| CM 72                     | 21/4                     | Foot rot resistance            | 22/3; 29/21                                                                |
| BMG 424                   | 22/4                     | Harvest index                  | 22/4                                                                       |
| BMG 425                   | 22/4                     | Nitrogen fixation              | 37/3; 24                                                                   |
| BMG 426                   | 22/4                     | Photoperiod insensitivity      | 34/19                                                                      |
| BMG 427                   | 22/4                     | Plant habit                    | 26/12; 37/3                                                                |
| BMG 428                   | 22/4                     | Plant architecture             | 21/5; 29/21                                                                |
| BMG 429                   | 22/4                     | Pod number                     | 21/5; 29/21                                                                |
| BMG 430                   | 22/4                     | Pod length                     | 43/19                                                                      |
| Desi mutants              | 22/3                     | Protein content                | 33/7                                                                       |
| FLIP 94-501C              | 43/19                    | Root rot resistance            | 21/9; 29/21                                                                |
| FLIP 94-502C              | 43/19                    | Salinity tolerance             | 26/12                                                                      |
| G-293                     | 37/4                     | Stunt virus resistance         | 22/2; 29/21                                                                |
| G-302                     | 37/4                     | Wilt resistance                | 22/2; 29/21                                                                |
| Kabuli mutants            | 22/3                     | Yield                          | 21/6; 22/2, 3;<br>4; 23/17;<br>26/12; 29/21;<br>33/7; 37/3;<br>24; 43/43   |
| Mutant No. 16119          | 41/7                     |                                |                                                                            |
| Varieties treated         |                          | Countries                      |                                                                            |
| 6153                      | 21/4; 23/17;<br>37/3; 24 | Bangladesh                     | 21/5; 22/9;<br>35/26; 37/4                                                 |
| BG 203                    | 29/21                    | Chile                          | 21/9                                                                       |
| C 727                     | 21/4; 34/19;<br>43/43    | Egypt                          | 43/43                                                                      |
| Desi                      | 22/3                     | ICARDA                         | 41/7; 43/20                                                                |
| Faridpur-1                | 21/5; 33/7;<br>37/4      | India                          | 21/6; 22/5;<br>26/12; 29/21                                                |
| G-130                     | 20/21                    | Pakistan                       | 21/4; 23/17;<br>34/19; 37/3;<br>24; 39/3;<br>41/7; 43/43;<br>44/34         |
| Hyprosola                 | 22/9                     |                                |                                                                            |
| ILC 3279                  | 41/6                     |                                |                                                                            |
| ILC 482                   | 41/6                     |                                |                                                                            |
| ILC 5901                  | 43/19                    |                                |                                                                            |
| ILC 6104                  | 41/6                     |                                |                                                                            |
| Kabuli                    | 22/3                     |                                |                                                                            |
| Line 6151                 | 44/34                    |                                |                                                                            |
| NECL #055                 | 43/43                    |                                |                                                                            |
| RS-10                     | 26/12                    |                                |                                                                            |
| Other varieties mentioned |                          |                                |                                                                            |
| Warangal                  | 22/2                     |                                |                                                                            |

**Citronella** see *Cymbopogon winterianus*

***Citrullus lanatus***

|                                                                                 |              |
|---------------------------------------------------------------------------------|--------------|
| Mutant varieties                                                                |              |
| Gibrid 218                                                                      | 31/18        |
| Lu No. 1                                                                        | 32/21        |
| Varieties treated                                                               |              |
| Hybrid Bykovskii 22 x Melitopolskii 143 and subsequent cross with Yubileinyi 72 | 31/18        |
| Taojian No. 8 x Lemi No. 1                                                      | 32/21        |
| Mutagens used                                                                   |              |
| Gamma rays                                                                      | 31/18; 32/21 |
| Breeding objectives                                                             |              |
| Disease resistance                                                              | 32/21        |
| Yield                                                                           | 32/21        |
| Countries                                                                       |              |
| China                                                                           | 32/21        |
| USSR                                                                            | 31/18        |

***Citrus limon***

|                     |             |
|---------------------|-------------|
| Mutant varieties    |             |
| Eureka 22INTA       | 44/34       |
| Varieties treated   |             |
| Eureka              | 26/1; 36/11 |
| Frost Eureka        | 44/34       |
| Israeli Villafranca | 36/11       |
| Mutagens used       |             |
| Gamma rays          | 26/1; 36/11 |
| X-rays              | 44/34       |
| Breeding objectives |             |
| Fruit quality       | 44/34       |
| Fruit set           | 44/34       |
| Seedless            | 26/1; 36/11 |
| Countries           |             |
| Argentina           | 44/34       |
| Israel              | 26/2; 36/11 |

***Citrus paradisi***

|                     |       |
|---------------------|-------|
| Mutant varieties    |       |
| Rio Red             | 37/24 |
| Valencia 2 INTA     | 44/34 |
| Varieties treated   |       |
| Ruby Red            | 37/24 |
| Valencia Late       | 44/34 |
| Mutagens used       |       |
| Thermal neutrons    | 37/24 |
| X-rays              | 44/34 |
| Breeding objectives |       |
| Fruit colour        | 37/24 |
| Fruit quality       | 44/34 |
| Fruit size          | 44/34 |
| Juice colour        | 37/24 |
| Yield               | 37/24 |
| Countries           |       |
| Argentina           | 44/34 |

USA 37/24

***Citrus sinensis***

|                                 |       |
|---------------------------------|-------|
| Other mutants mentioned         |       |
| Seedless Orange no. 7           | 37/8  |
| Seedless Orange no. 8           | 37/8  |
| Varieties treated               |       |
| Jin Cheng                       | 37/8  |
| Pera                            | 36/11 |
| Mutagens used                   |       |
| Gamma rays                      | 37/8  |
| Gamma rays (protoplast culture) | 36/11 |
| Breeding objectives             |       |
| Cytogenetic studies             | 37/9  |
| Isozyme analysis                | 37/8  |
| Radiosensitivity                | 36/11 |
| Seedless                        | 37/8  |
| Countries                       |       |
| Brazil                          | 36/11 |
| China                           | 37/9  |
| Other information               |       |
| Protoplast culture              | 36/11 |

***Citrus* sp.**

|                                  |                                    |
|----------------------------------|------------------------------------|
| Mutant varieties                 |                                    |
| Guoqin 1 to Guoqin 5             | 33/12                              |
| Hongju 420                       | 34/27; 35/33                       |
| Xue Gan 9-12-1                   | 29/22                              |
| Other mutants mentioned          |                                    |
| 4790                             | 34/24                              |
| 563                              | 34/24                              |
| Varieties treated                |                                    |
| Dahongpao                        | 34/27; 35/33                       |
| Eureka                           | 35/26                              |
| Mestnyi                          | 34/24                              |
| Minneola                         | 35/26                              |
| Shamauti                         | 35/27                              |
| Unshu                            | 34/24                              |
| Villafranca                      | 35/26                              |
| Xue Gan                          | 29/21                              |
| Other varieties mentioned        |                                    |
| Wilking                          | 35/26                              |
| Mutagens used                    |                                    |
| Chemical mutagensis              | 34/24                              |
| EMS ( <i>in vitro</i> )          | 33/13                              |
| Gamma rays                       | 27/14; 29/22; 34/24, 27; 35/26, 33 |
| Gamma rays ( <i>in vitro</i> )   | 33/13                              |
| NEH                              | 34/24                              |
| Penyamycin ( <i>in vitro</i> )   | 33/13                              |
| Sodium azide ( <i>in vitro</i> ) | 33/13                              |
| Breeding objectives              |                                    |
| Cold tolerance                   | 34/27                              |
| Chromosomal translocations       | 27/14                              |
| Few seeds                        | 34/27; 35/33                       |
| Fruit number                     | 29/22                              |
| Increased variability            | 34/24                              |

|                                                  |                                         |  |  |
|--------------------------------------------------|-----------------------------------------|--|--|
| Parthenogenesis                                  | 29/22                                   |  |  |
| Salt tolerance                                   | 33/13                                   |  |  |
| Seedlessness                                     | 27/14; 29/22;<br>35/26                  |  |  |
| Semi-compact plant type                          | 35/26                                   |  |  |
| Countries                                        |                                         |  |  |
| China                                            | 27/14; 29/22;<br>33/14; 34/17;<br>35/33 |  |  |
| Georgian SSR                                     | 34/24                                   |  |  |
| Israel                                           | 35/27                                   |  |  |
| <b><i>Coix lachryma-jobi</i></b>                 |                                         |  |  |
| Mutant varieties                                 |                                         |  |  |
| Hatomusume                                       | 42/27                                   |  |  |
| Varieties treated                                |                                         |  |  |
| Okayama (local)                                  | 42/27                                   |  |  |
| Mutagens used                                    |                                         |  |  |
| Gamma rays                                       | 42/27                                   |  |  |
| Breeding objectives                              |                                         |  |  |
| Earliness                                        | 42/27                                   |  |  |
| Semi-dwarfness                                   | 42/27                                   |  |  |
| Countries                                        |                                         |  |  |
| Japan                                            |                                         |  |  |
| <b><i>Coleus parviflorus</i></b>                 |                                         |  |  |
| Other mutants mentioned                          |                                         |  |  |
| CPM 25                                           | 34/5                                    |  |  |
| Varieties treated                                |                                         |  |  |
| CP-11                                            | 32/5; 34/6                              |  |  |
| Mutagens used                                    |                                         |  |  |
| Gamma rays                                       | 32/5; 34/5                              |  |  |
| Breeding objectives                              |                                         |  |  |
| Day-length insensitive                           | 34/5                                    |  |  |
| Earliness                                        | 32/5                                    |  |  |
| Morphological characters                         | 34/5                                    |  |  |
| Countries                                        |                                         |  |  |
| India                                            | 32/5; 34/6                              |  |  |
| <b><i>Colocasia esculenta</i></b>                |                                         |  |  |
| Other mutants mentioned                          |                                         |  |  |
| CM 1                                             | 34/5                                    |  |  |
| CM 17                                            | 34/5                                    |  |  |
| Varieties treated                                |                                         |  |  |
| CM 9 (Thamarakkhannan)                           | 34/5                                    |  |  |
| Other varieties mentioned                        |                                         |  |  |
| Rasmi                                            | 34/5                                    |  |  |
| Mutagens used                                    |                                         |  |  |
| Gamma rays                                       | 32/4                                    |  |  |
| Breeding objectives                              |                                         |  |  |
| Earliness                                        | 32/4                                    |  |  |
| Morphological characters                         | 32/4                                    |  |  |
| Shelf life                                       | 34/5                                    |  |  |
| Starch content                                   | 34/5                                    |  |  |
| Yield                                            | 32/4                                    |  |  |
| Countries                                        |                                         |  |  |
| India                                            | 32/4; 34/5                              |  |  |
| <b>Common bean see <i>Phaseolus vulgaris</i></b> |                                         |  |  |
| <b>Comon vetch see <i>Vicia sativa</i></b>       |                                         |  |  |
| <b>Cotton see <i>Gossypium</i></b>               |                                         |  |  |
| <b>Cowpea see <i>Vigna unguiculata</i></b>       |                                         |  |  |
| <b><i>Corchorus capsularis</i></b>               |                                         |  |  |
| Mutant varieties                                 |                                         |  |  |
| Binadeshipat-2                                   | 44/10, 34                               |  |  |
| Hyb 'C'                                          | 34/27                                   |  |  |
| JRC-6165                                         | 34/27                                   |  |  |
| JRC 7447 (Shymalia)                              | 24/17                                   |  |  |
| Other mutants mentioned                          |                                         |  |  |
| C-278                                            | 44/9, 10                                |  |  |
| C-30                                             | 24/12                                   |  |  |
| C-37                                             | 24/12                                   |  |  |
| C-41                                             | 24/12                                   |  |  |
| C-47                                             | 24/12                                   |  |  |
| C-5                                              | 24/10                                   |  |  |
| Varieties treated                                |                                         |  |  |
| CVL-1                                            | 44/9, 10, 34                            |  |  |
| D 154                                            | 24/10; 24/11,<br>12, 17; 41/19          |  |  |
| JRC 212                                          | 24/17                                   |  |  |
| JRC-919                                          | 34/27                                   |  |  |
| Other varieties mentioned                        |                                         |  |  |
| JRC 212                                          | 41/19                                   |  |  |
| JRC-412                                          | 34/27                                   |  |  |
| Mutagens used                                    |                                         |  |  |
| Gamma rays                                       | 24/10, 11                               |  |  |
| Sodium azide                                     | 44/9, 34                                |  |  |
| X-rays                                           | 24/17; 34/27;<br>41/19                  |  |  |
| Breeding objectives                              |                                         |  |  |
| Base diameter                                    | 44/10                                   |  |  |
| Chlorophyll mutants                              | 24/11                                   |  |  |
| Dwarfness                                        | 24/10                                   |  |  |
| Fibre quality                                    | 24/17; 44/10                            |  |  |
| Fibre yield                                      | 24/12; 44/10,<br>34                     |  |  |
| <i>Macrophomina phaseolina</i>                   | 24/11                                   |  |  |
| tolerance                                        |                                         |  |  |
| Morphological mutants                            | 24/11; 41/19                            |  |  |
| Photoperiod insensitivity                        | 24/10                                   |  |  |
| Physiological mutants                            | 41/19                                   |  |  |
| Plant architecture                               | 24/17                                   |  |  |
| Seed colour                                      | 41/19                                   |  |  |
| Tallness                                         | 41/19; 44/10                            |  |  |
| Thermoperiod sensitivity                         | 24/10                                   |  |  |
| Water lodging tolerance                          | 34/27                                   |  |  |
| Yield                                            | 24/13, 17                               |  |  |
| Countries                                        |                                         |  |  |
| Bangladesh                                       | 24/10, 13;<br>44/10, 34                 |  |  |
| India                                            | 34/27; 41/19                            |  |  |
| <b><i>Corchorus olitorius</i></b>                |                                         |  |  |
| Mutant varieties                                 |                                         |  |  |
| IR 1 (JRO 68-Anobika)                            | 24/17; 37/25                            |  |  |

|                                                           |                                            |                                 |              |
|-----------------------------------------------------------|--------------------------------------------|---------------------------------|--------------|
| JRO 3690 (Savitri)                                        | 24/17; 33/22                               | Altay                           | 31/18        |
| JRO 514                                                   | 24/17                                      | Altay ranii                     | 31/18        |
| Mahadev                                                   | 23/3, 17                                   | Ludi 1                          | 35/33        |
| Rupali                                                    | 24/17                                      | Varieties treated               |              |
| Other mutants mentioned                                   |                                            | Jinyan 1                        | 35/33        |
| TJ-40                                                     | 22/3                                       | Lemon                           | 28/7         |
| Virescent                                                 | 23/3, 17                                   | M15                             | 34/23        |
| Involute leathery                                         | 23/3, 17                                   | Nishikisuyo                     | 32/2         |
| Yellow Leaf                                               | 24/17                                      | Other varieties mentioned       |              |
| Tobacco leaf                                              | 24/17; 33/22                               | Din-zo-cin                      | 31/18        |
| Long Internode                                            | 24/17; 33/22                               | Mutagens used                   |              |
| Varieties treated                                         |                                            | EI                              | 34/23        |
| JRO 632                                                   | 23/3, 17;<br>24/17; 37/25                  | Gamma rays                      | 32/2; 35/28  |
| JRO 878                                                   | 41/19                                      | Laser                           | 35/33        |
| NH87/Co <sub>4</sub>                                      | 41/20                                      | Somaclonal variation            | 35/16        |
|                                                           |                                            | Thermal neutrons                | 28/7         |
| Other varieties mentioned                                 |                                            | Breeding objectives             |              |
| JRO 632                                                   | 41/19                                      | Earliness                       | 31/18        |
| Mutagens used                                             |                                            | Downy mildew resistance         | 35/33        |
| Gamma rays                                                | 24/17; 37/25;<br>41/20                     | 'Glaborus' mutant               | 28/7         |
| X rays                                                    | 24/17; 33/22;<br>41/19                     | Leaf shape                      | 32/2         |
| Thermal neutrons                                          | 23/17                                      | Mutation technology             | 35/28        |
| Breeding objectives                                       |                                            | Nematode resistance             | 34/23        |
| Breaking seed dormancy                                    | 41/20                                      | Sugar content                   | 35/33        |
| Fibre quality                                             | 23/3                                       | Vigorous growth                 | 35/33        |
| Fibre yield                                               | 23/3, 17                                   | Yield                           | 31/18        |
| Fruit number/node                                         | 41/20                                      | Countries                       |              |
| Leaf colour                                               | 24/17                                      | China                           | 35/33        |
| Leaf size                                                 | 23/3; 24/17                                | Japan                           | 32/3; 35/28  |
| Morphological mutants                                     | 41/19                                      | USA                             | 28/8         |
| Number of internodes                                      | 24/17                                      | USSR                            | 31/18; 34/23 |
| Physiological mutants                                     | 41/19                                      | Other information               |              |
| Seed colour                                               | 41/19                                      | <i>In vitro</i> culture         | 35/16        |
| Talness                                                   | 41/18                                      | <b><i>Cuphea</i> sp.</b>        |              |
| Vigorous growth                                           | 37/25                                      | Mutagens used                   |              |
| Yellow mite tolerance                                     | 24/17; 33/22                               | Gamma rays                      | 33/11        |
| Yield                                                     | 24/17; 33/22;<br>37/25; 41/20              | Breeding objectives             |              |
| Countries                                                 |                                            | Radiosensitivity test           | 33/11        |
| India                                                     | 23/3, 17;<br>24/17; 33/22;<br>37/25; 41/19 | Countries                       |              |
| Nigeria                                                   | 41/20                                      | Poland                          | 35/16        |
|                                                           |                                            | USA                             | 33/11        |
| <b>Crapemyrtle see <i>Lagerstroemia indica</i></b>        |                                            | <b><i>Curcuma domestica</i></b> |              |
| <b>Creeping bent grass see <i>Agrostis</i></b>            |                                            | Mutant varieties                |              |
| <b>Cress see <i>Lepidium sativum</i></b>                  |                                            | BSR 1                           | 29/22        |
| <b>Crested wheat grass see <i>Agropyron cristatum</i></b> |                                            | Co 1                            | 29/22        |
| <b>Cucumber see <i>Cucumis sativus</i></b>                |                                            | Varieties treated               |              |
| <b><i>Cucumis sativus</i></b>                             |                                            | Erode                           | 29/22        |
| Mutant varieties                                          |                                            | Mutagens used                   |              |
|                                                           |                                            | X-rays                          | 29/22        |
|                                                           |                                            | Breeding objectives             |              |
|                                                           |                                            | Colour                          | 29/22        |
|                                                           |                                            | Curcumin content                | 29/22        |
|                                                           |                                            | Curing percent                  | 29/22        |
|                                                           |                                            | Disease tolerance               | 29/22        |
|                                                           |                                            | Plant architecture              | 29/22        |
|                                                           |                                            | Countries                       |              |

|                                                      |                  |                                        |                  |
|------------------------------------------------------|------------------|----------------------------------------|------------------|
| India                                                | 29/22            | Turf quality                           | 44/10            |
| <b><i>Cymbopogon winterianus</i></b>                 |                  | Vigorous growth                        | 33/23            |
| Mutant varieties                                     |                  | Countries                              |                  |
| Bhanumati (OJC-11)                                   | 35/34            | USA                                    | 33/23; 44/11, 34 |
| Bibhuti (OJC-5)                                      | 35/34            | <b><i>Cyperus malaccensis</i></b>      |                  |
| Niranjana (OJC-6)                                    | 35/34            | Mutant varieties                       |                  |
| Phuttara (OJC-22)                                    | 35/34            | Toyomidori                             | 21/13            |
| Sourav (OJC-3)                                       | 35/34            | Varieties treated                      | 21/13            |
| Subir (OJC-31)                                       | 33/35            | Ohi2                                   |                  |
| Other mutants mentioned                              |                  | Mutagens used                          |                  |
| OJC-1                                                | 35/11            | Gamma rays                             | 21/13            |
| OJC-11                                               | 35/11            | Breeding objectives                    |                  |
| OJC-12                                               | 35/11            | Lodging resistance                     | 21/13            |
| OJC-15                                               | 35/11            | Yield                                  | 21/13            |
| OJC-18                                               | 35/11            | Downy mildew resistance                | 21/13            |
| OJC-20                                               | 35/11            | Countries                              |                  |
| OJC-21                                               | 35/11            | Japan                                  | 21/13            |
| OJC-22                                               | 35/11            | <b>D</b>                               |                  |
| OJC-24                                               | 35/11            | <b><i>Dendranthema grandiflora</i></b> |                  |
| OJC-26                                               | 35/11            | Mutant varieties                       |                  |
| OJC-3                                                | 35/11            | Bronze Wonder                          | 42/19            |
| OJC-30                                               | 35/11            | Cristiane                              | 42/18            |
| OJC-31                                               | 35/11            | Ingrid                                 | 42/18            |
| OJC-4                                                | 35/11            | Lady Antee                             | 42/19            |
| OJC-5                                                | 35/11            | Lady Bronze                            | 42/19            |
| OJC-6                                                | 35/11            | Lady Pink                              | 42/19            |
| Varieties treated                                    |                  | Lady Rosy                              | 42/19            |
| Subirsourav (CKS-CW-S-1) or (KS-CW-S-I)              | 35/11; 34, 35    | Lady Salmon                            | 42/19            |
| Mutagens used                                        |                  | Lady Yellow                            | 42/19            |
| X-rays                                               | 35/11; 34, 35    | Red Wonder                             | 42/19            |
| Breeding objectives                                  |                  | Varieties treated                      |                  |
| Adaptability to marginal conditions                  | 35/34            | Lilac Wonder                           | 42/19            |
| Hardiness                                            | 35/11            | Repin                                  | 42/18            |
| Oil yield                                            | 35/11; 34, 35    | Richmond                               | 42/19            |
| Yield                                                | 35/11            | Mutagens used                          |                  |
| Countries                                            |                  | Gamma rays                             | 42/18, 19        |
| India                                                | 35/12, 34, 35    | X-rays                                 | 42/19            |
| <b><i>Cynodon sp.</i></b>                            |                  | Breeding objectives                    |                  |
| Mutant varieties                                     |                  | Flower colour                          | 42/18, 19        |
| Tifgreen II                                          | 33/23            | Flower size                            | 42/19            |
| Tift 94                                              | 44/10, 34        | Inflorescence form                     | 42/19            |
| Varieties treated                                    |                  | Leaf morphology                        | 42/19            |
| Midiron                                              | 44/10, 34        | Countries                              |                  |
| Tifgreen                                             | 33/23            | Brazil                                 | 42/18            |
| Mutagens used                                        |                  | Poland                                 | 42/19            |
| Gamma rays                                           | 33/23; 44/10, 34 | <b><i>Dianthus caryophyllus</i></b>    |                  |
| Breeding objectives                                  |                  | Mutant varieties                       |                  |
| Dense turf                                           | 33/23            | Accent                                 | 31/18            |
| Fine texture                                         | 44/10            | Bonitas                                | 37/25            |
| Leaf quality                                         | 44/34            | Cerise Kortina                         | 31/18            |
| Mole crickets ( <i>Scapteriscus</i> ssp.) resistance | 44/10, 34        | Chaichoompon                           | 34/28            |
| Nematode resistance                                  | 33/23            | Dione                                  | 23/17            |
| Root knot resistance                                 | 33/23            | Enzett Barther Frühling                | 23/17            |
|                                                      |                  | Enzett Folklore                        | 23/17            |

|                                         |                                       |                                                          |                  |
|-----------------------------------------|---------------------------------------|----------------------------------------------------------|------------------|
| Galatee-lonvego                         | 33/23                                 |                                                          |                  |
| Lavendel Kortina                        | 31/18                                 |                                                          |                  |
| Loncerda                                | 33/23                                 |                                                          |                  |
| Maiella-lonchabi                        | 33/23                                 |                                                          |                  |
| Pink Kortina                            | 31/19                                 |                                                          |                  |
| Red Kortina                             | 31/19                                 |                                                          |                  |
| Royal Red Kortina                       | 31/19                                 |                                                          |                  |
| Scarlett Bell                           | 32/22                                 |                                                          |                  |
| White Kortina                           | 31/19                                 |                                                          |                  |
| Varieties treated                       |                                       |                                                          |                  |
| Angel                                   | 32/22                                 |                                                          |                  |
| Arthur Sim                              | 23/17                                 |                                                          |                  |
| Benoni                                  | 31/18                                 |                                                          |                  |
| Elsy-londonie                           | 33/23                                 |                                                          |                  |
| Kortina                                 | 31/18, 19                             |                                                          |                  |
| Pallas-londorga                         | 33/23                                 |                                                          |                  |
| White Sim                               | 34/28                                 |                                                          |                  |
| William Sim                             | 23/17                                 |                                                          |                  |
| Mutagens used                           |                                       |                                                          |                  |
| EMS                                     | 23/17                                 |                                                          |                  |
| Gamma rays                              | 32/22; 33/23; 37/25                   |                                                          |                  |
| Gamma rays ( <i>in vitro</i> )          | 33/23; 34/28                          |                                                          |                  |
| X-rays                                  | 31/18, 19                             |                                                          |                  |
| Breeding objectives                     |                                       |                                                          |                  |
| Flower colour                           | 23/17; 31/18, 19; 32/22; 33/23; 34/28 |                                                          |                  |
| Miniature type                          | 37/25                                 |                                                          |                  |
| Stiff stems                             | 23/17                                 |                                                          |                  |
| Petal shape                             | 23/17                                 |                                                          |                  |
| Resistance to <i>Fusarium oxysporum</i> | 33/23; 37/25                          |                                                          |                  |
| Yield                                   | 31/18                                 |                                                          |                  |
| Countries                               |                                       |                                                          |                  |
| GDR                                     | 23/17; 37/25                          |                                                          |                  |
| France                                  | 33/23                                 |                                                          |                  |
| Japan                                   | 32/22                                 |                                                          |                  |
| The Netherlands                         | 31/18, 19                             |                                                          |                  |
| Thailand                                | 34/28                                 |                                                          |                  |
| <b><i>Daucus carota</i></b>             |                                       |                                                          |                  |
| Mutagens used                           |                                       |                                                          |                  |
| MNNG ( <i>in vitro</i> )                | 22/14                                 |                                                          |                  |
| EMS ( <i>in vitro</i> )                 | 22/14                                 |                                                          |                  |
| Colchicine ( <i>in vitro</i> )          | 22/14                                 |                                                          |                  |
| Breeding objectives                     |                                       |                                                          |                  |
| Biochemical mutants                     | 22/14                                 |                                                          |                  |
| Countries                               |                                       |                                                          |                  |
| India                                   | 22/17                                 |                                                          |                  |
| Other information                       |                                       |                                                          |                  |
| <i>In vitro</i> cultures                | 22/14                                 |                                                          |                  |
| <b><i>Discorea alata</i></b>            |                                       |                                                          |                  |
| Mutagens used                           |                                       |                                                          |                  |
| Gamma rays ( <i>in vitro</i> )          | 30/17                                 |                                                          |                  |
| Countries                               |                                       |                                                          |                  |
| FAO/IAEA                                | 30/19                                 |                                                          |                  |
|                                         |                                       | <b><i>Dolichos lablab</i></b>                            |                  |
|                                         |                                       | Mutant varieties                                         |                  |
|                                         |                                       | Co.10 (Co 10)                                            | 28/13; 29/22     |
|                                         |                                       | Varieties treated                                        |                  |
|                                         |                                       | Co.6 (Co 6)                                              | 28/13; 29/22     |
|                                         |                                       | Mutagens used                                            |                  |
|                                         |                                       | Gamma rays                                               | 28/13; 29/22     |
|                                         |                                       | Breeding objectives                                      |                  |
|                                         |                                       | Plant type                                               | 28/13; 29/22     |
|                                         |                                       | Yield                                                    | 28/13; 20/22     |
|                                         |                                       | Countries                                                |                  |
|                                         |                                       | India                                                    | 28/14; 29/22     |
|                                         |                                       | <b>Dura see <i>Sorghum dura</i></b>                      |                  |
|                                         |                                       | <b>Durum see <i>Triticum turgidum</i></b>                |                  |
|                                         |                                       | <b>ssp. durum</b>                                        |                  |
|                                         |                                       | <b><i>Echinochloa furmentaca</i></b>                     |                  |
|                                         |                                       | Varieties treated                                        |                  |
|                                         |                                       | VL8                                                      | 33/10            |
|                                         |                                       | VL11                                                     | 33/10            |
|                                         |                                       | Mutagens used                                            |                  |
|                                         |                                       | EMS                                                      | 33/10            |
|                                         |                                       | Gamma rays                                               | 33/10            |
|                                         |                                       | Gamma rays + EMS                                         | 33/10            |
|                                         |                                       | Breeding objectives                                      |                  |
|                                         |                                       | Chlorophyll mutants                                      | 33/10            |
|                                         |                                       | <b>E</b>                                                 |                  |
|                                         |                                       | <b>Eggplant see <i>Solanum melongena</i></b>             |                  |
|                                         |                                       | <b>Egyptian clover see <i>Trifolium alexandrinum</i></b> |                  |
|                                         |                                       | <b><i>Eremochloa ophiuroides</i></b>                     |                  |
|                                         |                                       | Mutant varieties                                         |                  |
|                                         |                                       | AU Centennial (AC-17)                                    | 30/20            |
|                                         |                                       | TifBlair                                                 | 44/11, 35        |
|                                         |                                       | Varieties treated                                        |                  |
|                                         |                                       | common centipede grass                                   | 30/20; 44/11     |
|                                         |                                       | Mutagens used                                            |                  |
|                                         |                                       | Gamma rays                                               | 30/20; 44/11, 35 |
|                                         |                                       | Breeding objectives                                      |                  |
|                                         |                                       | Cold tolerance                                           | 44/11            |
|                                         |                                       | Dwarfness                                                | 30/20            |
|                                         |                                       | Fast growth                                              | 44/11            |
|                                         |                                       | High leaf density                                        | 30/20            |
|                                         |                                       | Large seeds                                              | 44/11            |
|                                         |                                       | Quality                                                  | 44/35            |
|                                         |                                       | Tallness                                                 | 44/11            |
|                                         |                                       | Vigour                                                   | 44/35            |
|                                         |                                       | Countries                                                |                  |
|                                         |                                       | USA                                                      | 30/20; 44/11, 35 |

|                                        |       |                                                       |              |
|----------------------------------------|-------|-------------------------------------------------------|--------------|
| <b><i>Eriobotrya japonica</i></b>      |       | EI                                                    | 31/19; 40/13 |
| Mutant varieties                       |       | MNH (MNU)                                             | 40/13        |
| Shiro-mogi                             | 21/13 | Breeding objectives                                   |              |
| Varieties treated                      |       | Cooking quality                                       | 40/13        |
| Mogi                                   | 21/13 | Earliness                                             | 40/13        |
| Mutagens used                          |       | Lodging resistance                                    | 31/19; 40/13 |
| Gamma rays                             | 21/13 | Seed size                                             | 40/13        |
| Breeding objectives                    |       | Yield                                                 | 31/19        |
| Fruit size                             | 21/13 | Countries                                             |              |
| Taste                                  | 21/13 | USSR                                                  | 31/19; 40/13 |
| Countries                              |       | <b><i>Fagopyrum sagittatum</i></b>                    |              |
| Japan                                  | 21/13 | Mutant varieties                                      |              |
| <b><i>Euphorbia lagascae</i></b>       |       | Aelita                                                | 30/21        |
| Mutagens used                          |       | Galleya                                               | 30/21        |
| EMS                                    | 37/8  | Lada                                                  | 30/21        |
| Sodium azide                           | 37/8  | Podolyanka                                            | 30/21; 32/17 |
| Breeding objectives                    |       | Varieties treated                                     |              |
| Determinate growth                     | 37/8  | Improved Radekhovskaya                                | 30/21        |
| Uniform ripening                       | 37/8  | Victoria (Viktoriya)                                  | 30/21; 32/17 |
| Countries                              |       | Mutagens used                                         |              |
| FRG                                    | 35/8  | Gamma rays                                            | 30/21        |
| <b><i>Eustoma grandiflorum</i></b>     |       | Gamma rays + NEH                                      | 32/17        |
| Mutant varieties                       |       | Gamma rays + NMH                                      | 32/17        |
| Purple Fantasy                         | 44/35 | Gamma rays + EI                                       | 32/17        |
| Purpe Robin                            | 44/35 | Gamma rays + DMS                                      | 32/17        |
| Red Robin                              | 44/35 | Gamma rays + DAB                                      | 32/17        |
| Varieties treated                      |       | Radiation and chemical mutagens                       | 30/21        |
| Morgen Rot                             | 44/35 | Breeding objectives                                   |              |
| Pastel Murasaki                        | 44/35 | Early ripening                                        | 30/21; 32/17 |
| Mutagens used                          |       | Grain quality                                         | 30/21        |
| Gamma rays                             | 44/35 | Large seeds                                           | 32/17        |
| Breeding objectives                    |       | Less branching                                        | 30/21; 32/17 |
| Flower colour                          | 44/35 | Short stem                                            | 30/21; 32/17 |
| Flower size                            | 44/35 | Plant architecture                                    | 30/21; 32/17 |
| Countries                              |       | Yield                                                 | 30/21; 32/17 |
| Japan                                  | 44/35 | Countries                                             |              |
| <b>F</b>                               |       | USSR                                                  | 30/21; 32/18 |
| <b>Faba bean</b> see <i>Vicia faba</i> |       | <b>Fenugreek</b> see <i>Trigonella foenum graecum</i> |              |
| <b><i>Fagopyrum esculentum</i></b>     |       | <b><i>Festuca pratensis</i></b>                       |              |
| Mutant varieties                       |       | Mutant varieties                                      |              |
| Aromat                                 | 31/19 | Fesko                                                 | 34/28        |
| Chernoplodnaya                         | 40/13 | Lifesta                                               | 34/28        |
| Kurskaya 87                            | 40/13 | Liforte                                               | 34/28        |
| Skorospelaya                           | 40/13 | Mutagens used                                         |              |
| Other mutants mentioned                |       | Gamma rays                                            | 34/28        |
| Line Orbita                            | 40/13 | Breeding objectives                                   |              |
| Varieties treated                      |       | Seed retention                                        | 34/28        |
| Chernoplodnaya                         | 40/13 | Countries                                             |              |
| Hybrid 1597/69 x Mayskaya              | 31/19 | FRG                                                   | 34/28        |
| Yunilenaya 2                           | 40/13 | <b><i>Ficus benjamina exotica</i></b>                 |              |
| Other varieties mentioned              |       | Mutant varieties                                      |              |
| DOV 1                                  | 40/13 | Golden King                                           | 31/19        |
| Temp 411                               | 40/13 | Golden Princess                                       | 31/19        |
| Mutagens used                          |       |                                                       |              |

|                                                     |              |                             |                         |
|-----------------------------------------------------|--------------|-----------------------------|-------------------------|
| Varieties treated                                   |              | Red Reflection              | 34/28                   |
| Green Ficus                                         | 31/19        | Shobha                      | 34/29                   |
| Mutagens used                                       |              | Showwinner                  | 31/20                   |
| X-rays                                              | 31/19        | Tambari                     | 43/43                   |
| Breeding objectives                                 |              | Varieties treated           |                         |
| Disease tolerance                                   | 31/19        | Applause                    | 31/20                   |
| Leaf colour                                         | 31/19        | Oscar                       | 43/43                   |
| Pest tolerance                                      | 31/19        | Peter Pears                 | 34/28                   |
| Plant type                                          | 31/19        | Wild Rose                   | 34/29                   |
| Countries                                           |              | Mutagens used               |                         |
| Belgium                                             | 31/19        | Gamma rays                  | 34/29; 43/43            |
|                                                     |              | X-rays                      | 31/20; 34/28            |
| <b>Flax</b> see <i>Linum usitatissimum</i>          |              | Breeding objectives         |                         |
| <b>Fodder beet</b> see <i>Beta vulgaris</i>         |              | Corm production             | 31/20                   |
| <b>Forsythia x intermedia</b>                       |              | Flower colour               | 31/20; 34/28, 29; 43/43 |
| Mutant varieties                                    |              | Countries                   |                         |
| Courtalyn                                           | 25/10        | India                       | 34/29; 43/43            |
| Courtadic                                           | 25/10        | The Netherlands             | 31/20; 34/28            |
| Varieties treated                                   |              | <b>Glycine max</b>          |                         |
| Lynwood                                             | 25/10        | Mutant varieties            |                         |
| Vitellina                                           | 25/10        | Aida (HM-S-78)              | 26/13                   |
| Mutagens used                                       |              | Arkadiya Odesskaya          | 31/20                   |
| Gamma rays                                          | 25/10        | Bangsa Kong (CB27-25-27)    | 26/13                   |
| Breeding objectives                                 |              | Bisser                      | 31/20                   |
| Erect form                                          | 25/10        | Boriana                     | 23/3, 18                |
| Dwarf internode                                     | 25/10        | Chudo Gruzii 74             | 37/25                   |
| Blooming on 1 year old shoot                        | 25/10        | Dioskuriye                  | 37/25                   |
| Ramification type                                   | 25/10        | Doi kham                    | 33/24                   |
| Ground cover                                        | 25/10        | Dorado                      | 34/3, 29; 35/5          |
| Countries                                           |              | DT-83                       | 43/44                   |
| France                                              | 25/10        | DT-84                       | 43/44                   |
| <b>Foxtail millet</b> see <i>Setaria italica</i>    |              | DT-90                       | 43/44                   |
| <b>G</b>                                            |              | Fengdou 1                   | 34/29                   |
| <b>Geranium</b> see <i>Pelargonium grandiflorum</i> |              | Heilong 31                  | 32/22                   |
| <b>Gerbera jamesonii</b>                            |              | Heilong 32                  | 32/22                   |
| Mutant varieties                                    |              | Heilong No. 16              | 33/6                    |
| Red Raisa                                           | 42/19; 43/43 | Heilong No. 26              | 33/4                    |
| Varieties treated                                   |              | Heinong 16                  | 44/35, 36               |
| Raisa                                               | 42/19; 43/43 | Heinong 28                  | 30/21                   |
| Mutagens used                                       |              | Heinong 32                  | 35/24                   |
| Gamma rays                                          | 42/19; 43/43 | Heinong 34                  | 44/35                   |
| X-rays                                              | 35/9         | Heinong 35                  | 44/36                   |
| Breeding objectives                                 |              | Heinong 41                  | 44/36                   |
| Flower colour                                       | 42/19; 43/43 | Heinong 8                   | 35/24                   |
| Radiosensitivity                                    | 35/9         | Heinong No. 26 (Heinong 26) | 27/10; 35/24            |
| Countries                                           |              | Heinoun No. 16              | 25/11                   |
| FRG                                                 | 35/9         | Heinoun No. 26              | 25/11                   |
| Poland                                              | 42/19; 43/43 | Heinoun No. 4               | 25/10                   |
| Other                                               |              | Heinoun No. 5               | 25/10                   |
| <i>In vitro</i> cultures                            | 35/9         | Heinoun No. 7               | 25/10                   |
| <b>Gladiolus sp.</b>                                |              | Heinoun No. 8               | 25/10                   |
| Mutant varieties                                    |              | Kartuli 7                   | 37/25                   |
|                                                     |              | Kosuzu                      | 32/22; 35/35            |
|                                                     |              | Liaonong 1                  | 34/29                   |
|                                                     |              | Liaodou No. 3               | 27/10                   |
|                                                     |              | Luchezarnaya                | 40/13                   |

|                           |               |                                            |              |
|---------------------------|---------------|--------------------------------------------|--------------|
| M-103                     | 44/36         |                                            | 42/9; 43/44  |
| Mageva (Lastochka-out)    | 40/13         | Calland                                    | 43/45        |
| Muria                     | 35/35         | CB-27                                      | 26/13        |
| Mushi No. 6               | 25/11         | CG 661 x 91-1                              | 43/23        |
| Mutant 2                  | 37/25         | Cocchum                                    | 43/44        |
| Nanbushirome              | 21/13;        | Dongnong No. 4                             | 27/11        |
| Nitrobean 60              | 43/44         | Dongnong No. 4                             | 25/10        |
| Noventa                   | 41/8          | F <sub>1</sub> 45-15 x 5621                | 25/11; 27/10 |
| Prikarpatkaya 81          | 40/13         | F <sub>1</sub> DT-80 x DH-4                | 43/44        |
| Raiden                    | 21/13; 24/13  | F <sub>1</sub> G7002 x Cocchum             | 43/44        |
| Ryokusui                  | 42/27         | F <sub>2</sub> (Qunxuan 1 x Qun Ying       | 34/29        |
| S-31                      | 43/44         | Dou) x 5621                                |              |
| Sui Nong 12               | 44/36         | F <sub>2</sub> Heinong 11 x Tiefeng 9      | 34/29        |
| TAEK A3                   | 43/45         | F <sub>2</sub> Wundingzhu x Jingshanpu     | 25/11        |
| TAEK C10                  | 43/45         | F <sub>4</sub> Har 70-5072 x Har No. 53    | 32/22        |
| Tengger                   | 42/27         | F <sub>6</sub> [Suijio 83-432 x (Heihe 4 x | 44/36        |
| Tidar                     | 35/35         | Te 7604)]                                  |              |
| Tiefeng 18                | 25/11; 27/10; | Fengshan                                   | 44/36        |
|                           | 35/24         | Fengshou No.10 x Jilin No.3                | 25/11        |
| Wase-suzunari             | 32/23         | Fengshouhuang                              | 32/23        |
| Wei 7610-13               | 32/23         | Fiskeby V                                  | 26/5; 34/3,  |
| Zarya                     | 32/23         |                                            | 29; 35/5     |
| Other mutants mentioned   |               | Fukura                                     | 42/27        |
| 14-3                      | 32/9          | Hanying No. 1                              | 43/23        |
| 19510                     | 42/9          | Heinong No. 16 x Zyuushoo                  | 30/21        |
| 30                        | 42/9          | Nagakal                                    |              |
| 31                        | 42/9          | H.PF <sub>6</sub> x ZZ85-095               | 43/23        |
| 31-17                     | 42/9          | Gaurav                                     | 39/7         |
| 6405                      | 27/10         | Kanto 101                                  | 38/11        |
| 72-12                     | 42/9          | Kanto 102                                  | 38/11        |
| 82-16                     | 42/9          | Kirovogradskaya 2                          | 40/13        |
| 82-7                      | 42/9          | Linzhen No. 1                              | 43/23        |
| 86-180                    | 35/25         | Mancangjin                                 | 25/10        |
| 86-223                    | 35/26         | Maple Arrow                                | 35/5         |
| G-2120                    | 35/35         | Nattou Kotsubu (Natto Kotubu)              | 32/22; 35/35 |
| Ha 2294                   | 25/11         | Nemashirazu                                | 24/13        |
| Ha 63-2294 (Har63-2294)   | 27/10; 33/4   | No. 29 (Indonesia)                         | 35/35        |
| Ha90-9825                 | 44/36         | Okushirome                                 | 32/23        |
| Ha-Co73-8955              | 44/36         | Orba                                       | 35/35; 42/27 |
| Har 75-6222               | 33/5          | Parana                                     | 36/9         |
| Har 77-7594               | 33/5          | PK-472                                     | 39/7; 42/9   |
| Longfu 73-8955            | 33/6          | Sidou 11 x Jilin 22                        | 43/23        |
| Mufeng No. 5              | 27/12         | Sidou 11 x Kefeng 6                        | 43/23        |
| Mufu 81-6009              | 27/12         | S.J.4                                      | 33/24        |
| PI 360844                 | 24/13         | Smena                                      | 26/13        |
| OX615                     | 24/13         | Tie 6817                                   | 27/11        |
| SF7910-3                  | 27/11         | V-74                                       | 43/44        |
| SF7919-61                 | 27/11         | VNIMK 9186                                 | 31/20        |
| T <sub>1</sub> 54 (NRC-1) | 36/8          | Wasesuzunari                               | 38/11        |
| T <sub>2</sub> 14 (NRC-2) | 33/16         | Williams                                   | 33/7         |
| T285                      | 33/7          | Yodou No. 2                                | 35/25        |
| Varieties treated         |               | Youdou 8 x D90                             | 43/23        |
| Altona                    | 41/7          | Zakang F <sub>6</sub> x Ludou 4            | 43/23        |
| Amsoy 71                  | 43/45         | Zora                                       | 32/23        |
| Bhat                      | 36/8          | Other varieties mentioned                  |              |
| Beeson                    | 23/4, 18;     | Amsoy                                      | 27/10        |
|                           | 31/20         | Bhatmash                                   | 36/8         |
| Bragg                     | 33/15; 39/7;  | Haman                                      | 21/6         |

|                            |                |                                        |                |
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| Heihe 3                    | 35/29          | Early maturing                         | 23/4, 18;      |
| Kala Hulga                 | 36/8           |                                        | 25/10; 26/13;  |
| Kalitur                    | 36/8           |                                        | 27/10; 30/21;  |
| Kitami-nagaha              | 21/13          |                                        | 31/20; 32/22,  |
| PI 96983                   | 24/13          |                                        | 23; 33/5, 16;  |
| L78-379                    | 24/13          |                                        | 34/3, 29;      |
| Suzu-yutake                | 38/11          |                                        | 35/5, 25, 35;  |
| Tiefeng No. 18             | 27/11          |                                        | 36/8, 9;       |
| Tokachinogaha              | 44/35, 36      |                                        | 40/13; 41/8;   |
| Xiaojinhuang               | 33/4           | Eating quality                         | 42/9           |
| Xiaojinhuang No.1          | 25/11          | Extreme earliness                      | 42/27          |
| Mutagens used              |                | Germinability                          | 41/8           |
| Chemical mutagenesis       | 40/13          | Grain quality                          | 33/16          |
| DMS                        | 31/20          | High branch number                     | 44/36          |
| EI                         | 43/44          | Humidity tolerance                     | 25/10, 11      |
| ENH                        | 40/13          | Hypernodulation                        | 25/10          |
| EMS                        | 26/13; 35/25;  | Intermediate maturing                  | 43/44          |
|                            | 36/9; 43/44    | Large seed                             | 21/13; 27/10   |
| EMS ( <i>in vitro</i> )    | 22/14; 33/15   | Leaf characters                        | 33/24; 43/23   |
| Gamma rays                 | 25/10, 11,     | Lateness                               | 27/11          |
|                            | 26/5; 27/10,   | Lipoxygenase isozymes                  | 42/27          |
|                            | 11; 32/22, 23; | Lodging resistance                     | 38/11          |
|                            | 33/7, 15, 24;  |                                        | 23/4; 25/11;   |
|                            | 34/3, 29;      |                                        | 27/11; 31/20;  |
|                            | 34/5; 36/8, 9; |                                        | 32/22, 35/35;  |
|                            | 37/25; 38/11;  |                                        | 43/23; 44/36   |
|                            | 39/7; 41/8;    | Long day                               | 35/5           |
|                            | 42/9, 27;      | Long leaf                              | 21/13          |
|                            | 43/23, 44, 45; | Long stem                              | 26/5; 33/4,    |
|                            | 44/36          |                                        | 29; 35/5       |
| Gamma rays + EMS           | 23/4, 18;      | Low temperature tolerance              | 27/10          |
|                            | 31/20          | Mechanized harvest                     | 23/4; 35/5     |
| Gamma rays + fast neutrons | 32/23          | Morphological mutants                  | 41/8           |
| Gamma rays + UV            | 33/15; 36/8;   | Mosaic virus resistance                | 21/6; 24/13;   |
|                            | 39/7; 42/9     |                                        | 26/13          |
| MNNG ( <i>in vitro</i> )   | 22/14          | Multi-leaflet                          | 27/11          |
| MMS                        | 33/15          | Nitrate tolerant nodulation            | 43/44          |
| NMH (MNU) = (MNH)          | 26/5; 34/3,    | Nitrogen carry-over                    | 43/44          |
|                            | 29; 35/5;      | Non-fluorescent root                   | 33/7           |
|                            | 40/13          | Oil content                            | 27/10; 30/21;  |
| Sodium azide               | 26/5; 34/3;    |                                        | 32/22; 39/7;   |
|                            | 35/5           |                                        | 43/23, 45      |
| Thermal neutrons           | 30/21; 32/22;  | Plant stature                          | 25/11; 27/10   |
|                            | 44/36          | Pod position                           | 43/45          |
| X rays                     | 26/13          | Protein content                        | 23/4, 18;      |
| Breeding objectives        |                |                                        | 27/10; 30/21;  |
| Adaptability               | 32/22          |                                        | 31/20; 32/22,  |
| Ascochytiopsis resistance  | 40/13          |                                        | 23; 39/7;      |
| Bacteriosis resistance     | 40/13          |                                        | 43/23, 44, 45; |
| Biochemical mutants        | 22/14          |                                        | 44/35, 36      |
| Cold tolerance             | 25/11; 33/4;   | Quality                                | 25/11; 27/10;  |
|                            | 43/44          |                                        | 30/21; 32/23;  |
| Compact branched type      | 25/10          |                                        | 33/4, 6        |
| Cyst nematode resistance   | 21/13          | Resistance to rust ( <i>Phakopsora</i> | 33/24          |
| Disease resistance         | 27/11; 32/22;  | <i>pachyrrhizi</i> )                   |                |
|                            | 33/4; 35/25;   | Root system                            | 25/10          |
|                            | 40/13; 42/27;  | Salt tolerance                         | 33/6           |
|                            | 44/36          | Seed colour                            | 35/35; 36/8;   |
| Drought tolerance          | 25/11; 27/10;  |                                        | 42/27; 43/44   |
|                            | 32/22; 33/4    | Seed size                              | 26/13; 44/36   |
| Earliness                  | 42/27; 43/45   | Seed storage proteins                  | 38/11          |

|                                  |                |                               |               |
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| Shade tolerance                  | 33/6           | Khandwa-2                     | 30/21         |
| Short internode                  | 25/10, 11      | M.A. 9                        | 30/21         |
| Short petiole                    | 23/15          | MCU.7                         | 28/13         |
| Short stature                    | 35/35          | MCU.10 (MCU 10)               | 28/13; 29/22  |
| <i>Sporotrichosis</i> resistance | 32/23          | NIAB-78                       | 23/18; 31/7;  |
| Stem fly resistance              | 42/9           |                               | 43/30         |
| Stem type                        | 26/13; 30/21   | Oktyabr (October)             | 31/20         |
| Virus resistance                 | 32/22          | Other mutants mentioned       |               |
| Wide adaptability                | 25/11          | 72-563-3                      | 27/12         |
| Waterlogging tolerance           | 25/11          | AENB-85                       | 43/30         |
| Yellow mosaic virus tolerance    | 36/8           | L-281                         | 31/20         |
| Yield                            | 21/13; 23/18;  | Xinhai                        | 27/12         |
|                                  | 25/11; 26/6,   | Varieties treated             |               |
|                                  | 13; 27/10, 11; | Brown lint                    | 33/20         |
|                                  | 30/21; 31/20;  | Deltapine x Ac134             | 23/18         |
|                                  | 32/22, 23;     | Dongtin 1                     | 34/29         |
|                                  | 33/4, 5, 16,   | C.1412                        | 26/7          |
|                                  | 24; 34/3, 29;  | C <sub>o</sub> -2             | 30/21         |
|                                  | 35/25, 35;     | G-27                          | 42/28         |
|                                  | 36/8; 42/9;    | L1143 EE                      | 28/13         |
|                                  | 43/23, 44, 45; | Liao 6496                     | 35/35         |
|                                  | 44/35, 36      | MCU.4 (MCU 4)                 | 28/13; 29/22  |
| Countries                        |                | MU-4 (Dhar Kambodia)          | 30/21         |
| Australia                        | 43/44          | Mutant line 9/1               | 31/20         |
| Brazil                           | 36/9           | NIAB-78                       | 43/30, 45     |
| Bulgaria                         | 23/4, 18;      | Si Sumrong                    | 33/20         |
|                                  | 31/20; 32/23   | White lint                    | 33/20         |
| Canada                           | 35/5           | Other varieties mentioned     |               |
| China                            | 25/10, 11;     | Tashkent 1                    | 31/20         |
|                                  | 27/10, 11, 12; | Mutagens used                 |               |
|                                  | 30/21; 32/22,  | Gamma rays                    | 23/18; 26/7;  |
|                                  | 23; 33/6;      |                               | 27/12; 28/13; |
|                                  | 34/29; 35/24,  |                               | 29/22; 31/7,  |
|                                  | 26; 43/24;     |                               | 20; 33/20;    |
|                                  | 44/35, 36      |                               | 34/29; 35/35; |
| CSRR                             | 26/13          |                               | 42/28; 43/30, |
| GDR                              | 26/7; 34/4,    |                               | 45            |
|                                  | 29; 35/5       | Radiation                     | 31/20         |
| Hungary                          | 41/9           | X-rays                        | 28/13; 30/21  |
| India                            | 22/17; 33/16;  | Breeding objectives           |               |
|                                  | 36/8; 38/11;   | <i>Alternaria</i> resistance  | 28/13; 29/22  |
|                                  | 39/7; 42/10    | Black arm resistance          | 28/13; 29/22  |
| Indonesia                        | 42/27          | Boll weight                   | 34/29         |
| Japan                            | 21/13; 32/22,  | Drought tolerance             | 28/13; 29/22; |
|                                  | 23; 42/27      |                               | 30/21         |
| Korea, R.of                      | 21/6; 26/13    | Early maturity                | 23/18; 28/13; |
| Thailand                         | 33/24          |                               | 34/29; 35/35  |
| Turkey                           | 43/45          | Fibre quality                 | 43/30, 45     |
| USSR                             | 31/20; 37/25;  | Hairy leaves                  | 26/7          |
|                                  | 40/13          | Hybrid production             | 27/13         |
| Vietnam                          | 43/44; 44/36   | Jassid resistance             | 26/7; 43/30   |
| <b>Gossypium sp.</b>             |                | Lint yield                    | 34/29         |
| Mutant varieties                 |                | Male sterility                | 27/12         |
| 113                              | 35/35          | Plant stature                 | 23/18; 28/13; |
| Agdash 3                         | 31/20          |                               | 31/20         |
| Badnawar-1                       | 30/21          | Quality                       | 35/35         |
| Chandi 95                        | 43/30, 45      | Radiosensitivity              | 33/20         |
| Chuanpei                         | 34/29          | <i>Rhizoctonia</i> resistance | 29/22         |
| DS-1                             | 42/28          | Semi-dwarfness                | 42/28         |
| Indore-2                         | 30/21          |                               |               |

|                                              |                                               |                                                 |             |
|----------------------------------------------|-----------------------------------------------|-------------------------------------------------|-------------|
| Staple length                                | 28/13; 29/22                                  | 1607                                            | 41/16       |
| Wilt resistance                              | 31/20                                         | 211                                             | 41/16       |
| Yield                                        | 23/18; 31/20;<br>43/30, 45                    | 2934                                            | 41/16       |
| Countries                                    |                                               | 2942                                            | 41/16       |
| Bangladesh                                   | 33/20                                         | 3004                                            | 29/14       |
| China                                        | 27/12; 34/29;<br>35/35                        | 32                                              | 41/16       |
| India                                        | 26/7; 28/14;<br>29/22; 30/21;<br>35/35; 42/28 | 33                                              | 41/16       |
| Indonesia                                    | 35/35                                         | 3853                                            | 41/16       |
| Pakistan                                     | 23/18; 31/7;<br>43/32, 45                     | 4064                                            | 41/16       |
| USSR                                         | 31/20                                         | 429                                             | 41/16       |
|                                              |                                               | 69                                              | 41/16       |
|                                              |                                               | HA-300                                          | 41/16       |
|                                              |                                               | HA-89                                           | 41/16       |
|                                              |                                               | Nadejdni                                        | 41/16       |
|                                              |                                               | Peredovik                                       | 41/16       |
|                                              |                                               | Skorospelii                                     | 41/16       |
| <b>Grape</b> see <i>Vitis vinifera</i>       |                                               | Mutagens used                                   |             |
| <b>Grapefruit</b> see <i>Citrus paradisi</i> |                                               | Chemical mutagens                               | 44/24       |
| <b>Greengram</b> see <i>Vigna radiata</i>    |                                               | EMS                                             | 29/16       |
| <b>Groundnut</b> see <i>Arachis hypogaea</i> |                                               | Gamma rays                                      | 41/15       |
|                                              |                                               | Ultrasound                                      | 41/15       |
|                                              |                                               | X-rays                                          | 29/16       |
| <b>H</b>                                     |                                               | Breeding objectives                             |             |
| <b><i>Helianthus annuus</i></b>              |                                               | Cold tolerance                                  | 44/24       |
| Mutant varieties                             |                                               | Compact growth habit                            | 44/24       |
| Perventes                                    | 35/8                                          | Dwarfness                                       | 44/24       |
| Other mutants mentioned                      |                                               | Fatty acid composition                          | 29/16; 35/8 |
| CMS-Hemus                                    | 41/15                                         | Large seeds                                     | 44/24       |
| CMS-Peredovik                                | 41/16                                         | Lodging resistance                              | 44/24       |
| CMS-Stadion                                  | 41/15                                         | Male sterility                                  | 41/15       |
| M-1155                                       | 44/24                                         | Short petiole                                   | 44/24       |
| M-1584                                       | 44/24                                         | Stalk breakage resistance                       | 44/24       |
| M-1624                                       | 44/24                                         | Super-earliness                                 | 44/24       |
| M-1700                                       | 44/24                                         | Tolerance to high density<br>growing conditions | 44/24       |
| M-1925                                       | 44/24                                         | Countries                                       |             |
| M-1927                                       | 44/24                                         | Bulgaria                                        | 41/16       |
| M-1967                                       | 44/24                                         | FRG                                             | 29/16; 35/8 |
| M-1991                                       | 44/24                                         | Russia                                          | 44/25       |
| M-2006                                       | 44/24                                         | <b><i>Helianthus tuberosus</i></b>              |             |
| M-2007                                       | 44/24                                         | Varieties treated                               |             |
| M-2008                                       | 44/24                                         | Violet de Rennes                                | 28/9        |
| Varieties treated                            |                                               | Mutagens used                                   |             |
| Peredovik                                    | 41/15                                         | Gamma rays                                      | 28/9        |
| Hemus                                        | 41/15                                         | Breeding objectives                             |             |
| Progres                                      | 41/15                                         | Carbohydrate metabolism                         | 28/10       |
| Vihren                                       | 41/15                                         | Plant morphology                                | 28/10       |
| Trudovik                                     | 41/15                                         | Tuber number and size                           | 28/10       |
| Stadion                                      | 41/15                                         | Countries                                       |             |
| Start                                        | 41/15                                         | Italy                                           | 28/10       |
| Balkan                                       | 41/15                                         | <b><i>Hevea sp.</i></b>                         |             |
| VNIIMK                                       | 29/16                                         | Mutagens used                                   |             |
| 1607                                         | 41/15                                         | Gamma rays                                      | 27/13       |
| 1721                                         | 41/15                                         | X rays                                          | 27/13       |
| 3004                                         | 41/15                                         | Breeding objectives                             |             |
| Other varieties mentioned                    |                                               | Yield                                           | 27/13       |
| 130                                          | 41/16                                         |                                                 |             |

|                                       |                            |                 |                                                                                   |
|---------------------------------------|----------------------------|-----------------|-----------------------------------------------------------------------------------|
| Countries                             |                            | Alpina          | 43/45                                                                             |
| China                                 | 27/13                      | Amalia          | 33/24                                                                             |
| <b><i>Hibiscus</i> sp.</b>            |                            | Amazona         | 36/16                                                                             |
| Mutant varieties                      |                            | Amethyst (H464) | 36/16, 17                                                                         |
| Anjali                                | 31/21                      | Ametyst         | 31/23                                                                             |
| Purnima                               | 30/21                      | Amil            | 43/46                                                                             |
| Shirasagi-no-Yume (Shirasagi-no-yume) | 28/20; 33/24               | Anker           | 37/26                                                                             |
| Varieties treated                     |                            | Anna Abed       | 34/29                                                                             |
| Alipore Beauty                        | 30/21; 31/21               | Anni            | 43/46                                                                             |
| Sakai-no-hana                         | 28/20; 33/24               | Araraty         | 31/21                                                                             |
| Mutagens used                         |                            | Arena           | 36/16                                                                             |
| Gamma rays                            | 28/20; 30/21; 31/21; 33/24 | Ariel           | 37/26                                                                             |
| Breeding objectives                   |                            | Atlas           | 42/28; 43/47                                                                      |
| Flower colour                         | 28/20; 33/24               | Ayr             | 34/30                                                                             |
| Flower type                           | 31/21                      | Bacchus         | 37/26                                                                             |
| Leaf colour                           | 30/21                      | Balder J.       | 24/8                                                                              |
| Leaf size                             | 30/21                      | Baraka          | 37/26; 43/46                                                                      |
| Sterile                               | 28/20                      | Bastion         | 41/26                                                                             |
| Countries                             |                            | Beate           | 36/16                                                                             |
| India                                 | 30/21; 31/21               | Beauty          | 34/30                                                                             |
| Japan                                 | 28/20; 33/24               | Berolina        | 37/26                                                                             |
| <b><i>Hippophaea rhamnoides</i></b>   |                            | Betina          | 36/18                                                                             |
| Mutant varieties                      |                            | BH-75           | 36/17                                                                             |
| Zyrianka                              | 28/4, 21                   | BIOS-1          | 41/26                                                                             |
| Other mutants mentioned               |                            | Blazer          | 28/20                                                                             |
| N118                                  | 28/4                       | Blenheim        | 36/17                                                                             |
| Varieties treated                     |                            | Bonus           | 31/21                                                                             |
| Altai (wild form from Altai)          | 28/4, 21                   | Camargue        | 32/23                                                                             |
| Mutagens used                         |                            | Camen           | 37/26                                                                             |
| Gamma rays                            | 28/4, 21                   | Camir           | 36/17                                                                             |
| NMU                                   | 28/21                      | Canor           | 37/27                                                                             |
| Breeding objectives                   |                            | Canut           | 37/27                                                                             |
| Ascorbic acid content                 | 28/4, 21                   | Cargine         | 37/27                                                                             |
| Carotenoids content                   | 28/4, 21                   | Carmen          | 29/23                                                                             |
| Fruit yield                           | 28/4, 21                   | Carnival        | 37/27                                                                             |
| Oil content                           | 28/4, 21                   | Carula          | 37/27                                                                             |
| Sugar content                         | 28/4, 21                   | Catrin          | 37/27                                                                             |
| Countries                             |                            | Cheri           | 36/17                                                                             |
| USSR                                  | 28/4, 21                   | Comtesse        | 36/17                                                                             |
| <b>Hop</b> see <i>Humulus lupulus</i> |                            | Comtesse        | 33/24                                                                             |
| <b><i>Hordeum vulgare</i></b>         |                            | Consista        | 32/23                                                                             |
| Mutant varieties                      |                            | Corgi           | 37/27                                                                             |
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| Shirokolistnii    | 31/24          | 538 DK                  | 24/16          |
| Shua              | 43/47          | 54M17                   | 26/8; 34/22    |
| Sila              | 36/21          | 555 DK                  | 24/16          |
| Sissy             | 37/31          | 57 M13                  | 40/14          |
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| Tamina            | 32/26          | 819/2                   | 43/18          |
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| INRC-BBH-1                   | 34/12                   | Cyclon                    | 34/22          |
| INRC-HBR-3                   | 34/12                   | Dema                      | 43/17          |
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|                              |                         | Miraj                     | 36/17          |
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| Ukei H-83                    | 21/13                   | Vogelsanger Gold          | 26/8; 34/22    |
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| Abed 079        | 36/21          | T253)                                   |              |
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|                 | 30, 31; 43/45  | Hart                                    | 39/3         |
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| Azam d1         | 36/19          | Hood                                    | 37/28        |
| Barberausse     | 37/26          | HVS 91/76                               | 40/14        |
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| Carina          | 37/29          | K-572/11                                | 36/18        |
| Carlsberg       | 37/30          | Kantokawa 53                            | 35/35        |
| Celechovicky    | 31/22          | KM1192                                  | 40/14        |
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| CIV P176        | 36/21          | Lola                                    | 43/46        |
| Claret          | 37/28          | Lotus                                   | 39/3         |
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| Conquest        | 28/20          | Magnum                                  | 34/30, 31;   |
| Dandy           | 39/3           |                                         | 37/27        |
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| Marion                  | 37/28               | Vijaya                                       | 36/18                                                                                                                |
| Maris Bulbeck           | 37/27               | Vogelsanger Gold                             | 31/21                                                                                                                |
| Maris Jak               | 36/18               | Volla                                        | 29/23; 37/29                                                                                                         |
| Maris Mink              | 29/23               | Voldagsen 2344                               | 37/30                                                                                                                |
| Marlen                  | 39/3                | Wasiro                                       | 35/29                                                                                                                |
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| Medusa                  | 36/17               | Wintermalt                                   | 41/26                                                                                                                |
| Melvin                  | 43/45               | Mutagens used                                |                                                                                                                      |
| Menuet                  | 37/27               | Chemical mutagens                            | 21/2; 34/25;<br>35/30                                                                                                |
| Meteor                  | 36/22               | DENH (dENH)                                  | 40/14                                                                                                                |
| Minevra                 | 37/29               | DMS                                          | 40/14                                                                                                                |
| Mirjam                  | 37/26               | DMSO                                         | 35/36                                                                                                                |
| Monte Cristo            | 31/23               | EMS                                          | 30/5; 32/25;<br>34/12, 22;<br>35/16; 39/3;<br>41/26                                                                  |
| Morgenrot               | 43/45, 47           | Ethyleneimine (EI)                           | 30/22; 31/21;<br>34/22; 44/37                                                                                        |
| MSE Aramir 202          | 37/30, 31           | Ethylenoxide                                 | 31/21                                                                                                                |
| Multan                  | 25/11               | Fast neutrons                                | 24/16; 43/47                                                                                                         |
| Nery                    | 37/26               | Gamma field                                  | 35/35                                                                                                                |
| Nittakei-1              | 41/26               | Gamma rays                                   | 21/2, 13;<br>24/18; 25/11;<br>31/22; 34/12;<br>35/16; 36/2,<br>17; 37/29;<br>41/4; 42/13;<br>43/46, 47, 48;<br>44/36 |
| Nordal                  | 37/27               | Gamma rays + EMS                             | 35/16                                                                                                                |
| Nota                    | 29/23               | Neutrons                                     | 34/25                                                                                                                |
| Novator                 | 34/22; 34/22        | Nitroso-dimethyl-urea (NDH)                  | 26/8; 34/22                                                                                                          |
| NS 756123               | 37/31               | Nitroso-ethyl-urea (NEH) =<br>(NEU) = (ENH)  | 26/8; 31/24;<br>34/22; 36/22;<br>40/23; 43/47                                                                        |
| Numar*2/CI 2376         | 43/48               | Nitroso-methyl urea (NMH) =<br>(MNU) = (MNH) | 24/16; 38/8;<br>40/14, 23;<br>42/14; 43/17;<br>44/28                                                                 |
| Nutanns 244             | 30/22               | NTMU                                         | 41/26                                                                                                                |
| Otra                    | 43/45, 47           | Physical mutagens                            | 35/30                                                                                                                |
| P21                     | 37/29               | Sodium azide                                 | 24/16; 30/5;<br>34/22, 25;<br>35/3; 37/29;<br>42/14; 43/17;<br>44/28                                                 |
| Palestine               | 31/23               | Sodium azide + MNH                           | 38/8; 44/28                                                                                                          |
| Pallydum 394            | 40/14               | X-rays                                       | 21/2; 34/25;<br>39/2                                                                                                 |
| Paoly                   | 31/23               | Breeding objectives                          |                                                                                                                      |
| Piccolo                 | 36/20               | Adaptation                                   | 36/18, 21                                                                                                            |
| Pitayo                  | 37/30               | Aluminum tolerance                           | 43/17; 44/28                                                                                                         |
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| Steveland               | 41/26               |                                              |                                                                                                                      |
| Sumire Mochi            | 35/29               |                                              |                                                                                                                      |
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| Tammi                   | 43/45, 47           |                                              |                                                                                                                      |
| Totem                   | 39/3                |                                              |                                                                                                                      |
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| UN 25                   | 37/31               |                                              |                                                                                                                      |

|                                                               |                                                                                                                                                                                   |                                  |                                                                                                                     |
|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------|
|                                                               | 19, 20, 21, 22                                                                                                                                                                    | Low water requirement            | 36/21                                                                                                               |
| Brown rust resistance                                         | 30/22                                                                                                                                                                             | Lysine content                   | 21/3; 35/29                                                                                                         |
| Callose formation                                             | 25/4                                                                                                                                                                              | Malting quality                  | 34/30, 31;<br>36/16, 17, 20,<br>21, 22; 37/26,<br>27, 28, 30,<br>31; 41/4;<br>43/46, 47                             |
| Chlorophyll mutants                                           | 42/14                                                                                                                                                                             |                                  |                                                                                                                     |
| CNN resistance                                                | 36/17, 21                                                                                                                                                                         | Mn deficiency tolerance          | 24/18                                                                                                               |
| Cold tolerance                                                | 36/17, 22;<br>37/29; 44/36                                                                                                                                                        | Mutant collection                | 34/25                                                                                                               |
| Compact spikes                                                | 42/28                                                                                                                                                                             | Mutation frequency               | 44/28                                                                                                               |
| Doubled haploid (DH) mutant<br>production                     | 38/8; 42/14                                                                                                                                                                       | Nematode resistance              | 26/13; 36/16,<br>21; 37/31                                                                                          |
| Disease resistance                                            | 31/21, 22;<br>32/23, 24, 25,<br>26; 34/30, 31;<br>36/19; 37/26;<br>40/24; 41/26;<br>43/45, 46, 47,<br>48                                                                          | Plant habit                      | 24/16, 26/13                                                                                                        |
| Drought resistance/tolerance                                  | 34/12; 43/46;<br>44/36                                                                                                                                                            | Powdery mildew resistance        | 21/3; 25/4, 5;<br>30/5, 22;<br>31/22, 23;<br>32/24, 25;<br>33/24; 34/12,<br>22; 36/16                               |
| Dwarf type                                                    | 26/13; 36/17,<br>18, 19                                                                                                                                                           | Proanthocyanidin-free            | 35/3; 37/29                                                                                                         |
| Ear morphology                                                | 24/16                                                                                                                                                                             | Protein content                  | 21/2; 33/12;<br>35/36; 36/17,<br>19, 20; 43/47                                                                      |
| Earliness                                                     | 21/13; 25/11;<br>26/8; 29/4;<br>31/21; 32/25;<br>33/24, 25;<br>34/30, 31;<br>35/36; 36/17,<br>20; 37/30;<br>40/14, 23;<br>41/26; 42/28;<br>43/45, 47, 48                          | <i>Rhynchosporium</i> resistance | 30/22                                                                                                               |
| <i>Eceriferum</i>                                             | 42/14                                                                                                                                                                             | Rust tolerant                    | 33/24                                                                                                               |
| Ecological stability                                          | 36/22                                                                                                                                                                             | Salt tolerance                   | 35/16; 41/4                                                                                                         |
| Erectoid type                                                 | 37/28                                                                                                                                                                             | Semi-dwarfness                   | 24/16; 36/19;<br>42/14 ; 43/45,<br>47, 48; 44/37                                                                    |
| <i>Erysiphe graminis</i> resistance                           | 35/4; 39/2, 3                                                                                                                                                                     | Semiprostrate plant habit        | 30/22                                                                                                               |
| Escape from leaf beetle<br>( <i>Oulema melanopus</i> ) attack | 40/23                                                                                                                                                                             | Short culm                       | 21/13; 24/18;<br>25/11; 28/20;<br>31/23; 33/25;<br>34/30, 31;<br>35/36; 36/16,<br>18, 19, 22;<br>37/26, 28;<br>41/4 |
| Feed barley                                                   | 36/18, 20                                                                                                                                                                         | Silage production                | 31/24                                                                                                               |
| Foliage yield                                                 | 40/14                                                                                                                                                                             | Spike length                     | 41/26                                                                                                               |
| Frost resistance                                              | 29/4; 31/21,<br>23; 40/23                                                                                                                                                         | Stability                        | 31/24                                                                                                               |
| Grain colour                                                  | 41/26                                                                                                                                                                             | Stiffness                        | 21/13; 30/22;<br>34/29, 31;<br>36/16, 20, 21;<br>37/26, 28;<br>41/4, 26;<br>43/45, 46, 47,<br>32/23, 25             |
| Grain quality                                                 | 40/14                                                                                                                                                                             | Stripe rust resistance           | 31/24                                                                                                               |
| Grain size                                                    | 36/17, 21, 22;<br>40/23; 41/26                                                                                                                                                    | Tallness                         | 26/13; 32/25;<br>36/17, 19, 21;<br>42/14                                                                            |
| Heterosis                                                     | 42/13                                                                                                                                                                             | Tillering                        | 29/4; 36/17,<br>22; 43/47                                                                                           |
| Hulless                                                       | 36/18, 19                                                                                                                                                                         | Winter hardiness                 | 21/13; 24/16;<br>25/11; 26/13;<br>28/20; 29/23;<br>30/22; 31/21,<br>22, 23, 24;<br>32/23, 24, 25,<br>26; 33/24, 25; |
| Isozyme mutants                                               | 35/30; 42/14                                                                                                                                                                      | Yield                            |                                                                                                                     |
| Leaf disease resistance                                       | 31/22, 23, 24                                                                                                                                                                     |                                  |                                                                                                                     |
| Leaf rust resistance                                          | 32/23, 24, 25                                                                                                                                                                     |                                  |                                                                                                                     |
| Lodging resistance                                            | 21/2; 25/11;<br>29/4; 29/23;<br>31/21, 22, 23,<br>24; 32/23, 24,<br>25, 26; 33/24;<br>34/30, 31;<br>36/16, 17, 18,<br>19, 20; 37/26,<br>27, 30; 40/14,<br>23; 41/26;<br>43/46, 47 |                                  |                                                                                                                     |

|                        |                                                                                                                                                   |                                                             |                                                                                                    |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
|                        | 34/30, 31;<br>36/3, 17, 18,<br>19, 20, 21,<br>22; 37/26, 27,<br>28, 30, 31;<br>40/14, 23;<br>41/4, 26;<br>43/46, 47, 48;<br>44/37<br>30/22; 36/17 |                                                             |                                                                                                    |
| Yellow rust resistance |                                                                                                                                                   |                                                             |                                                                                                    |
| Countries              |                                                                                                                                                   |                                                             |                                                                                                    |
| Algeria                | 42/15                                                                                                                                             |                                                             |                                                                                                    |
| Australia              | 24/18; 35/3                                                                                                                                       |                                                             |                                                                                                    |
| Austria                | 29/23; 33/24;<br>36/20; 37/26,<br>27; 43/45<br>37/27                                                                                              |                                                             |                                                                                                    |
| Belgium                |                                                                                                                                                   |                                                             |                                                                                                    |
| Bulgaria               | 36/17, 19, 22                                                                                                                                     |                                                             |                                                                                                    |
| Canada                 | 28/20; 43/45,<br>47                                                                                                                               |                                                             |                                                                                                    |
| Chile                  | 37/30                                                                                                                                             |                                                             |                                                                                                    |
| China                  | 25/11                                                                                                                                             |                                                             |                                                                                                    |
| CSSR                   | 21/2, 3;<br>31/21, 22, 23,<br>24; 34/31<br>33/12                                                                                                  |                                                             |                                                                                                    |
| Cyprus                 |                                                                                                                                                   |                                                             |                                                                                                    |
| Denmark                | 25/4, 5;<br>33/24; 34/29,<br>31; 35/4;<br>36/16, 17, 18,<br>21; 37/26, 27,<br>29, 30, 31<br>43/46                                                 |                                                             |                                                                                                    |
| Estonia                |                                                                                                                                                   |                                                             |                                                                                                    |
| FAO/IAEA               | 38/9; 41/14;<br>42/15; 43/18;<br>44/30<br>25/8                                                                                                    |                                                             |                                                                                                    |
| Finland                |                                                                                                                                                   |                                                             |                                                                                                    |
| France                 | 36/20; 37/26,<br>28, 29, 30, 31<br>36/16, 17, 20,<br>21, 22; 37/28,<br>29, 30, 31                                                                 |                                                             |                                                                                                    |
| FRG                    |                                                                                                                                                   |                                                             |                                                                                                    |
| GDR                    | 32/23, 24, 25,<br>26; 36/19, 20;<br>37/26, 27, 28<br>39/2, 3; 43/46<br>37/29                                                                      |                                                             |                                                                                                    |
| Germany                |                                                                                                                                                   |                                                             |                                                                                                    |
| Greece                 |                                                                                                                                                   |                                                             |                                                                                                    |
| India                  | 26/13; 32/25;<br>35/16; 36/17,<br>18, 19, 21<br>34/12; 35/31;<br>43/46, 47, 48                                                                    |                                                             |                                                                                                    |
| Iraq                   |                                                                                                                                                   |                                                             |                                                                                                    |
| Japan                  | 21/13; 35/35;<br>41/26<br>36/3                                                                                                                    |                                                             |                                                                                                    |
| Libya                  |                                                                                                                                                   |                                                             |                                                                                                    |
| Norway                 | 33/25                                                                                                                                             |                                                             |                                                                                                    |
| Peru                   | 43/48                                                                                                                                             |                                                             |                                                                                                    |
| Poland                 | 24/16; 38/9;<br>41/14; 42/15;<br>43/18; 44/30<br>40/24; 41/26;<br>43/47                                                                           |                                                             |                                                                                                    |
| Russia                 |                                                                                                                                                   |                                                             |                                                                                                    |
|                        |                                                                                                                                                   | Sweden                                                      | 25/11; 34/25;<br>36/21, 22;<br>37/26, 28, 30<br>36/20                                              |
|                        |                                                                                                                                                   | The Netherlands                                             |                                                                                                    |
|                        |                                                                                                                                                   | UK                                                          | 30/22; 34/30,<br>31; 36/17, 18,<br>19; 37/26, 27,<br>28, 29, 31;<br>41/4                           |
|                        |                                                                                                                                                   | USA                                                         | 28/20; 36/18,<br>20; 41/26;<br>42/28; 43/47,<br>48                                                 |
|                        |                                                                                                                                                   | USSR                                                        | 26/8; 29/4;<br>30/22; 31/21,<br>22, 23, 24;<br>35/36; 36/22;<br>37/30, 31;<br>40/14; 41/26<br>38/9 |
|                        |                                                                                                                                                   | Zaire                                                       |                                                                                                    |
|                        |                                                                                                                                                   | Other information                                           |                                                                                                    |
|                        |                                                                                                                                                   | Anther culture                                              | 38/8; 41/13;<br>42/13                                                                              |
|                        |                                                                                                                                                   | <b>Horsegram</b> see <i>Macrotyloma</i><br><i>uniflorum</i> |                                                                                                    |
|                        |                                                                                                                                                   | <b>Hoya carnosa</b>                                         |                                                                                                    |
|                        |                                                                                                                                                   | Mutant varieties                                            |                                                                                                    |
|                        |                                                                                                                                                   | Compacta                                                    | 31/24                                                                                              |
|                        |                                                                                                                                                   | Compacta Regalis                                            | 31/24                                                                                              |
|                        |                                                                                                                                                   | Mauna Loa                                                   | 31/25                                                                                              |
|                        |                                                                                                                                                   | Rubra                                                       | 31/25                                                                                              |
|                        |                                                                                                                                                   | Mutagens used                                               |                                                                                                    |
|                        |                                                                                                                                                   | Gamma rays                                                  | 31/24, 25                                                                                          |
|                        |                                                                                                                                                   | X-rays                                                      | 31/24, 25                                                                                          |
|                        |                                                                                                                                                   | Breeding objectives                                         |                                                                                                    |
|                        |                                                                                                                                                   | Leaf colour                                                 | 31/24, 25                                                                                          |
|                        |                                                                                                                                                   | Leaf shape                                                  | 31/24                                                                                              |
|                        |                                                                                                                                                   | Countries                                                   |                                                                                                    |
|                        |                                                                                                                                                   | USA                                                         | 31/24, 25                                                                                          |
|                        |                                                                                                                                                   | <b>Humulus lupulus</b>                                      |                                                                                                    |
|                        |                                                                                                                                                   | Mutant varieties                                            |                                                                                                    |
|                        |                                                                                                                                                   | Crystal                                                     | 43/48                                                                                              |
|                        |                                                                                                                                                   | Santiam                                                     | 44/37                                                                                              |
|                        |                                                                                                                                                   | Ultra                                                       | 44/37                                                                                              |
|                        |                                                                                                                                                   | Other mutants mentioned                                     |                                                                                                    |
|                        |                                                                                                                                                   | Hallertauer mittelfrüh                                      | 43/48; 44/37                                                                                       |
|                        |                                                                                                                                                   | Other varieties mentioned                                   |                                                                                                    |
|                        |                                                                                                                                                   | Saazer                                                      | 44/37                                                                                              |
|                        |                                                                                                                                                   | Tettenanger                                                 | 44/37                                                                                              |
|                        |                                                                                                                                                   | USDA 21381                                                  | 43/48                                                                                              |
|                        |                                                                                                                                                   | USDA 21381M                                                 | 44/37                                                                                              |
|                        |                                                                                                                                                   | USDA 21618M                                                 | 44/37                                                                                              |
|                        |                                                                                                                                                   | Mutagens used                                               |                                                                                                    |
|                        |                                                                                                                                                   | Colchicine                                                  | 43/48; 44/37                                                                                       |
|                        |                                                                                                                                                   | Breeding objectives                                         |                                                                                                    |
|                        |                                                                                                                                                   | Oil quality                                                 | 44/37                                                                                              |
|                        |                                                                                                                                                   | Vigour                                                      | 43/48                                                                                              |
|                        |                                                                                                                                                   | Yield                                                       | 43/48; 44/37                                                                                       |

|                                                     |                     |                                                            |              |
|-----------------------------------------------------|---------------------|------------------------------------------------------------|--------------|
| Countries                                           |                     | Ornamental Quality                                         | 37/32        |
| USA                                                 | 43/48; 44/37        | Winter hardiness                                           | 37/32        |
| <b>Hyacinth bean</b> see <i>Dolichos lablab</i>     |                     | Countries                                                  |              |
|                                                     |                     | USSR                                                       | 37/32        |
| <b>Hyacinthus sp.</b>                               |                     | <b>J</b>                                                   |              |
| Mutagens used                                       |                     | <b>Japanese pear</b> see <i>Pyrus pyrifolia</i>            |              |
| X-rays                                              | 34/31               |                                                            |              |
| Breeding objectives                                 |                     | <b>Job's tears</b> see <i>Coix lachryma-jobi</i>           |              |
| Flower colour                                       | 34/31               |                                                            |              |
| Countries                                           |                     | <b>Juglans regia</b>                                       |              |
| The Netherlands                                     | 34/31               | Mutagens used                                              |              |
| <b>I</b>                                            |                     | Gamma rays                                                 | 34/24        |
| <b>Indian jujube</b> see <i>Ziziphus mauritiana</i> |                     | Breeding objectives                                        |              |
|                                                     |                     | Fast growth                                                | 34/24        |
| <b>Ipomoea batatas</b>                              |                     | Countries                                                  |              |
| Mutant varieties                                    |                     | Ukrainian SSR                                              | 34/24        |
| Yan-shu 759                                         | 33/25               | <b>Jerusalem artichoke</b> see <i>Helianthus tuberosus</i> |              |
| Yan-shu-781                                         | 33/25               |                                                            |              |
| Varieties treated                                   |                     | <b>Juncus effusus</b>                                      |              |
| 15 varieties                                        | 43/21               | Mutant varieties                                           |              |
| Bhadrakalichuvala                                   | 43/21               | Fukunami                                                   | 31/25        |
| F <sub>1</sub> Feng Shou-huang x Hong-hong 1        | 33/25               | Seto-nami                                                  | 21/13        |
| F <sub>1</sub> hybrids                              | 27/13               | Varieties treated                                          |              |
| F <sub>1</sub> Yan-shun 3 x Xu-shu 18               | 33/25               | Asanagi                                                    | 21/13; 31/25 |
| Kanhangad local                                     | 43/21               | Mutagens used                                              |              |
| Mutavella                                           | 43/21               | Gamma rays                                                 | 21/13; 31/25 |
| Mutagens used                                       |                     | Breeding objectives                                        |              |
| Fast neutrons                                       | 27/13; 33/25        | Hard stem                                                  | 31/25        |
| Gamma rays                                          | 43/21               | Long culm                                                  | 21/13        |
| Breeding objectives                                 |                     | <i>Rhizoctonia solanii</i> resistance                      | 31/25        |
| Black spot resistance                               | 33/25               | Quality                                                    | 21/13        |
| Disease resistance                                  | 27/13               | Yield                                                      | 21/13; 31/25 |
| Plant type                                          | 33/25               | Countries                                                  |              |
| Radiosensitivity test                               | 43/21               | Japan                                                      | 21/13; 31/25 |
| Starch content                                      | 27/13; 33/25        | <b>Jute</b> see <i>Corchorus</i>                           |              |
| Short internodes                                    | 33/25               | <b>K</b>                                                   |              |
| Yield                                               | 27/13; 33/25; 43/22 | <b>Kalanchoe sp.</b>                                       |              |
| Countries                                           |                     | Mutant varieties                                           |              |
| China                                               | 27/13; 33/25        | Flores                                                     | 31/25        |
| India                                               | 43/22               | Lombok                                                     | 31/25        |
| <b>Iris sp.</b>                                     |                     | Sumba                                                      | 31/25        |
| Mutant varieties                                    |                     | Varieties treated                                          |              |
| Belyi Karlik (white dwarf)                          | 37/32               | Singapur                                                   | 31/25        |
| Chistoe Pole                                        | 37/32               | Mutagens used                                              |              |
| Marina Raskova                                      | 37/32               | X-rays                                                     | 31/25        |
| Marshal Pokryshkin                                  | 37/32               | X-rays ( <i>in vitro</i> )                                 | 24/14        |
| Podmoskownaya Osen                                  | 37/32               | Breeding objectives                                        |              |
| Mutagens used                                       |                     | Branching                                                  | 31/25        |
| Gamma rays                                          | 37/32               | Flower colour                                              | 24/14; 31/25 |
| Breeding objectives                                 |                     | Flower shape                                               | 24/14; 31/25 |
| Disease resistance                                  | 37/32               | Growth habit                                               | 24/14; 31/25 |
| Easy propagation                                    | 37/32               |                                                            |              |

|                                                                              |                 |                                         |              |
|------------------------------------------------------------------------------|-----------------|-----------------------------------------|--------------|
| Leaf shape                                                                   | 24/14           | Mutagens used                           |              |
| Countries                                                                    |                 | EMS                                     | 28/21        |
| FRG                                                                          | 24/15           | Breeding objectives                     |              |
| The Netherlands                                                              | 31/25           | Leaf size and shape                     | 28/21        |
| <b>Kale</b> see <i>Brassica oleracea</i> var. <i>acephala</i>                |                 | Flower colour                           | 28/21        |
| <b>Khasianum</b> see <i>Solanum khasianum</i>                                |                 | Plant stature                           | 28/21        |
| <b>Kohleria</b> sp.                                                          |                 | Mildew resistance                       | 28/21        |
| Other mutants mentioned                                                      |                 | Cold tolerance                          | 28/21        |
| II-2-0                                                                       | 34/8            | Drought tolerance                       | 28/21        |
| II-2-32                                                                      | 34/8            | Sterile                                 | 28/21        |
| Varieties treated                                                            |                 | Countries                               |              |
| II-2-0                                                                       | 34/8            | USA                                     | 28/21        |
| Trihybrid ( <i>K. amabilis</i> x <i>K. bogotensis</i> x <i>K. eriantha</i> ) | 34/7            | <b>Lantana depressa</b>                 |              |
| Mutagens used                                                                |                 | Mutant varieties                        |              |
| NMH ( <i>in vitro</i> )                                                      | 34/7            | Lantana depressa bicoloured             | 37/33        |
| Breeding objectives                                                          |                 | Lantana depressa variegata              | 31/25        |
| Early flowering                                                              | 34/8            | Niharika                                | 37/33        |
| Internode length                                                             | 34/8            | Mutagens used                           |              |
| Leaf characters                                                              | 34/8            | Gamma rays                              | 31/25; 37/33 |
| Countries                                                                    |                 | Breeding objectives                     |              |
| Germany, FR.                                                                 | 34/8            | Flower colour                           | 37/33        |
| <b>L</b>                                                                     |                 | Variegated leaf                         | 31/25        |
| <b>Lactuca sativa</b>                                                        |                 | Countries                               |              |
| Mutant varieties                                                             |                 | India                                   | 31/25; 37/33 |
| Blush                                                                        | 43/48           | <b>Lathyrus sativus</b>                 |              |
| Ice Cube                                                                     | 43/49           | Mutant varieties                        |              |
| Mini-Green                                                                   | 43/49           | Poltavskaya 2                           | 40/14        |
| Novogodnii                                                                   | 41/27           | Varieties treated                       |              |
| Varieties treated                                                            |                 | BINA Acc. No. 1                         | 33/20        |
| 81-1251-C-18-2 (F <sub>3</sub> )                                             | 43/48, 49       | LSD 6                                   | 33/9         |
| Moskovskii parnik                                                            | 41/27           | S 220                                   | 33/9         |
| Mutagens used                                                                |                 | Mutagens used                           |              |
| EI                                                                           | 41/27           | ENH                                     | 40/14        |
| EMS                                                                          | 28/7; 43/48, 49 | EMS                                     | 33/9         |
| Breeding objectives                                                          |                 | Gamma rays                              | 33/9         |
| Chlorophyll mutants                                                          | 28/7            | NMH                                     | 33/9         |
| Dwarfness                                                                    | 43/48, 49       | Sodium azide                            | 33/20        |
| Early flowering                                                              | 28/7            | Breeding objectives                     |              |
| Leaf shape mutants                                                           | 28/7            | Disease resistance                      | 40/14        |
| Photosynthesis                                                               | 41/27           | Drought resistance                      | 40/14        |
| Vitamin C content                                                            | 41/27           | Insect resistance                       | 40/14        |
| Yield                                                                        | 41/27           | Leaf colour                             | 33/9         |
| Countries                                                                    |                 | Morphological mutants                   | 33/9, 20     |
| USA                                                                          | 28/7; 43/48, 49 | Countries                               |              |
| USSR                                                                         | 41/27           | Bangladesh                              | 33/20        |
| <b>Lagerstroemia indica</b>                                                  |                 | USSR                                    | 40/14        |
| Mutant varieties                                                             |                 | <b>Lemon</b> see <i>Citrus limon</i>    |              |
| Centennial Spirit                                                            | 28/21           | <b>Lentil</b> see <i>Lens culinaris</i> |              |
| Prairie Lace                                                                 | 28/21           | <b>Lens culinaris</b>                   |              |
|                                                                              |                 | Mutant varieties                        |              |
|                                                                              |                 | Mutant 17 MM                            | 44/37        |
|                                                                              |                 | Other mutants mentioned                 |              |
|                                                                              |                 | SKL 2659                                | 21/5         |
|                                                                              |                 | HR 73-76                                | 21/5         |
|                                                                              |                 | HR 32-35                                | 21/5         |

|                                               |                       |                                   |                              |
|-----------------------------------------------|-----------------------|-----------------------------------|------------------------------|
| HR 28-31                                      | 21/5                  | <b><i>Linum usitatissimum</i></b> |                              |
| RPL-1                                         | 32/11                 | Mutant varieties                  |                              |
| Varieties treated                             |                       | Baltyuchai                        | 41/27                        |
| LL-78                                         | 32/11; 34/9           | Hei Ya No. 4 (Heiyi No. 4)        | 29/21; 33/5                  |
| Mutagens used                                 |                       | Heiya No. 6                       | 32/26                        |
| EMS                                           | 35/26                 | Linola 989                        | 44/38                        |
| Gamma rays                                    | 32/11; 34/9;<br>44/37 | M-5                               | 41/27                        |
| Sodium azide                                  | 35/26                 | Ning Ya No. 10                    | 29/21                        |
| Breeding objectives                           |                       | Zarya 87                          | 31/26                        |
| Dwarf stature                                 | 32/11                 | Other mutants mentioned           |                              |
| Earliness                                     | 21/5                  | γ-67-1-681                        | 29/21; 33/5                  |
| Late flowering                                | 35/26                 | γ-67-681                          | 33/6                         |
| Male sterility                                | 34/9                  | γ-7015-4                          | 33/6                         |
| Pod size                                      | 44/37                 | M1589                             | 30/11                        |
| Seed size                                     | 44/37                 | M1722                             | 30/11                        |
| <i>Uromyces fabae</i> resistance              | 21/9                  | r7107-2-4                         | 32/26                        |
| Yield                                         | 21/5; 35/26           | r7005-21-6-6                      | 32/26                        |
| Countries                                     |                       | Zero                              | 44/38                        |
| Bangladesh                                    | 35/26                 | Varieties treated                 |                              |
| Bulgaria                                      | 44/37                 | Bionda                            | 35/9                         |
| India                                         | 21/6; 32/11;<br>34/10 | Glenleg                           | 44/38                        |
| Chile                                         | 21/9                  | LD142 x Complex                   | 31/26                        |
| <b><i>Lepidium sativum</i></b>                |                       | Orshanskii 2                      | 41/27                        |
| Mutant varieties                              |                       | Raulinus                          | 35/9                         |
| Vest (News)                                   | 31/26                 | Vipegantas                        | 41/27                        |
| Varieties treated                             |                       | Yan Za No. 10                     | 29/21                        |
| Uzkolistnyi                                   | 31/26                 | Other varieties mentioned         |                              |
| Mutagens used                                 |                       | 6409-640                          | 29/21; 33/4                  |
| Electrons                                     | 31/26                 | CPI84495                          | 44/38                        |
| Breeding objectives                           |                       | McGregor                          | 44/38                        |
| Plasticity                                    | 31/26                 | Mutagens used                     |                              |
| Quality                                       | 31/26                 | DMS                               | 41/27                        |
| Countries                                     |                       | EI                                | 31/26                        |
| USSR                                          | 31/26                 | EMS                               | 35/9                         |
| <b>Lettuce see <i>Lactuca sativa</i></b>      |                       | ENH (NMH)                         | 41/27                        |
| <b>Lily see <i>Lilium</i></b>                 |                       | Gamma rays                        | 29/21; 32/26                 |
| <b><i>Lilium</i> sp.</b>                      |                       | Breeding objectives               |                              |
| Mutant varieties                              |                       | Alkali resistance                 | 29/21; 32/26                 |
| Mies Bouwman                                  | 37/33                 | Branching                         | 29/21                        |
| TX 68-1                                       | 37/33                 | Damp tolerance                    | 29/21                        |
| Varieties treated                             |                       | Disease resistance                | 32/26; 33/5;<br>41/27        |
| Tabasco                                       | 37/33                 | Drought tolerance                 | 33/5                         |
| Mutagens used                                 |                       | Early maturing                    | 29/21                        |
| X-rays                                        | 37/33                 | Fibre quality                     | 33/5, 6                      |
| Breeding objectives                           |                       | Fatty acid composition            | 35/9                         |
| Flower colour                                 | 37/33                 | Late flowering                    | 31/26                        |
| Forcing qualities                             | 37/33                 | Linoleic acid content             | 30/11                        |
| Countries                                     |                       | Lodging resistance                | 29/21; 32/26;<br>33/5; 41/27 |
| The Netherlands                               | 37/33                 | Oil quality                       | 44/38                        |
| <b>Linseed see <i>Linum usitatissimum</i></b> |                       | Quality                           | 29/21                        |
|                                               |                       | Salt tolerance                    | 29/21; 32/26;<br>33/5, 6     |
|                                               |                       | Yield                             | 29/21; 31/26;<br>32/26; 33/5 |
|                                               |                       | Countries                         |                              |
|                                               |                       | Australia                         | 30/11                        |

|                                              |               |                                       |              |
|----------------------------------------------|---------------|---------------------------------------|--------------|
| Canada                                       | 44/38         | Yield                                 | 31/27; 40/15 |
| China                                        | 29/21; 32/26; | Countries                             |              |
|                                              | 33/6          | USSR                                  | 31/26, 27;   |
| FRG                                          | 35/9          |                                       | 40/15        |
| USSR                                         | 31/26; 41/27  |                                       |              |
| <b>Loquat</b> see <i>Eriobotrya japonica</i> |               | <b><i>Lupinus angustifolius</i></b>   |              |
| <b><i>Luffa acutangula</i></b>               |               | Mutant varieties                      |              |
| Mutant varieties                             |               | Bar                                   | 41/27        |
| PKM-1                                        | 32/26         | Other mutants mentioned               |              |
| Varieties treated                            |               | Mutant 1                              | 41/27        |
| H.160                                        | 32/26         | Varieties treated                     |              |
| Mutagens used                                |               | Turkus                                | 41/27        |
| Gamma rays                                   | 32/26         | Other varieties mentioned             |              |
| Breeding objectives                          |               | 1.456/76/78                           |              |
| Fruit fly tolerance                          | 32/26         | Mutagens used                         |              |
| Leaf spot disease tolerance                  | 32/26         | MNH (NMH) = (MNU)                     | 41/27        |
| Pumpkin beetles tolerance                    | 32/26         | Breeding objectives                   |              |
| Yield                                        | 32/26         | Earliness                             | 41/27        |
| Countries                                    |               | Self-completing                       | 35/7         |
| India                                        | 32/26         | Unbranched                            | 35/7         |
|                                              |               | Uniform maturing                      | 41/27        |
| <b><i>Lupinus albus</i></b>                  |               | Countries                             |              |
| Mutant varieties                             |               | Poland                                | 35/7; 41/27  |
| Druzhba                                      | 31/26         | <b><i>Lupinus luteus</i></b>          |              |
| Olezhka                                      | 40/14         | Mutant varieties                      |              |
| Pichevoy                                     | 31/26         | Kopilovskii                           | 31/27        |
| Sinii parus                                  | 40/15         | Martin 2                              | 31/27        |
| Slavutich                                    | 40/15         | Narochanskii                          | 31/27        |
| Solnechnyi                                   | 40/15         | Other mutants mentioned               |              |
| Start                                        | 31/27         | WTD 585                               | 35/7         |
| Ukrainskii                                   | 40/15         | Varieties treated                     |              |
| Vympel                                       | 40/15         | R 6025                                | 31/27        |
| Other mutants mentioned                      |               | Other varieties mentioned             |              |
| M-70VA                                       | 40/15         | Niko                                  | 31/27        |
| VI-M-70-S                                    | 40/15         | Mutagens used                         |              |
| Varieties treated                            |               | Gamma rays                            | 31/27        |
| Kievskii mutant                              | 40/14         | Breeding objectives                   |              |
| Pishochovoi                                  | 40/15         | Disease resistance                    | 31/27        |
| Rannespelyi 31 uluchshen                     | 40/15         | Earliness                             | 31/27        |
| White 7                                      | 31/27         | Fodder quality                        | 31/27        |
| Mutagens used                                |               | Fusarium resistance                   | 31/27        |
| Chemical mutagens                            | 31/26; 40/15  | Self completing                       | 35/7         |
| DMS                                          | 40/15         | Unbranched type                       | 35/7         |
| EI                                           | 40/15         | Yield                                 | 31/27        |
| EMS                                          | 31/26         | Countries                             |              |
| ENH                                          | 40/14         | Poland                                | 35/7         |
| Gamma rays                                   | 31/27         | USSR                                  | 31/27        |
| MNH                                          | 40/14, 15     | <b><i>Lycopersicon esculentum</i></b> |              |
| Breeding objectives                          |               | Mutant varieties                      |              |
| Alkaloid content                             | 40/14, 15     | Bahar                                 | 42/28        |
| Disease resistance                           | 31/27; 40/15  | Co.3 (Marudham)                       | 28/13; 29/23 |
| Earliness                                    | 40/14, 15     | Kagyoku                               | 32/27        |
| Early maturity                               | 31/27         | Kyoryoku-ogata-reikou                 | 32/26        |
| Insect resistance                            | 40/15         | Kyoryoku-reikou                       | 21/14        |
| Lodging resistance                           | 40/15         | PKM-1                                 | 32/27        |
| Plasticity                                   | 31/27         | Ranii Nush                            | 31/27        |
| Protein content                              | 40/15         | Ryuugyoku                             | 32/27        |

|                                    |                                            |                                |                                         |
|------------------------------------|--------------------------------------------|--------------------------------|-----------------------------------------|
| Other mutants mentioned            |                                            | Yield                          | 23/11; 31/27;<br>32/27; 41/12           |
| Anobik                             | 23/11; 42/28                               | Countries                      |                                         |
| Chuukan-bohon Nou 4                | 32/27                                      | Bangladesh                     | 23/12; 42/28                            |
| Chuukan-bohon Nou 5                | 32/27                                      | Bulgaria                       | 23/7                                    |
| D(10)                              | 23/11                                      | India                          | 22/17; 28/14;<br>29/23; 32/27;<br>41/12 |
| E(6)                               | 23/11                                      | Japan                          | 21/14; 32/26,<br>27                     |
| IRB301-31                          | 32/26                                      | The Netherlands                | 35/14                                   |
| Mutant 12/13                       | 23/7                                       | USSR                           | 31/27                                   |
| Mutant 12/14                       | 23/7                                       | Other information              |                                         |
| Mutant 12/6-17                     | 23/7                                       | <i>In vitro</i> cultures       | 22/14; 35/14                            |
| Mutant 43/10                       | 23/7                                       | <i>In vitro</i> selection      | 35/14                                   |
| Mutant 77                          | 23/7                                       |                                |                                         |
| Mutant 95/9                        | 23/7                                       |                                |                                         |
| Varieties treated                  |                                            |                                |                                         |
| Annanj                             | 32/27                                      | <b><i>Lycopersicon</i> sp.</b> |                                         |
| Araks 322                          | 31/27                                      | Other mutants mentioned        |                                         |
| Co.1 (Co 1)                        | 28/13; 29/23                               | Line 108059/3 (GP-5)           | 29/10; 32/13                            |
| XXIV <sup>a</sup>                  | 23/7                                       | Line 108059/13 (GP-6)          | 29/10; 32/13                            |
| Oxheart                            | 42/28                                      | Line 108059/15 (GP-7)          | 29/10; 32/13                            |
| Pusa Ruby                          | 41/12                                      | Line 108-59/5 (GP-9)           | 29/10; 32/13                            |
| Other varieties mentioned          |                                            | Line 108059/12 (GP-10)         | 29/10; 32/13                            |
| Anahu                              | 32/26                                      | Line 108059/10 (GP-11)         | 29/11; 32/13                            |
| Chuukan-bohon Nou 3                | 32/27                                      | Line 108059/17 (GP-12)         | 29/11; 32/13                            |
| Ichihara                           | 32/26                                      | Line 108059/1-4 (GP-18)        | 29/11; 32/13                            |
| Sekaiichi                          | 32/26                                      | Line 112140/2-1 (GP-3)         | 29/11; 32/13                            |
| Shugyoku                           | 21/14                                      | Varieties treated              |                                         |
| Oxheart                            | 23/11; 42/28                               | <i>Lycopersion peruvianum</i>  | 21/14; 32/26,<br>27                     |
| Mutagens used                      |                                            | Currant tomato, Vir sample     | 29/9                                    |
| EI + gamma rays                    | 31/27                                      | No. k-4053                     |                                         |
| EMS                                | 28/13; 29/23;<br>41/12                     | Other varieties mentioned      |                                         |
| Gamma rays                         | 21/14; 23/7,<br>11; 32/27;<br>41/12        | Lebyazhinskij                  | 32/12                                   |
| MNU (MNH)                          | 41/12                                      | Mutagens used                  |                                         |
| MNU ( <i>in vitro</i> )            | 35/14                                      | Gamma rays                     | 29/9; 32/12                             |
| Breeding objectives                |                                            | Breeding objectives            |                                         |
| Aluminium tolerance                | 22/14                                      | Agronomic characters           | 29/9                                    |
| Determinate growth habit           | 23/7, 11;<br>28/13; 29/23;<br>32/27; 42/28 | Fruit dry matter               | 32/13                                   |
| Dwarfness                          | 23/11; 28/13;<br>29/23                     | Fruit quality                  | 32/13                                   |
| Earliness                          | 31/27                                      | Multiple disease resistance    | 32/26, 27                               |
| Early maturity                     | 41/12                                      | Countries                      |                                         |
| Fruit characters                   | 28/13; 29/23                               | Japan                          | 32/26, 27                               |
| Fruit number                       | 42/28                                      | USSR                           | 29/12; 32/14                            |
| Fruit quality                      | 42/28                                      |                                |                                         |
| High content of soluble dry matter | 23/7                                       |                                |                                         |
| Large fruit                        | 23/7                                       |                                |                                         |
| Lateral supressor                  | 23/7                                       |                                |                                         |
| Lodging resistance                 | 23/11                                      |                                |                                         |
| Multiple disease resistance        | 32/26, 27                                  |                                |                                         |
| Semi-dwarfness                     | 23/7                                       |                                |                                         |
| Streptomycin resistance            | 35/14                                      |                                |                                         |
| TMV resistance                     | 21/14, 23/12                               |                                |                                         |
| Vitamin C content                  | 28/13; 29/23                               |                                |                                         |
| Wilt resistance                    | 21/14; 23/12                               |                                |                                         |

## M

**Maize** see *Zea mays*

### ***Macrotyloma uniflorum***

|                     |      |
|---------------------|------|
| Varieties treated   |      |
| CO 1                | 37/7 |
| Kurungkollu         | 37/7 |
| Mutagens used       |      |
| Gamma rays          | 37/7 |
| Breeding objectives |      |
| Yield               | 37/7 |
| Countries           |      |
| India               | 37/7 |

**Macadamia nut** see *Macadamia***Macadamia sp.**

|                     |       |
|---------------------|-------|
| Mutagens used       |       |
| UV (pollen)         | 42/15 |
| Breeding objectives |       |
| Dwarf rootsock      | 42/15 |
| Countries           |       |
| Australia           | 42/17 |

**Malus pumila**

|                         |                        |
|-------------------------|------------------------|
| Mutant varieties        |                        |
| Courtagold              | 30/22                  |
| Courtavel               | 30/22                  |
| Senbatsu-Fuji-2-Kei     | 37/33                  |
| Other mutants mentioned |                        |
| 177 I-4                 | 26/11                  |
| 128                     | 26/11                  |
| 177-E-7                 | 26/11                  |
| 177 N-4                 | 26/11                  |
| 177 O-7                 | 26/11                  |
| Varieties treated       |                        |
| Fuji                    | 37/33                  |
| Golden Spur             | 30/22                  |
| McIntosh                | 26/11                  |
| Starking delicious      | 30/22                  |
| Mutagens used           |                        |
| Gamma rays              | 26/11; 30/22;<br>37/33 |
| Breeding objectives     |                        |
| Compact growth          | 26/11                  |
| Fruit colour            | 26/11; 37/33           |
| Quality                 | 37/33                  |
| Storability             | 26/11                  |
| Short internodes        | 30/22                  |
| Tree size reduction     | 30/22                  |
| Countries               |                        |
| Czechoslovakia          | 26/11                  |
| France                  | 30/22                  |
| Japan                   | 37/33                  |

**Malus sp.**

|                             |                       |
|-----------------------------|-----------------------|
| Mutant varieties            |                       |
| Golden Haidegg              | 31/28; 32/1           |
| Hongju No. 4                | 27/15                 |
| Shamrock (8C-1-15)          | 31/28                 |
| Other mutants mentioned     |                       |
| clone 9-12-1                |                       |
| Mc Intosh clone 10 C-8-43-1 |                       |
| Varieties treated           |                       |
| Cepiland                    | 35/10                 |
| Fuji                        | 27/15                 |
| Gala                        | 35/10                 |
| Golden Delicious            | 31/28; 32/1;<br>35/10 |
| Granny Smith                | 35/10                 |
| Lancep                      | 35/10                 |
| Mark                        | 35/10                 |
| Novole                      | 35/10                 |

|                           |                       |
|---------------------------|-----------------------|
| Xoushuei                  | 27/15                 |
| Xuegan                    | 27/15                 |
| Other varieties mentioned |                       |
| Belgolden                 | 32/2                  |
| Charden                   | 32/2                  |
| Cloden                    | 32/2                  |
| Golden 1972               | 32/2                  |
| Golden Delicious strain   | 31/28                 |
| 'Starkspur'               |                       |
| Golden Missouri           | 32/2                  |
| Golden Shay               | 32/2                  |
| Lysogolden                | 32/2                  |
| Mutsu                     | 32/2                  |
| Smoothe                   | 32/2                  |
| Mutagens used             |                       |
| Fast neutrons             | 27/15                 |
| Gamma rays                | 27/15; 31/28;<br>32/1 |
| Microwave                 | 27/15                 |
| Radiation                 | 31/28                 |
| Somaclonal variation      | 35/10                 |
| Breeding objectives       |                       |
| Cold storability          | 31/28; 32/2           |
| Earliness                 | 31/28                 |
| Fruit colour              | 27/15; 31/28;<br>32/2 |
| Fruit size                | 31/28; 32/2           |
| Growth habit              | 31/28; 32/2           |
| Non-russeting             | 31/28; 32/2           |
| Smoot sheen fruit         | 31/28; 32/2           |
| Taste                     | 31/28; 32/2           |
| Texture                   | 31/28; 32/2           |
| Uniform fruit maturing    | 31/28                 |
| Countries                 |                       |
| Austria                   | 31/28; 32/2           |
| Canada                    | 31/28                 |
| China                     | 27/15                 |
| France                    | 35/10                 |
| Other                     |                       |
| <i>In vitro</i> culture   | 35/10                 |

**Manihot esculenta**

|                                |                       |
|--------------------------------|-----------------------|
| Mutant varieties               |                       |
| Tekbankye                      | 44/38                 |
| Varieties treated              |                       |
| H-165                          | 30/18                 |
| H-2304                         | 30/18                 |
| Isunikakiyan                   | 44/38                 |
| Malayan 4 (M4)                 | 30/18; 37/9           |
| Mutagens used                  |                       |
| Gamma rays                     | 30/18; 37/9;<br>44/38 |
| Gamma rays ( <i>in vitro</i> ) | 30/18                 |
| Breeding objectives            |                       |
| Branching                      | 30/18                 |
| Chlorophyll content            | 30/18; 37/11          |
| Cooking quality                | 44/38                 |
| Dry matter content             | 37/11                 |
| Early flowering                | 30/18                 |

|                                                   |              |                                                              |             |
|---------------------------------------------------|--------------|--------------------------------------------------------------|-------------|
| Leaf colour                                       | 37/11        | USA                                                          | 36/14; 39/3 |
| Leaf size and shape                               | 30/18, 37/11 |                                                              |             |
| Morphological characters                          | 37/9         | <b>Millet</b> see <i>Panicum miliaceum</i> or <i>Setaria</i> |             |
| Petiole size                                      | 30/18; 37/11 | <b>Mint</b> see <i>Mentha arvensis</i>                       |             |
| Tuber characters                                  | 37/11        | <b>Momordica charantia</b>                                   |             |
| Vigour                                            | 44/38        | Mutant varieties                                             |             |
| Countries                                         |              | MDU 1                                                        | 32/27       |
| FAO/IAEA                                          | 30/19        | Varieties treated                                            |             |
| Ghana                                             | 44/38        | MC 103                                                       | 32/27       |
| India                                             | 30/18; 37/11 | Mutagens used                                                |             |
| <b>Mat rush</b> see <i>Juncus effusus</i>         |              | Gamma rays                                                   | 32/27       |
| <b>Matricaria chamomilla</b>                      |              | Breeding objectives                                          |             |
| Mutant varieties                                  |              | Fruit colour                                                 | 32/27       |
| Podmoskovnaya                                     | 41/27        | Fruit fly tolerance                                          | 32/27       |
| Mutagens used                                     |              | Leaf spot disease tolerance                                  | 32/27       |
| Colchicine                                        | 41/27        | Pumpkin beetle tolerance                                     | 32/27       |
| Breeding objectives                               |              | Countries                                                    |             |
| Disease resistance                                | 41/27        | India                                                        | 32/27       |
| Lodging resistance                                | 41/27        | <b>Morus alba</b>                                            |             |
| Ploidy level                                      | 41/27        | Mutant varieties                                             |             |
| Countries                                         |              | 7681                                                         | 33/25       |
| USSR                                              | 41/27        | S54                                                          | 33/25       |
| <b>Meadow fescue</b> see <i>Festuca pratensis</i> |              | Varieties treated                                            |             |
| <b>Medicago sativa</b>                            |              | Berhampore                                                   | 33/25       |
| Varieties treated                                 |              | F <sub>1</sub> Cangxi 49 x Yu 2                              | 33/25       |
| Augune II                                         | 34/25        | Other varieties mentioned                                    |             |
| Mutagens used                                     |              | Kanva 2                                                      | 33/25       |
| DMS                                               | 34/25        | Mutagens used                                                |             |
| EI                                                | 34/25        | EMS                                                          | 33/25       |
| EMS                                               | 34/25        | Gamma rays (gamma field)                                     | 37/7        |
| NMH                                               | 34/25        | N <sub>2</sub> laser                                         | 33/25       |
| Breeding objectives                               |              | Breeding objectives                                          |             |
| Saponin level                                     | 34/25        | Drought tolerance                                            | 33/25       |
| Self-fertility                                    | 34/25        | Leaf quality                                                 | 33/25       |
| Countries                                         |              | Leaf yield                                                   | 33/25       |
| Lithuanian SSR                                    | 34/25        | Mulberry bacterial blight resistance                         | 33/25; 37/7 |
| <b>Mentha arvensis</b>                            |              | Countries                                                    |             |
| Mutant varieties                                  |              | Cina                                                         | 33/25       |
| Murray Mitcham                                    | 36/13; 39/3  | India                                                        | 33/25       |
| TN-8                                              | 44/38        | Japan                                                        | 37/8        |
| Todd's Mitcham                                    | 36/13; 39/3  | <b>Mulberry</b> see <i>Morus alba</i>                        |             |
| Varieties treated                                 |              | <b>Mungbean</b> see <i>Vigna radiata</i>                     |             |
| NV-74                                             | 44/38        | <b>Musa sp.</b>                                              |             |
| Regular Mitcham                                   | 36/13        | Mutant varieties                                             |             |
| Mutagens used                                     |              | Klue Tom Thong KU1                                           | 35/36       |
| Gamma rays                                        | 44/38        | Novaria                                                      | 44/38       |
| Thermal neutrons                                  | 36/13        | Other mutants mentioned                                      |             |
| Breeding objectives                               |              | FATOM-1                                                      | 40/5, 6     |
| Disease resistance                                | 44/38        | FC GN #1                                                     | 40/3        |
| Oil quality                                       | 44/38        | FC GN #2                                                     | 40/3        |
| Pest resistance                                   | 44/38        | GN-60A                                                       | 40/2, 4, 5  |
| <i>Verticillium</i> resistance                    | 36/13; 39/3  | Varieties treated                                            |             |
| Countries                                         |              |                                                              |             |
| Vietnam                                           | 44/38        |                                                              |             |

|                                                              |                                    |                                                                 |              |
|--------------------------------------------------------------|------------------------------------|-----------------------------------------------------------------|--------------|
| Agbagba                                                      | 40/4                               | American 307                                                    | 41/27        |
| Burro CEMSA                                                  | 40/4                               | Baghdad-V77                                                     | 43/49        |
| Dwarf Parfitt                                                | 40/4                               | GSH-3                                                           | 30/22        |
| Grand Nain (Grand Naine)                                     | 40/2, 4, 5;<br>44/38               | KY 907                                                          | 43/49        |
| Hom Thong                                                    | 35/36                              | Sumar-V48                                                       | 43/49        |
| Maca                                                         | 36/12; 41/16                       | Virginia 0454                                                   | 32/27        |
| Nanicao                                                      | 41/16                              | Other mutants mentioned                                         |              |
| Paradiso al Rei                                              | 40/4                               | B14-7kR                                                         | 43/33        |
| Pisang Mas                                                   | 40/4                               | B20-10kR                                                        | 43/33        |
| Pisang Rastali                                               | 40/4                               | B3-5kR                                                          | 43/33        |
| SH-3142                                                      | 40/2                               | Krupolystnyi B-3                                                | 41/27        |
| SH-3362                                                      | 40/2, 5                            | LTH                                                             | 30/22        |
| SH-3436                                                      | 40/2                               | M4                                                              | 30/22        |
| Williams                                                     | 40/4                               | Mutant line 825                                                 | 32/27        |
| Other varieties mentioned                                    |                                    | TI 1406                                                         | 43/49        |
| Williams                                                     | 40/6                               | Varieties treated                                               |              |
| Mutagens used                                                |                                    | Black Plantlet                                                  | 27/15        |
| Colchicine ( <i>in vitro</i> )                               | 40/5                               | Bursa-18000                                                     | 43/33        |
| EMS ( <i>in vitro</i> )                                      | 35/13; 40/2                        | Quiaochung                                                      | 27/15        |
| Gamma rays                                                   | 36/12; 44/38                       | Small Golden Leaf                                               | 27/15        |
| Gamma rays ( <i>in vitro</i> )                               | 35/13, 36;<br>36/12; 40/2,<br>4, 5 | Vargini                                                         | 43/49        |
| Breeding objectives                                          |                                    | Xiangyin No. 1                                                  | 27/15        |
| Cold tolerance                                               | 40/4                               | Other varieties mentioned                                       |              |
| Earliness                                                    | 44/38                              | 290 A                                                           | 43/49        |
| Early flowering                                              | 40/2, 4, 5                         | Burley 49                                                       | 43/49        |
| Early fruiting                                               | 40/2, 4                            | Coker 347                                                       | 32/27        |
| Esterase isozyme changes                                     | 40/2, 5                            | CTR1 Special                                                    | 30/22        |
| Fruit quality                                                | 40/3; 44/38                        | Dubek 44                                                        | 41/27        |
| <i>Fusarium oxysporum</i> f. sp.<br><i>cubens</i> resistance | 36/12, 13                          | EX4                                                             | 43/49        |
| <i>Fusarium</i> wilt (race 4)<br>resistance                  | 40/4                               | KY 10                                                           | 43/49        |
| Larger bundle                                                | 35/36                              | KY 15                                                           | 43/49        |
| Larger plant                                                 |                                    | KY 16                                                           | 43/49        |
| Phenotypic variation                                         | 35/13                              | KY 17                                                           | 43/49        |
| Radiosensitivity ( <i>in vitro</i> )                         | 35/13, 36/13                       | TN 86                                                           | 43/49        |
| Shorter plant                                                | 40/4                               | Mutagens used                                                   |              |
| Soluble protein composition                                  | 40/2, 5                            | 5BUdR ( <i>in vitro</i> )                                       | 22/13        |
| Tetraploidy                                                  | 40/5                               | EMS ( <i>in vitro</i> )                                         | 22/13        |
| Yield                                                        | 40/4                               | Gamma rays                                                      | 43/33, 49    |
| Countries                                                    |                                    | <i>In vitro</i> culture                                         | 27/12        |
| Brazil                                                       | 36/12, 13;<br>41/18                | Irradiation (anther culture)                                    | 27/15        |
| FAO/IAEA                                                     | 35/13; 40/3                        | MNNG ( <i>in vitro</i> )                                        | 22/13        |
| Malaysia                                                     | 40/6; 44/38                        | MNU                                                             | 35/15        |
| Quinsland                                                    | 40/5                               | MNU ( <i>in vitro</i> )                                         | 22/13        |
| Thailand                                                     | 35/36                              | NEU ( <i>in vitro</i> )                                         | 22/13        |
| Other information                                            |                                    | Neutrons                                                        | 30/22        |
| <i>In vitro</i> cultures                                     | 35/13; 36/13;<br>40/2, 4; 41/16    | TCNH (taurine-chloroethyl-<br>nitrosourea)                      | 35/15        |
| RAPD analysis                                                | 40/2, 5                            | UV ( <i>in vitro</i> )                                          | 22/13        |
|                                                              |                                    | X-rays ( <i>in vitro</i> )                                      | 22/13; 38/13 |
|                                                              |                                    | Breeding objectives                                             |              |
|                                                              |                                    | Adaptation                                                      | 43/49        |
|                                                              |                                    | Biochemical mutants                                             | 22/13        |
|                                                              |                                    | Blue mould ( <i>Peronospora</i><br><i>tabacina</i> ) resistance | 43/33        |
|                                                              |                                    | Cytoplasmic male sterility                                      | 38/13        |
|                                                              |                                    | Disease resistance                                              | 43/49        |
|                                                              |                                    | DNA repair studies                                              | 35/15        |
|                                                              |                                    | <i>Eryshiphe cichoracearum</i>                                  | 32/27        |

## N

### *Nicotiana tabacum*

Mutant varieties

|                                     |              |
|-------------------------------------|--------------|
| tolerance                           |              |
| Leaf colour                         | 41/27        |
| Leaf size                           | 43/49        |
| <i>Peronospora tabacina</i>         | 32/27        |
| resistance                          |              |
| <i>Phytophthora parasitica</i> var. | 27/15        |
| nicotiana resistance                |              |
| Potato virus Y resistance           | 32/27        |
| Quality                             | 30/22        |
| Salt tolerance                      | 27/12        |
| <i>Thielaviopsis basicola</i>       | 32/27        |
| tolerance                           |              |
| Vigour                              | 43/49        |
| Yield                               | 30/22; 43/49 |
| Countries                           |              |
| Bulgaria                            | 32/27        |
| China                               | 27/12, 15    |
| CSSR                                | 35/15        |
| India                               | 22/17; 30/22 |
| Iraq                                | 43/49        |
| Japan                               | 38/13        |
| Turkey                              | 43/34        |
| UK                                  | 35/15        |
| USA                                 | 43/49        |
| USSR                                | 41/27        |
| Other information                   |              |
| Unequal cell fusion                 | 38/13        |

## O

**Oat** see *Avena sativa*

**Okra** see *Abelmoschus esculentus*

**Onion** see *Allium cepa*

***Onobrychis viciifolia***

|                     |              |
|---------------------|--------------|
| Mutant varieties    |              |
| Kirovogradskij 13   | 31/28        |
| Krasnodarskii 84    | 41/27        |
| Varieties treated   |              |
| Krasnodarskii 2834  | 41/27        |
| Peschanyj 1251      | 31/28        |
| Mutagens used       |              |
| Chemical mutagen    | 41/27        |
| MNU                 | 31/28        |
| Breeding objectives |              |
| Green mass          | 31/28        |
| Hay yield           | 31/28        |
| Yield               | 41/27        |
| Countries           |              |
| USSR                | 31/28; 41/27 |

***Opium poppy*** see *Papaver somniferum*

**Orange** see *Citrus*

**Oriental mustard** see *Brassica*

***juncea***

***Ornithopus compressus***

|                           |       |
|---------------------------|-------|
| Other mutants mentioned   |       |
| WTD-8008                  | 28/18 |
| Varieties treated         |       |
| Mazurska Biala            | 28/16 |
| Other varieties mentioned |       |
| Bydgoska                  | 28/17 |
| Lacerta                   | 28/17 |
| KOB-4189                  | 28/17 |
| Warta                     | 28/17 |
| Mutagens used             |       |
| EMS                       | 28/16 |
| Breeding objectives       |       |
| Bunchy plant type         | 28/16 |
| Erectoides                | 28/16 |
| Stem and branch number    | 28/18 |
| Countries                 |       |
| Poland                    | 28/18 |

***Oryza glaberrima***

|                         |       |
|-------------------------|-------|
| Varieties treated       |       |
| 127/d                   | 37/15 |
| Mutagens used           |       |
| Gamma rays              | 37/15 |
| Breeding objectives     |       |
| Avoidance of chimerism  | 37/15 |
| Countries               |       |
| India                   | 37/16 |
| Other information       |       |
| <i>In vitro</i> culture | 37/15 |

***Oryza sativa***

|                      |                                    |
|----------------------|------------------------------------|
| Mutant varieties     |                                    |
| 2205                 | 27/6                               |
| 652                  | 30/25                              |
| 6B (6 B)             | 29/4; 31/30                        |
| 7201                 | 27/3                               |
| 7404                 | 31/30                              |
| 7738                 | 25/15                              |
| 8013                 | 27/2                               |
| A-20                 | 42/28                              |
| A-201                | 44/38                              |
| Aichinokaori         | 42/29                              |
| Aifu No. 9           | 25/12; 27/3                        |
| Ailiutiaohong        | 37/34                              |
| Akichikara           | 32/28                              |
| Akihikari            | 21/16; 32/28                       |
| Amber-Baghdad        | 43/49                              |
| Amber-Furat          | 43/50                              |
| Amber-Manathera      | 43/50                              |
| Atomita 1            | 21/6,7,15;<br>25/7                 |
| Atomita 3            | 42/29                              |
| Atomita 4            | 42/29                              |
| Atomita-2 (627-5PsJ) | 23/18; 25/7,<br>15; 29/4;<br>31/30 |

|                                          |                                                       |                             |                                |
|------------------------------------------|-------------------------------------------------------|-----------------------------|--------------------------------|
| Au-1                                     | 29/23                                                 | Fuzhu                       | 25/15                          |
| Aya                                      | 42/29                                                 | Fuzao No. 2                 | 25/13; 43/3, 5                 |
| B-fu-1                                   | 29/15, 23                                             | Gangai A/ Fuhai 06 (hybrid) | 35/37                          |
| Binadhan 6                               | 44/38                                                 | Ginnosei                    | 42/30                          |
| Binasail                                 | 31/29                                                 | Guangdabai                  | 25/15                          |
| Bioryza                                  | 35/5                                                  | Guangfu No. 1               | 25/16                          |
| Biraj (CNM 539)                          | 29/24                                                 | Guifu No. 3                 | 25/14                          |
| BPI Ri 10                                | 42/29                                                 | H-4 dwarf mutant (Kota H-4) | 23/5                           |
| Calmochi 101                             | 28/22; 34/22;<br>36/13; 44/40                         | Hanahikari                  | 21/14                          |
| Calmochi 201                             | 25/15                                                 | Hangfeng                    | 30/23                          |
| Calmochi 202                             | 25/15                                                 | Hari (TR-RNR-21)            | 33/17; 34/31                   |
| Calpearl                                 | 23/18; 29/14;<br>36/13; 44/40                         | Hatsukogane                 | 32/28                          |
| Calrose 76                               | 23/18; 25/15;<br>29/13; 30/12;<br>13; 34/22;<br>42/32 | Hatsuyume                   | 35/22                          |
| Camago-8                                 | 43/50                                                 | Heiseimochi                 | 42/30                          |
| Ce 48                                    | 27/3                                                  | Hirohikari                  | 42/30                          |
| Chenzao No. 5                            | 30/23                                                 | Hongmeizao                  | 43/3, 5                        |
| Chuukan-bohon Nou-13                     | 42/29                                                 | Hongnan                     | 25/16                          |
| Chuukan-bohon Nou-14                     | 42/29                                                 | Hongtu 31                   | 31/29                          |
| Cilosari                                 | 44/39                                                 | Hokuriku 100                | 33/32; 42/31                   |
| Daisenminori                             | 35/36                                                 | Houhai                      | 21/16                          |
| Dalris 11                                | 31/29                                                 | HPU 8020 (IET 5878)         | 29/24                          |
| Danau atas                               | 35/36                                                 | Hu 2205                     | 41/28                          |
| DB-2                                     | 42/29                                                 | Huangpiai                   | 25/12                          |
| DB 250                                   | 30/23                                                 | HUR-36                      | 42/30                          |
| DCM-1                                    | 42/29                                                 | Hyoeki-sake 18              | 21/14, 15, 16                  |
| Dellmont                                 | 43/50                                                 | Ibuki-wase                  | 32/28                          |
| Domannaka                                | 42/29                                                 | Ikungbau 4-2                | 37/34                          |
| Dongting No. 3                           | 21/14                                                 | Indira                      | 29/24                          |
| DT-10                                    | 42/30                                                 | Intan Mutant                | 35/37                          |
| DT-11                                    | 43/50                                                 | IR 36                       | 44/39                          |
| Er Jiu Feng (Erjiufeng) =<br>(Erjiufong) | 27/3; 30/23;<br>43/3, 5                               | IRAT 101 (M55)              | 33/27                          |
| Erfuzao                                  | 25/12                                                 | IRAT 104                    | 34/32                          |
| Fu 709                                   | 25/13                                                 | IRAT 109                    | 37/34                          |
| Fu 774                                   | 37/34                                                 | IRAT 110                    | 37/34                          |
| Fu 78-12 <sup>2</sup>                    | 37/36                                                 | IRAT 112                    | 34/32; 37/35                   |
| Fu Gui No. 1                             | 27/5                                                  | IRAT 113                    | 33/27                          |
| Fuchuerai                                | 37/34, 35                                             | IRAT 114                    | 33/27                          |
| Fuhui 06                                 | 35/37                                                 | IRAT 115                    | 33/27                          |
| Fukei 102                                | 32/27, 28                                             | IRAT 116                    | 33/27                          |
| Fukei 104                                | 42/32                                                 | IRAT 117                    | 33/27                          |
| Fukei 70                                 | 21/14                                                 | IRAT 13                     | 34/32; 35/37,<br>38; 37/34, 35 |
| Fulianai                                 | 25/12; 43/3, 5                                        | IRAT 133                    | 35/37                          |
| Fu-no 101                                | 33/26                                                 | IRAT 134                    | 35/37                          |
| Funo 402                                 | 35/37                                                 | IRAT 136                    | 37/34                          |
| Funong 709                               | 35/39                                                 | IRAT 144                    | 34/32                          |
| Fushe 31                                 | 25/12                                                 | IRAT 146                    | 35/38                          |
| Fushe 94                                 | 25/13                                                 | IRAT 147                    | 37/35                          |
| Fushenongken 58                          | 29/24                                                 | IRAT 161                    | 37/35                          |
| Fuxian 6 (Radiation 83-29)               | 37/34                                                 | IRAT 170                    | 34/32                          |
| Fuwan 23                                 | 25/14                                                 | IRAT 177                    | 34/32                          |
| Fuxuan 124                               | 25/13                                                 | IRAT 191 (IREM 191)         | 33/28                          |
| Fuxuan No. 3                             | 25/13                                                 | IRAT 192 (IREM 192)         | 33/28                          |
|                                          |                                                       | IRAT 193 (IREM 193)         | 33/28                          |
|                                          |                                                       | IRAT 194 (IREM 194)         | 33/28                          |
|                                          |                                                       | IRAT 195 (IREM 195)         | 33/28                          |
|                                          |                                                       | IRAT 196 (IREM 196)         | 33/29                          |
|                                          |                                                       | IRAT 213                    | 37/35                          |

|                             |                |                              |               |
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| IRAT 214                    | 37/35          | M-102                        | 32/28; 36/13  |
| IRAT 216 (IDSA 6)           | 34/32          | M-103                        | 36/13         |
| IRAT 239 (IREM 779)         | 33/29          | M112                         | 27/3, 4       |
| IRAT 240 (IRAEM 950)        | 33/29          | M114                         | 25/16         |
| IRAT 241 (IREM 73-2)        | 33/29          | M-202 (PI 494105)            | 28/21; 34/22; |
| IRAT 242 (IREM 575-1)       | 33/29          |                              | 36/13         |
| IRAT 243 (IREM 15-2)        | 33/29          | M-203 (86-Y-35)              | 37/35         |
| IRAT 244 (IREM 12-5)        | 33/29          | M-204                        | 43/51         |
| IRAT 245 (IREM 431-1-1)     | 33/30          | M-302                        | 25/15         |
| IRAT 246 (IREM 346-3)       | 33/30          | M-401                        | 36/13; 37/35  |
| IRAT 247 (IREM 75-1)        | 33/30          | Malysh                       | 40/15         |
| IRAT 248 (IREM 2-1)         | 33/30          | Marathon (Mara 136)          | 30/23         |
| IRAT 249 (IREM 123-2-2)     | 33/30          | Marjan                       | 31/29         |
| IRAT 250 (IREM 52-1)        | 33/30          | Matsukaori                   | 21/16         |
| IRAT 251 (IREM 297-3)       | 33/31          | Matsukomachi                 | 21/16         |
| IRAT 252 (IREM 46-4)        | 33/31          | Megumi-mochi                 | 32/27         |
| IRAT 253 (IREM 50-2)        | 33/31          | MI-273(m)                    | 29/25         |
| IRAT 254 (IREM 53-2)        | 33/31          | Mercury                      | 35/38; 44/39  |
| IRAT 255 (IREM 35/2)        | 33/31          | Miyamanishiki                | 42/30         |
| IRAT 256 (IREM 46-2)        | 33/31          | Mineasahi                    | 32/28         |
| IRAT 257 (IREM 41-1-3)      | 33/31          | Minesaki                     | 21/15         |
| IRAT 258 (IREM 41-1-4)      | 33/32          | Minnuo 706                   | 35/38         |
| IRAT 268                    | 37/35          | Minyuan 1                    | 35/39         |
| IRAT 269                    | 37/35          | Mohan                        | 37/35         |
| IRAT 320                    | 37/35          | MT-4                         | 42/31         |
| IRAT 4 (IRAT 51)            | 33/26          | MT-6                         | 43/51         |
| IRAT 5 (IRAT 52)            | 33/26          | MTU-17                       | 42/32         |
| IRAT 78 (M18)               | 33/26          | Musashikogane                | 21/16         |
| IRAT 79 (M45)               | 33/26; 34/32   | Mutant 428                   | 40/15         |
| IRATOM 24 (Iratom 24)       | 21/7; 29/24;   | Mutashali                    | 30/23         |
|                             | 44/38          | Mutsuhomare                  | 32/28         |
| IRATOM 38                   | 21/7           | Nadahikari                   | 21/15         |
| IRI 307                     | 44/39          | Niigatawase                  | 21/15         |
| ITA 123                     | 42/30, 31      | Nijihikari                   | 42/31         |
| ITA 235                     | 42/30          | NN 22-98                     | 30/23         |
| ITA 314                     | 42/31          | Norin PL 12                  | 42/31         |
| Jagannath                   | 29/12, 24, 25; | Nucus 2                      | 40/15         |
|                             | 34/21          | Oltenita                     | 44/39         |
| Jiasifu                     | 25/13          | Oryzella                     | 30/24         |
| Jiguang No. 4               | 31/30          | Padmini                      | 37/35         |
| Jinfu No. 8                 | 25/12          | PL-56                        | 29/25         |
| Jinfu No.1                  | 25/12          | Prabhavati (PBN-1)           | 28/1; 29/25   |
| Jingnou No. 6               | 31/29          | Pusa-NR-162                  | 42/31         |
| Juangyebai                  | 25/14          | Pusa-NR-166                  | 42/31         |
| Jwate 21                    | 35/38          | Pusa-NR-381                  | 42/31         |
| K84                         | 29/24          | Pusa-NR-519                  | 42/32         |
| Kanto 79                    | 42/29          | Pusa-NR-550-1-2 (JD-8)       | 44/39         |
| Katsurawase                 | 21/15          | Pusa-NR-551-4-20 (JD-6)      | 44/39         |
| Kefuhong No. 2              | 25/16          | Pusa-NR-555-28 (JD-10)       | 44/40         |
| Kemei                       | 43/3, 5        | Pusa-NR-555-5 (JD-3)         | 42/32; 44/40  |
| Keshari                     | 29/24          | Pusa-NR-570-17               | 42/32         |
| Khao Jao Hawm Pitasanulok 1 | 44/39          | Pusa-NR-571                  | 44/40         |
| Kinuhikari                  | 42/31          | Pygmalion                    | 35/39         |
| Koihime                     | 42/31          | Qikesui                      | 30/24         |
| Kunihikari                  | 33/32          | Qing-Hua-Ai No. 6 (Qinghuaai | 27/5; 37/35,  |
| Lafitte                     | 44/39          | 6)                           | 37            |
| Liaoyan                     | 41/28          | Qing Wei No. 1 (Qingwei No.  | 27/6; 37/36   |
| M-101                       | 32/28; 34/22   | 1)                           |               |

|                                            |                                     |                               |                                         |
|--------------------------------------------|-------------------------------------|-------------------------------|-----------------------------------------|
| QiuFu No. 1                                | 31/29                               | Weiyuaji                      | 31/30                                   |
| R 462                                      | 30/24                               | Xiang-Fu 81-10                | 27/4                                    |
| R817 (R 817)                               | 30/1; 31/30                         | Xiangfu 81-10 (Xiangzaoluo 1) | 30/25                                   |
| Radiation 85-63                            | 37/36                               | Xiangfudao                    | 25/14                                   |
| Radiation 9-1                              | 37/36                               | Xianghu 24                    | 35/39                                   |
| Rasmi (PTB 44)                             | 30/24                               | Xiaofuzao                     | 25/13                                   |
| Reimei                                     | 21/14, 16, 17; 30/23; 42/30, 31, 33 | Xindao No. 1                  | 31/30                                   |
| Rokkonishiki                               | 21/16                               | Xiongyue 613                  | 25/11                                   |
| Sachiminori                                | 21/15                               | Xiushui 48                    | 35/39                                   |
| S-101                                      | 36/13                               | Yanzhengfu                    | 37/37                                   |
| S-102                                      |                                     | Yeng-Hsing-1                  | 29/25                                   |
| S-201                                      | 34/22; 36/13                        | Yeng-Hsing-2                  | 29/25                                   |
| S2-Calpearl                                | 37/36                               | Yuan Fengzao (Yuanfenzao) =   | 27/2, 3; 30/23; 34/8; 43/3              |
| S-301                                      | 42/32                               | Yuangfenzao                   | 42/33                                   |
| Salir                                      | 30/24                               | Yumeminori                    | 25/13                                   |
| Sattari (CRM 13-3241)                      | 29/25                               | Yifunuo No.1                  | 43/3, 4, 5                              |
| Savitri (Ponmani) (CR 210-1009)            | 29/25                               | Zhefu 218                     | 43/3, 4, 5                              |
| Shadab (IR 6-18)                           | 30/24; 43/35                        | Zhefu 762                     | 25/15; 26/2; 27/2, 4; 30/25; 43/3, 4, 5 |
| Shanghai Fragrant Japonica Rice 832        | 35/39                               | Zhefu 802                     | 43/3, 4, 5, 51                          |
| Shanghai Fragrant Blood Glutinous Rice 861 |                                     | Zhefu No. 7 Zhefu 7)          | 43/3, 4, 5                              |
| Shinanosakigake                            | 21/17                               | Zhefu No. 9                   | 25/13                                   |
| Shirakabanishiki                           | 21/17                               | Zhenfu No. 1                  | 25/14                                   |
| Short Mars                                 | 35/38                               | Zhengguang No.1               | 25/14                                   |
| Shua 92                                    | 42/32; 43/35                        | Zhongbao No. 2                | 30/25                                   |
| Shuangchengnuo                             | 25/15                               | Zhongtie                      | 27/4                                    |
| Shuangchiang 30-21 (SH-30-21)              | 30/24                               | Zhongtie 31                   | 27/5                                    |
| Shuangke No. 1                             | 25/16; 43/3, 5                      | Zhu-Bao 384                   | 37/34                                   |
| Shuiyaa                                    | 27/2                                | Zhuyin C6965                  | 40/15                                   |
| Sifu 851                                   | 30/25                               | Zlotistyi                     |                                         |
| Simei No. 2                                | 43/3, 4, 5                          | Other mutants mentioned       |                                         |
| Suifu 17                                   | 25/15                               | 409 MU 15                     | 28/6                                    |
| Suzutakara                                 | 42/32                               | 410 MU 28                     | 28/6                                    |
| Taifu No. 4                                | 30/25                               | 410 MU 30                     | 28/6                                    |
| Tang Er Nian (Tangernian)                  | 27/6; 37/36                         | 44-1086                       | 43/3, 5                                 |
| T131                                       | 27/3                                | 54257                         | 35/24                                   |
| T151                                       | 27/3                                | 627/10-3PsJ                   | 25/7                                    |
| Tori Kei 4                                 | 35/26                               | 627/4/214-PsJ                 | 21/6                                    |
| Tottori-4                                  | 42/31                               | 627/4-E/PsJ                   | 25/7                                    |
| Tsugaruotome                               | 42/32                               | 7056                          | 35/38                                   |
| UNP 9027                                   | 43/51                               | 83-E 26                       | 27/7                                    |
| Valencia                                   | 36/13                               | A227/2/PsJ                    | 25/7                                    |
| Valencia 87                                | 37/37                               | A227/3/PsJ                    | 25/7                                    |
| Vellayani                                  | 29/25                               | A227/5/PsJ                    | 25/7                                    |
| VN 10                                      | 29/4, 26                            | A5                            |                                         |
| VN 20                                      | 29/4; 26                            | BE3-37-5                      | 42/29                                   |
| VN 4                                       | 29/4, 25                            | Boo 37                        | 27/3                                    |
| VND95-26                                   | 44/40                               | BPI 121-407                   | 42/29                                   |
| Wandao 23                                  | 43/3, 5                             | BU 79                         | 30/17                                   |
| Wanfu 33                                   | 25/14                               | C2-13                         | 29/25                                   |
| Wanhua                                     | 37/37                               | Calpearl S-1                  | 29/14                                   |
| Wangeng 257                                | 25/14                               | Calpearl S-2                  | 29/14                                   |
| Wei A/Jiguang 4 (hybrid)                   | 32/28                               | CICA 8 MU 37                  | 28/7                                    |
|                                            |                                     | CICA 8 MU 53                  | 28/6                                    |

|                                                                                |                     |                        |                                      |
|--------------------------------------------------------------------------------|---------------------|------------------------|--------------------------------------|
| CNM-RDP-35                                                                     | 29/12               | M202                   | 34/10                                |
| CNM-RDP-50                                                                     | 29/12               | M207                   | 34/10                                |
| CR 1010                                                                        | 29/12               | M210                   | 34/10                                |
| CR 1017                                                                        | 29/12               | M41                    | 35/21                                |
| CR 1018                                                                        | 29/12               | M57                    | 35/21                                |
| CRM 42 – CRM 54                                                                | 44/23               | M6                     | 34/10                                |
| CRM 49                                                                         | 44/24               | M7 (M-7)               | 28/22; 30/12,<br>13; 34/22;<br>43/51 |
| CRM 51                                                                         | 44/24               |                        |                                      |
| CRM 53                                                                         | 44/24               | MI-273 (m)             | 23/4,5                               |
| CRM 58                                                                         | 44/23               | Mut 1-1                | 21/7                                 |
| D7                                                                             | 29/13               | Mut 1-2                | 21/7                                 |
| D51                                                                            | 25/15               | Mutant 17              | 44/40                                |
| Dan Fu Hei Nuo                                                                 | 27/3                | Mutant of IR8          | 25/13, 16                            |
| Della X2                                                                       | 43/50               | MW-10 mutant           | 42/32; 44/40                         |
| Dular mutant                                                                   | 42/32; 44/39,<br>40 | N-20                   | 42/28                                |
| FG-19                                                                          | 24/5                | N-22 mut.              | 42/32; 44/39                         |
| Fu-06                                                                          | 27/6                | N-30                   | 42/28                                |
| Fu8238                                                                         | 27/3                | NFD 137-127-3          | 29/14                                |
| Fu 9 Cong Shen                                                                 | 43/3, 5             | NFD 137-127-4          | 29/14                                |
| Fukei 104                                                                      | 21/16               | NFD 137-131-2          | 29/14                                |
| Fukei 71                                                                       | 21/15               | NFD 137-131-3          | 29/14                                |
| Fukei 91                                                                       | 21/15               | NM 391                 | 42/29                                |
| Ginbozu dwarf                                                                  | 35/19               | Nong Shi 4             | 27/3                                 |
| Gora mut.                                                                      | 42/32               | NS 1                   | 26/9                                 |
| Hong Tu31                                                                      | 27/3                | NS2                    | 23/10                                |
| Hokuriku 100                                                                   | 35/19               | PBN1                   | 28/1                                 |
| IM-106                                                                         | 21/14               | PI 457920              | 44/39                                |
| IR8-FG-26                                                                      | 24/5                | PSBG-1                 | 40/8                                 |
| IR8-FG-33                                                                      | 24/5                | R-16                   | 29/14                                |
| IR-8 mut.                                                                      | 42/31               | R-31                   | 29/14                                |
| IRAT 115                                                                       | 31/6                | R-34                   | 29/14                                |
| IRAT 13                                                                        | 28/11, 31/6         | R <sub>4</sub> -B      | 21/15                                |
| IRAT 78, 79, 101, 113-117,<br>191-196, 239, 240, 241-249,<br>250-256, 257, 258 | 28/11               | R462                   | 27/5                                 |
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| Toro-2                           | 30/12                |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Toyonishiki                      | 42/30, 31            |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Wagwag                           | 44/26                |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Wei 20A                          | 31/30                |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Wei A                            | 32/28                |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Xuan No. 2                       | 32/10                |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Yamadanishiki                    | 21/14                |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Yamagata-29                      | 42/29                |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Yamasenishiki                    | 21/15                |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Zhengshan 97                     | 35/24                |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Mutagens used                    |                      |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 5-azacytidine                    | 35/19                |                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

|                                          |                                                                                                                                                              |                            |                                                                                                                                                                                                                                           |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Laser                                    | 31/30; 32/28                                                                                                                                                 | Combining ability          | 43/3, 4, 51                                                                                                                                                                                                                               |
| Microwave                                | 21/14                                                                                                                                                        | Compact type               | 38/9                                                                                                                                                                                                                                      |
| MNU (MNH)                                | 31/29; 33/2;<br>35/22; 40/15;<br>42/28, 29                                                                                                                   | Conditional albino mutant  | 25/15                                                                                                                                                                                                                                     |
| MNU ( <i>in vitro</i> )                  | 35/4                                                                                                                                                         | Cooking quality            | 29/25; 30/24;<br>34/32; 35/36,<br>38; 37/34, 36;<br>40/15; 41/28;<br>43/3, 50                                                                                                                                                             |
| NEU (NEH) = (ENH)                        | 30/23; 42/29,<br>31                                                                                                                                          | Cytoplasmic male sterility | 32/6                                                                                                                                                                                                                                      |
| NEH ( <i>in vitro</i> )                  | 29/7                                                                                                                                                         | Day lenght tolerance       | 31/29; 35/39                                                                                                                                                                                                                              |
| Neutrons                                 | 23/4; 25/13,<br>14; 29/25;<br>35/20                                                                                                                          | Disease resistance         | 25/15; 27/4,<br>5, 6; 30/25;<br>31/30; 37/35,<br>36, 37; 42/29,<br>30, 32; 43/50,<br>51                                                                                                                                                   |
| Physical mutagens                        | 38/9                                                                                                                                                         | Drought tolerance          | 35/36                                                                                                                                                                                                                                     |
| Sodium azide                             | 44/23                                                                                                                                                        | Dwarfness                  | 24/7; 29/12;<br>33/7; 34/21;<br>35/18; 36/4;<br>37/34                                                                                                                                                                                     |
| Somaclonal variation                     | 35/4, 22, 24                                                                                                                                                 | Eating quality             | 33/32                                                                                                                                                                                                                                     |
| Spontaneous mutations                    | 35/18, 19, 20                                                                                                                                                | Earliness                  | 21/6,14,15;<br>22/8; 24/5;<br>28/21, 22;<br>29/23, 24, 25;<br>34/21; 35/38;<br>38/9; 40/15;<br>42/28, 29, 30,<br>31, 32; 43/3,<br>50, 51; 44/40,<br>41                                                                                    |
| Streptomycin sulphate                    | 32/5                                                                                                                                                         | Early maturity             | 23/10, 18;<br>25/12, 13, 14,<br>15, 16; 26/2,<br>9; 27/2, 3, 5,<br>6; 28/6; 29/4,<br>13, 15, 24,<br>25; 30/1, 23,<br>24, 25; 31/29,<br>30; 32/28;<br>33/26, 28, 29;<br>34/32; 35/5,<br>18, 22; 35/37;<br>37/34, 35, 36;<br>40/7; 43/3, 51 |
| Thermal neutrons                         | 35/21                                                                                                                                                        | Eating quality             | 42/29, 31;<br>43/3                                                                                                                                                                                                                        |
| X-rays                                   | 29/12, 24;<br>30/24; 34/21;<br>35/17, 39;<br>37/34                                                                                                           | Erectoid type              | 29/25                                                                                                                                                                                                                                     |
| Breeding objectives                      |                                                                                                                                                              | Embryo development         | 35/22                                                                                                                                                                                                                                     |
| Adaptability                             | 28/12; 30/25;<br>33/27; 35/39;<br>37/36; 43/3, 4                                                                                                             | Fertilizer tolerance       | 25/14; 27/3                                                                                                                                                                                                                               |
| Al tolerance                             | 33/2                                                                                                                                                         | Fulgorid resistance        | 25/16                                                                                                                                                                                                                                     |
| Amylose content                          | 35/20; 42/29                                                                                                                                                 | GLH resistance             | 21/6,15                                                                                                                                                                                                                                   |
| Awnless                                  | 25/15; 30/24                                                                                                                                                 | Glutinosity                | 27/4; 30/1,<br>25; 31/30;<br>32/27; 33/26;<br>35/18, 37, 38,<br>39; 44/40                                                                                                                                                                 |
| Bacterial leaf blast (BLB)<br>resistance | 21/8; 27/4, 6;<br>30/25; 35/21;<br>37/34, 36                                                                                                                 | Grain quality              | 21/14,15;<br>22/8; 24/5;<br>25/15; 27/3,<br>4, 5, 6; 29/25;                                                                                                                                                                               |
| Biochemical mutants                      | 22/15                                                                                                                                                        |                            |                                                                                                                                                                                                                                           |
| Blast resistance                         | 21/6,15;<br>23/18; 25/11,<br>12; 13, 14,<br>15, 16; 26/2;<br>27/3, 4, 5;<br>30/1, 25;<br>31/29, 30;<br>35/36, 38, 39;<br>42/30, 31;<br>43/3, 4, 50;<br>44/23 |                            |                                                                                                                                                                                                                                           |
| Blight resistance                        | 30/23, 25;<br>31/29, 30;<br>35/39                                                                                                                            |                            |                                                                                                                                                                                                                                           |
| Brewing quality                          | 42/30                                                                                                                                                        |                            |                                                                                                                                                                                                                                           |
| Brown plant hopper (BPH)<br>resistance   | 21/6,15;<br>23/18; 25/7,<br>15, 16; 31/29;<br>35/18                                                                                                          |                            |                                                                                                                                                                                                                                           |
| Callus induction and<br>regeneration     | 35/23                                                                                                                                                        |                            |                                                                                                                                                                                                                                           |
| Cell fusion                              | 35/22                                                                                                                                                        |                            |                                                                                                                                                                                                                                           |
| Chlorophyll mutants                      | 22/15                                                                                                                                                        |                            |                                                                                                                                                                                                                                           |
| Clustered spikelets                      | 35/21                                                                                                                                                        |                            |                                                                                                                                                                                                                                           |
| Cold tolerance                           | 25/13, 14, 15,<br>16; 27/4;<br>29/4; 31/29,<br>30; 32/28;<br>35/39; 37/34;                                                                                   |                            |                                                                                                                                                                                                                                           |

|                                              |                                                                                                                                                                                                                    |                                         |                                                                                                                                                                                                                                                |
|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                              | 30/1, 24;<br>31/29, 33/28,<br>29, 30, 31,<br>32; 37/34, 35,<br>37; 43/50;<br>44/40                                                                                                                                 |                                         |                                                                                                                                                                                                                                                |
| Grain shape                                  | 37/34, 35                                                                                                                                                                                                          |                                         |                                                                                                                                                                                                                                                |
| Grain size                                   | 28/22; 29/24,<br>35/18; 37/35;<br>42/30, 31, 32                                                                                                                                                                    |                                         |                                                                                                                                                                                                                                                |
| Green leaf hopper resistance                 | 31/29                                                                                                                                                                                                              |                                         |                                                                                                                                                                                                                                                |
| Heading time                                 | 35/17                                                                                                                                                                                                              |                                         |                                                                                                                                                                                                                                                |
| <i>Helminthosporium oryzae</i><br>resistance | 33/9                                                                                                                                                                                                               |                                         |                                                                                                                                                                                                                                                |
| Herbicide tolerance                          | 34/8                                                                                                                                                                                                               |                                         |                                                                                                                                                                                                                                                |
| Heterosis                                    | 27/6; 30/11;<br>32/28; 38/9                                                                                                                                                                                        |                                         |                                                                                                                                                                                                                                                |
| Higher temperature resistance                | 25/16                                                                                                                                                                                                              |                                         |                                                                                                                                                                                                                                                |
| Hybrid seed production                       | 35/37; 43/15                                                                                                                                                                                                       |                                         |                                                                                                                                                                                                                                                |
| Insect resistance                            | 37/34                                                                                                                                                                                                              |                                         |                                                                                                                                                                                                                                                |
| Intermediate maturity                        | 25/15, 16                                                                                                                                                                                                          |                                         |                                                                                                                                                                                                                                                |
| Iron chlorosis tolerance                     | 28/1; 29/25                                                                                                                                                                                                        |                                         |                                                                                                                                                                                                                                                |
| Large grain                                  | 21/14, 15,<br>16,17; 25/14;<br>35/21; 37/35                                                                                                                                                                        |                                         |                                                                                                                                                                                                                                                |
| Large panicle                                | 26/2; 27/4;<br>29/4; 31/29,<br>30                                                                                                                                                                                  |                                         |                                                                                                                                                                                                                                                |
| Late maturing                                | 43/3                                                                                                                                                                                                               |                                         |                                                                                                                                                                                                                                                |
| Leaf blight resistance                       | 27/3                                                                                                                                                                                                               |                                         |                                                                                                                                                                                                                                                |
| Leaf morphology                              | 43/51                                                                                                                                                                                                              |                                         |                                                                                                                                                                                                                                                |
| Lodging resistance                           | 21/14,15,16;<br>23/5, 18;<br>25/13, 15;<br>28/1, 11;<br>29/25; 30/23;<br>31/30; 32/28;<br>33/28, 32, 32;<br>34/32; 35/36,<br>38; 36/4;<br>37/37; 40/15;<br>41/28; 42/29,<br>30, 31, 32,<br>33; 43/49, 50;<br>44/39 |                                         |                                                                                                                                                                                                                                                |
| Long grain                                   | 27/4; 30/24,<br>25; 35/18, 39                                                                                                                                                                                      |                                         |                                                                                                                                                                                                                                                |
| Low pH tolerance                             | 35/36                                                                                                                                                                                                              |                                         |                                                                                                                                                                                                                                                |
| Low temperature tolerance                    | 21/14, 16;<br>27/3; 30/24                                                                                                                                                                                          |                                         |                                                                                                                                                                                                                                                |
| Lush growth                                  | 30/24                                                                                                                                                                                                              |                                         |                                                                                                                                                                                                                                                |
| Male sterility                               | 35/19, 24                                                                                                                                                                                                          |                                         |                                                                                                                                                                                                                                                |
| Nitrogen response                            | 43/51                                                                                                                                                                                                              |                                         |                                                                                                                                                                                                                                                |
| <i>Orseolia oryzae</i> tolerance             | 34/21                                                                                                                                                                                                              |                                         |                                                                                                                                                                                                                                                |
| Panicle length                               | 30/17                                                                                                                                                                                                              |                                         |                                                                                                                                                                                                                                                |
| Panicle size                                 | 42/30                                                                                                                                                                                                              |                                         |                                                                                                                                                                                                                                                |
| PEG resistance                               | 24/6                                                                                                                                                                                                               |                                         |                                                                                                                                                                                                                                                |
| Pest resistance                              | 42/29, 32                                                                                                                                                                                                          |                                         |                                                                                                                                                                                                                                                |
| Photonasty                                   | 35/39                                                                                                                                                                                                              |                                         |                                                                                                                                                                                                                                                |
| Photoperiod insensitive male<br>sterility    | 35/20                                                                                                                                                                                                              |                                         |                                                                                                                                                                                                                                                |
|                                              |                                                                                                                                                                                                                    | Photoperiod insensitivity               | 28/21, 22;<br>35/37; 37/35;<br>43/51                                                                                                                                                                                                           |
|                                              |                                                                                                                                                                                                                    | Photosynthetic rate                     | 25/7                                                                                                                                                                                                                                           |
|                                              |                                                                                                                                                                                                                    | Protein content                         | 21/7; 24/5;<br>25/16; 26/2;<br>27/3, 4;<br>31/29; 34/21                                                                                                                                                                                        |
|                                              |                                                                                                                                                                                                                    | <i>Pyricularia oryzae</i> resistance    | 30/23; 31/6;<br>33/26; 34/32;<br>35/22; 37/34                                                                                                                                                                                                  |
|                                              |                                                                                                                                                                                                                    | Quality                                 | 25/11, 14;<br>30/23, 24;<br>31/30; 43/5                                                                                                                                                                                                        |
|                                              |                                                                                                                                                                                                                    | RYMV resistance                         | 42/30                                                                                                                                                                                                                                          |
|                                              |                                                                                                                                                                                                                    | Root growth                             | 35/20                                                                                                                                                                                                                                          |
|                                              |                                                                                                                                                                                                                    | RuP <sub>2</sub> carboxylase activities | 24/7                                                                                                                                                                                                                                           |
|                                              |                                                                                                                                                                                                                    | Sake brewing                            | 21/17                                                                                                                                                                                                                                          |
|                                              |                                                                                                                                                                                                                    | Salinity test                           | 44/26                                                                                                                                                                                                                                          |
|                                              |                                                                                                                                                                                                                    | Salt tolerance                          | 22/8; 23/18;<br>24/6; 25/16;<br>29/4, 7;<br>30/24; 31/30;<br>33/2; 35/22;<br>37/35; 41/28;<br>42/28, 32;<br>43/36                                                                                                                              |
|                                              |                                                                                                                                                                                                                    | Seed retention                          | 40/15                                                                                                                                                                                                                                          |
|                                              |                                                                                                                                                                                                                    | Semi-dwarfness                          | 23/8; 24/5, 6;<br>27/5; 28/1,<br>11; 28/21, 22;<br>30/12; 31/5,<br>6; 33/7, 16;<br>34/10; 35/18,<br>19, 22; 35/38;<br>36/4; 37/37;<br>42/29, 30, ,<br>31, 32; 43/50,<br>51; 44/38, 39,<br>40                                                   |
|                                              |                                                                                                                                                                                                                    | Shattering resistance                   | 30/23; 33/27,<br>28, 32; 35/18                                                                                                                                                                                                                 |
|                                              |                                                                                                                                                                                                                    | Short culm                              | 21/14,15,16;<br>23/5; 24/5;<br>25/12, 13, 14,<br>15; 27/2, 3, 5;<br>29/13, 23, 24,<br>25; 30/23, 24;<br>31/30; 32/27,<br>28; 33/26, 27,<br>28, 29, 31,<br>32; 34/14, 21;<br>34/31; 35/37,<br>38, 39; 37/34,<br>36; 40/7, 15;<br>42/32; 43/3, 4 |
|                                              |                                                                                                                                                                                                                    | <i>Sogatella</i> resistance             | 27/3, 4                                                                                                                                                                                                                                        |
|                                              |                                                                                                                                                                                                                    | Stem borer resistance                   | 30/24                                                                                                                                                                                                                                          |
|                                              |                                                                                                                                                                                                                    | Stiffness                               | 21/14, 15, 16;<br>23/18; 28/1;<br>32/27, 28;<br>42/30; 43/51                                                                                                                                                                                   |
|                                              |                                                                                                                                                                                                                    | Stress tolerance                        | 25/12; 27/4                                                                                                                                                                                                                                    |

|                               |                                                                                                                                                                                                                                                                                                                                                                       |                            |                                                                                                                                                                                                                                                                                                   |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Strong culm                   | 30/23, 24;<br>31/29                                                                                                                                                                                                                                                                                                                                                   |                            | 44/38                                                                                                                                                                                                                                                                                             |
| Submergence tolerance         | 29/24, 25;<br>30/23                                                                                                                                                                                                                                                                                                                                                   | Brazil                     | 28/7; 33/28,<br>29, 30, 31,<br>32; 34/32                                                                                                                                                                                                                                                          |
| Sweet smell                   | 27/3                                                                                                                                                                                                                                                                                                                                                                  | Burkina Faso (Upper Volta) | 34/32; 35/38;<br>37/35                                                                                                                                                                                                                                                                            |
| Synchronous flowering         | 42/31                                                                                                                                                                                                                                                                                                                                                                 | Cameroon                   | 33/26, 27                                                                                                                                                                                                                                                                                         |
| Synchronous tillering         | 29/24                                                                                                                                                                                                                                                                                                                                                                 | China                      | 21/14, 25/11,<br>12, 13, 14,<br>15, 16; 26/3;<br>27/3, 4, 5, 6,<br>7; 29/15, 23,<br>24, 25; 30/1,<br>23, 24, 25;<br>31/29, 30;<br>32/28; 33/26;<br>34/9, 21;<br>35/17, 18, 20,<br>23, 24, 37,<br>38, 39; 37/34,<br>35, 36, 37;<br>38/9; 41/28;<br>43/5, 16, 51<br>43/50, 51                       |
| Tallness                      | 26/9; 30/24;<br>31/29; 33/28,<br>29, 30, 31;<br>34/32                                                                                                                                                                                                                                                                                                                 | Costa Rica                 | 33/26, 27;<br>34/32; 35/37;<br>37/34, 35<br>44/28                                                                                                                                                                                                                                                 |
| Taste                         | 21/14, 15;<br>25/15; 27/15;<br>32/28; 42/29                                                                                                                                                                                                                                                                                                                           | Cote d'Ivoire              | 28/12; 30/23;<br>31/6; 35/39                                                                                                                                                                                                                                                                      |
| Temperature stress tolerance  | 26/2                                                                                                                                                                                                                                                                                                                                                                  | FAO/IAEA                   | 33/28, 29, 30,<br>31, 32<br>34/32                                                                                                                                                                                                                                                                 |
| Thermosensitive GMS           | 42/31                                                                                                                                                                                                                                                                                                                                                                 | France                     | 30/23, 24<br>22/8, 17;<br>23/8; 24/5, 6,<br>7; 28/1; 29/12<br>23, 24, 25;<br>30/17, 24;<br>32/6; 33/17;<br>34/10, 14, 21,<br>31; 35/21, 23,<br>37; 36/4;<br>37/35; 42/30,<br>31, 32; 44/24,<br>39, 40<br>21/7, 15;<br>23/18; 25/8,<br>16; 32/27, 28;<br>33/7; 35/36;<br>42/29; 44/39<br>43/49, 50 |
| Thrip resistance              | 21/8                                                                                                                                                                                                                                                                                                                                                                  | Guyana                     | 21/14, 15, 16,<br>17; 33/32;<br>35/17, 18, 19,<br>20, 21, 22,<br>23, 36, 38;<br>42/29, 30, 31,<br>32, 33<br>35/19; 44/39                                                                                                                                                                          |
| Tillering                     | 23/4; 25/13,<br>14; 29/25;<br>30/17, 23;<br>31/29; 33/26,<br>27, 28, 29,<br>30, 31; 34/32;<br>35/22, 38;<br>37/34, 36;<br>43/3                                                                                                                                                                                                                                        | Haiti                      | 35/18, 19,<br>20, 21, 22,<br>23, 36, 38;<br>42/29, 30, 31,<br>32, 33<br>35/19; 44/39                                                                                                                                                                                                              |
| Treshability                  | 40/15                                                                                                                                                                                                                                                                                                                                                                 | Hungary                    | 30/23, 24                                                                                                                                                                                                                                                                                         |
| Tungro virus resistance       | 31/29                                                                                                                                                                                                                                                                                                                                                                 | India                      | 22/8, 17;<br>23/8; 24/5, 6,<br>7; 28/1; 29/12<br>23, 24, 25;<br>30/17, 24;<br>32/6; 33/17;<br>34/10, 14, 21,<br>31; 35/21, 23,<br>37; 36/4;<br>37/35; 42/30,<br>31, 32; 44/24,<br>39, 40<br>21/7, 15;<br>23/18; 25/8,<br>16; 32/27, 28;<br>33/7; 35/36;<br>42/29; 44/39<br>43/49, 50              |
| Virus resistance              | 43/50                                                                                                                                                                                                                                                                                                                                                                 | Indonesia                  | 21/14, 15, 16,<br>17; 33/32;<br>35/17, 18, 19,<br>20, 21, 22,<br>23, 36, 38;<br>42/29, 30, 31,<br>32, 33<br>35/19; 44/39                                                                                                                                                                          |
| Waxy endosperm                | 28/22; 35/20                                                                                                                                                                                                                                                                                                                                                          | Iraq                       | 43/49, 50                                                                                                                                                                                                                                                                                         |
| Wide adaptability             | 27/4                                                                                                                                                                                                                                                                                                                                                                  | Japan                      | 21/14, 15, 16,<br>17; 33/32;<br>35/17, 18, 19,<br>20, 21, 22,<br>23, 36, 38;<br>42/29, 30, 31,<br>32, 33<br>35/19; 44/39                                                                                                                                                                          |
| Wine production               | 30/25; 31/30                                                                                                                                                                                                                                                                                                                                                          | Korea                      | 35/18                                                                                                                                                                                                                                                                                             |
| White core grain              | 21/17                                                                                                                                                                                                                                                                                                                                                                 | Malayasia                  | 40/8                                                                                                                                                                                                                                                                                              |
| <i>Xanthomonas</i> resistance | 25/12, 14;<br>27/5                                                                                                                                                                                                                                                                                                                                                    | Myanmar                    | 42/30, 31                                                                                                                                                                                                                                                                                         |
| Yellow stunt resistance       | 25/14                                                                                                                                                                                                                                                                                                                                                                 | Nigeria                    |                                                                                                                                                                                                                                                                                                   |
| Yield                         | 21/14, 15;<br>22/8; 23/5,<br>10, 18; 24/5;<br>25/11, 12, 13,<br>14, 15, 16;<br>26/2, 9; 27/3,<br>4, 5, 6, 7;<br>28/21; 29/4,<br>12, 13, 24,<br>25; 30/1, 17;<br>30/23, 24, 25;<br>31/29, 30;<br>32/10; 32/27,<br>28; 33/17, 26;<br>34/14, 31, 32;<br>35/36, 37, 38,<br>39; 37/34, 35,<br>36, 37; 40/15;<br>42/29, 32;<br>43/3, 4, 36,<br>49, 50; 44/23,<br>38, 39, 40 |                            |                                                                                                                                                                                                                                                                                                   |
| Countries                     |                                                                                                                                                                                                                                                                                                                                                                       |                            |                                                                                                                                                                                                                                                                                                   |
| Bangladesh                    | 21/8; 23/10;<br>26/9; 29/24;<br>31/29; 40/8;                                                                                                                                                                                                                                                                                                                          |                            |                                                                                                                                                                                                                                                                                                   |

|                                   |                                                                                                                                          |                                                             |                    |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|--------------------|
| Pakistan                          | 30/24; 42/32;<br>43/36                                                                                                                   | Cooking quality                                             | 40/16              |
| Portugal                          | 30/24                                                                                                                                    | Green foliage yield                                         | 32/10              |
| Romania                           | 44/39                                                                                                                                    | Non-flowering plant                                         | 32/10              |
| Senegal                           | 33/26                                                                                                                                    | Protein content                                             | 32/10              |
| Sri Lanka                         | 23/4; 29/25                                                                                                                              | Tillering                                                   | 32/10              |
| Thailand                          | 44/39                                                                                                                                    | Countries                                                   |                    |
| The Philippines                   | 33/2; 42/29;<br>44/28                                                                                                                    | India                                                       | 32/10              |
| Togo                              | 34/32                                                                                                                                    | USSR                                                        | 40/16              |
| USA                               | 23/18; 25/15;<br>28/2, 22;<br>29/13; 30/12;<br>32/28; 34/22;<br>35/38; 36/13;<br>37/35, 36, 37;<br>42/32; 43/50,<br>51; 44/38, 39,<br>40 | <b><i>Panicum miliaceum</i></b>                             |                    |
| USSR                              | 31/29; 35/5;<br>40/15                                                                                                                    | Mutant varieties                                            |                    |
| Vietnam                           | 29/4, 7, 25,<br>26; 30/23;<br>31/30; 32/10;<br>42/28, 29, 30,<br>31; 43/50, 51;<br>44/40                                                 | Cheget                                                      | 41/28              |
| Other information                 |                                                                                                                                          | Lipetskoe 19                                                | 30/25              |
| <i>In vitro</i> cultures          | 22/15; 24/6;<br>29/7; 34/22,<br>23, 24                                                                                                   | Other mutants mentioned                                     |                    |
| <i>In vitro</i> selection         | 35/22                                                                                                                                    | Nan 72-4                                                    | 33/5               |
| Protoplast culture                | 35/22, 23                                                                                                                                | Varieties treated                                           |                    |
|                                   |                                                                                                                                          | F <sub>4</sub> line of cross Flavum x<br>Veselopodolyanskoe | 30/25              |
|                                   |                                                                                                                                          | Mutagens used                                               |                    |
|                                   |                                                                                                                                          | Chemical mutagenesis                                        | 41/28              |
|                                   |                                                                                                                                          | DMS + NEH                                                   | 30/25              |
|                                   |                                                                                                                                          | Breeding objectives                                         |                    |
|                                   |                                                                                                                                          | Disease resistance                                          | 41/28              |
|                                   |                                                                                                                                          | Drought resistance                                          | 30/25; 41/28       |
|                                   |                                                                                                                                          | Lodging resistance                                          | 30/25              |
|                                   |                                                                                                                                          | Mildew resistance                                           | 33/5               |
|                                   |                                                                                                                                          | Yield                                                       | 30/25              |
|                                   |                                                                                                                                          | Countries                                                   |                    |
|                                   |                                                                                                                                          | China                                                       | 33/6               |
|                                   |                                                                                                                                          | Ukraine                                                     | 41/28              |
|                                   |                                                                                                                                          | USSR                                                        | 30/25              |
| <b>P</b>                          |                                                                                                                                          | <b><i>Papaver somniferum</i></b>                            |                    |
| <b><i>Pachyrrhizus erosus</i></b> |                                                                                                                                          | Mutant varieties                                            |                    |
| Mutagens used                     |                                                                                                                                          | BC-28/9/4                                                   | 42/33              |
| EMS                               | 36/5; 39/10                                                                                                                              | Vivek                                                       | 42/11              |
| Gamma rays                        | 34/20                                                                                                                                    | Varieties treated                                           |                    |
| Breeding objectives               |                                                                                                                                          | Shweta                                                      | 30/6; 42/10,<br>33 |
| Dwarfness                         | 36/5                                                                                                                                     | Shyama                                                      | 30/6; 42/10        |
| Protein content                   | 39/10                                                                                                                                    | Other varieties mentioned                                   |                    |
| Starch content                    | 39/10                                                                                                                                    | Sanchita                                                    | 42/11              |
| Tuber quality                     | 39/10                                                                                                                                    | Mutagens used                                               |                    |
| Yield                             | 34/20; 39/10                                                                                                                             | EMS                                                         | 30/6; 42/10        |
| Countries                         |                                                                                                                                          | Gamma rays                                                  | 30/6; 42/10,<br>11 |
| India                             | 34/20; 36/6;<br>39/11                                                                                                                    | Gamma rays + EMS                                            | 30/6; 42/10        |
| <b><i>Panicum maximum</i></b>     |                                                                                                                                          | Breeding objectives                                         |                    |
| Mutant varieties                  |                                                                                                                                          | Capsule number                                              | 30/6               |
| Kharkovskoe 57                    | 40/16                                                                                                                                    | Capsule size                                                | 30/6; 42/10,<br>33 |
| Lipetskoe 19                      | 40/16                                                                                                                                    | Dwarfness                                                   | 30/6               |
| Varieties treated                 |                                                                                                                                          | Morphine content                                            | 30/6; 42/11        |
| Kharkovskoe 37                    | 40/16                                                                                                                                    | Morphine yield                                              | 42/11              |
| Line No. 947                      | 40/16                                                                                                                                    | Straw biomass yield                                         | 42/11              |
| Mutagens used                     |                                                                                                                                          | Countries                                                   |                    |
| DMS                               | 40/16                                                                                                                                    | India                                                       | 30/6; 42/11,<br>33 |
| Gamma rays                        | 32/10                                                                                                                                    |                                                             |                    |
| MNH                               | 40/16                                                                                                                                    |                                                             |                    |
| Breeding objectives               |                                                                                                                                          |                                                             |                    |
|                                   |                                                                                                                                          | <b>Papaya see <i>Carica papaya</i></b>                      |                    |

**Pea** see *Pisum sativum*

**Pear** see *Pyrus communis*

**Pearl millet** see *Pennisetum*

***Pelargonium grandiflorum*  
hybrid**

|                     |       |
|---------------------|-------|
| Mutant varieties    |       |
| Dark Mozart         | 35/40 |
| Varieties treated   |       |
| Mozart              | 35/40 |
| Mutagens used       |       |
| X-rays              | 35/40 |
| Breeding objectives |       |
| Flower colour       | 35/40 |
| Countries           |       |
| FRG                 | 35/40 |

***Pennisetum* sp.**

|                                      |                        |
|--------------------------------------|------------------------|
| Mutant varieties                     |                        |
| ICMH 451 (81 A/B)                    | 30/25; 39/3            |
| NHB 3 (hybrid)                       | 37/37                  |
| NHB 4 (hybrid)                       | 37/37                  |
| NHB 5                                | 39/3                   |
| Pusa 46                              | 23/19                  |
| Other mutants mentioned              |                        |
| 81 A/B                               | 30/25                  |
| M46                                  | 23/19                  |
| MS 5071A                             | 37/37                  |
| Tift 23A <sub>1</sub> E <sub>1</sub> | 26/3                   |
| Tift 23B <sub>1</sub> E <sub>1</sub> | 26/3                   |
| ICM A1 (81A)                         | 29/23                  |
| ICM B1 (82B)                         | 29/13                  |
| Varieties treated                    |                        |
| J104 x K559                          | 23/19                  |
| Tift 23                              | 33/10                  |
| Tift 23B                             | 26/3; 37/37            |
| Tift 23 DB                           | 29/13; 30/25           |
| Other varieties mentioned            |                        |
| 111 A                                | 29/13                  |
| 5141 A                               | 29/13                  |
| Inbred 104                           | 33/10                  |
| Inbred 186                           | 33/10                  |
| J104                                 | 37/37                  |
| K560-230                             | 37/37                  |
| Tifton 23DA                          | 29/13                  |
| Mutagens used                        |                        |
| EMS                                  | 26/3                   |
| Gamma rays                           | 29/13; 30/25;<br>37/37 |
| Radiation                            | 23/19                  |
| Thermal neutrons                     | 26/3                   |
| Breeding objectives                  |                        |
| Disease resistance                   | 39/3                   |
| Downy mildew resistance              | 23/19; 29/13;<br>30/25 |
| Earliness                            | 26/3                   |
| Heterosis                            | 33/10                  |

|                                |                              |
|--------------------------------|------------------------------|
| Hybrid production              | 26/3; 29/13;<br>30/25        |
| Plant architecture             | 26/3                         |
| <i>Sclerospora graminicola</i> | 37/37                        |
| resistance                     |                              |
| Shortness                      | 26/3                         |
| Countries                      |                              |
| ICRISAT                        | 29/13                        |
| India                          | 23/19; 30/25;<br>37/37; 39/3 |
| USA                            | 26/3                         |

**Pepper** see *Capsicum annuum*

**Peppermint** see *Mentha arvensis*

***Persea americana***

|                     |       |
|---------------------|-------|
| Varieties treated   |       |
| 139 PLS             | 41/9  |
| 175 PLS             | 41/9  |
| 39 PMe              | 41/9  |
| Colin V-101         | 41/9  |
| Colin V-33          | 41/9  |
| Colinmex            | 41/9  |
| Fuerte              | 41/9  |
| Mutagens used       |       |
| Gamma rays          | 41/9  |
| Breeding objectives |       |
| Dwarfness           | 41/9  |
| Countries           |       |
| Mexico              | 41/10 |

***Phaseolus coccineus***

|                     |       |
|---------------------|-------|
| Mutant varieties    |       |
| Eureka              | 41/28 |
| Varieties treated   |       |
| Local ecotype       | 41/28 |
| Mutagens used       |       |
| Gamma rays          | 41/28 |
| Breeding objectives |       |
| Dwarfness           | 41/28 |
| Countries           |       |
| Poland              | 41/28 |

***Phaseolus vulgaris***

|                           |            |
|---------------------------|------------|
| Mutant varieties          |            |
| AC Hensall                | 44/6, 7    |
| AC Skipper                | 44/6, 7, 8 |
| Albion                    | 44/6, 7    |
| Arapaho                   | 44/7       |
| Black Hawk                | 44/6, 8    |
| Black Magic               | 44/6, 8    |
| C-20                      | 44/6, 7, 8 |
| Carioca Arbustivo Precoce | 34/12, 33  |
| 1070 (CAP-1070)           |            |
| Centralia                 | 44/6, 7    |
| Crestwood                 | 44/6, 7    |
| Domino                    | 44/8       |
| Dresden                   | 44/7       |
| Fleetwood                 | 44/7       |

|                               |                          |                                     |                                                        |
|-------------------------------|--------------------------|-------------------------------------|--------------------------------------------------------|
| Frontier                      | 44/8                     | Rio Negro                           | 34/6                                                   |
| FT-Paulistinha                | 42/33                    | San Fernando                        | 44/6                                                   |
| Harkovskaya 8                 | 31/31                    | Shchedraya                          | 40/16                                                  |
| Harofleet                     | 44/7                     | Zaria                               | 23/7                                                   |
| Harokent                      | 44/7                     | Other varieties mentioned           |                                                        |
| Huron                         | 44/6, 7, 8               | 73130-E2-B                          | 44/7                                                   |
| Gratiot                       | 44/7                     | A-252                               | 42/33                                                  |
| IAPAR 57                      | 40/7; 44/6               | BAC 32                              | 40/7; 44/7                                             |
| JM-126                        | 44/8                     | Cannelino                           | 31/31                                                  |
| JM-24                         | 44/8                     | Imper                               | 31/31                                                  |
| Kentwood                      | 44/7                     | MD 632                              | 40/7; 44/7                                             |
| L-226-10                      | 44/8                     | MSU 31906                           | 30/25                                                  |
| L-227-1                       | 44/8                     | Opal                                | 31/31                                                  |
| Laker                         | 44/6, 7, 8               | San Fernando                        | 30/25                                                  |
| Maverick                      | 44/8                     | Tuscola                             | 34/33                                                  |
| Mayflower                     | 44/6, 8                  | U.I.111                             | 28/22                                                  |
| Midland                       | 44/7                     | Mutagens used                       |                                                        |
| Mitchell                      | 34/33; 44/7              | EI                                  | 40/16                                                  |
| Mogano                        | 31/31                    | EMS                                 | 21/5; 31/31;<br>34/6, 18;<br>40/7; 44/7                |
| Montalbano                    | 31/31                    | Gamma rays                          | 21/5; 23/7;<br>31/31; 34/12,<br>18, 33; 42/33;<br>44/6 |
| MSU N7612                     | 44/8                     | Gamma rays + EMS                    | 34/18                                                  |
| MSU N80043                    | 44/8                     | MNH                                 | 40/16                                                  |
| MSU N80051                    | 44/8                     | X-rays                              | 44/6, 7                                                |
| MSU N81109                    | 44/8                     | Breeding objectives                 |                                                        |
| MSU Sel. #61627               | 44/8                     | Bean common mosaic virus            | 28/22; 31/31                                           |
| MSU x 80101                   | 44/7, 8                  | resistance                          |                                                        |
| Mukhranula                    | 40/16                    | Anthracnose resistance              | 42/33                                                  |
| NC Alberta Pink               | 44/7                     | Bushy growth habit                  | 28/22; 34/12,<br>33; 44/6                              |
| NEP-2                         | 44/6, 8                  | Canning quality                     | 44/6                                                   |
| Neptune                       | 30/25; 44/7              | Disease resistance                  | 44/6                                                   |
| Norstar                       | 44/6, 7, 8               | Dwarf habit                         | 31/31                                                  |
| Northland                     | 44/7                     | Earliness                           | 40/16                                                  |
| OAC Seaforth                  | 44/7                     | Early maturity                      | 31/31; 34/12,<br>33                                    |
| Ouray                         | 28/22; 44/7              | Golden mosaic virus resistance      | 40/7; 44/6, 7                                          |
| Sanilac                       | 28/22; 44/6, 7           | Leaf spot resistance                | 42/33                                                  |
| Seafarer                      | 30/25; 34/33;<br>44/6, 7 | Lectin type                         | 34/6                                                   |
| Stinger                       | 44/6, 7                  | Morphological variation             | 34/19                                                  |
| Suncrest                      | 44/7                     | Mosaic virus resistance             | 21/9                                                   |
| Svetlaya                      | 40/16                    | Plant architecture                  | 30/25                                                  |
| Swan Valley                   | 44/8                     | Protein content                     | 40/16                                                  |
| Wesland                       | 44/7                     | Seed colour                         | 31/31; 34/6                                            |
| Other mutants mentioned       |                          | Upright short vine architecture     | 44/6                                                   |
| Carioca                       | 42/33                    | <i>Uromyces phaseoli</i> resistance | 21/5; 28/22                                            |
| FT/CENA 245                   | 34/6                     | <i>Xanthomonas phaseoli</i>         | 23/7                                                   |
| FT/CENA 247                   | 34/6                     | resistance                          |                                                        |
| TMD-1                         | 40/7; 44/6, 7            | Yield                               | 31/31; 40/7,<br>16; 42/33;<br>44/6                     |
| Varieties treated             |                          | Countries                           |                                                        |
| Carioca                       | 34/12, 33;<br>44/7       | Brazil                              | 34/6, 12, 33;<br>40/7; 42/33;<br>44/6                  |
| F <sub>1</sub> Sanilac x 6590 | 31/31                    |                                     |                                                        |
| Giza 3                        | 21/5                     |                                     |                                                        |
| Giza 4                        | 21/5                     |                                     |                                                        |
| Michelite                     | 44/6, 7                  |                                     |                                                        |
| Mukhranula 4                  | 40/16                    |                                     |                                                        |
| P106                          | 31/31                    |                                     |                                                        |
| P224                          | 31/31                    |                                     |                                                        |
| Prelom                        | 34/18                    |                                     |                                                        |

|                                            |                       |                                   |                                     |
|--------------------------------------------|-----------------------|-----------------------------------|-------------------------------------|
| Bulgaria                                   | 23/7; 34/19           | Ramenskii 77                      |                                     |
| Canada                                     | 34/33; 44/6           | F <sub>1</sub> Arkel x Mahndorfer | 37/16                               |
| Chile                                      | 21/9                  | Finale                            | 25/2                                |
| Egypt                                      | 21/5                  | Lincoln                           | 21/5                                |
| FAO/IAEA                                   | 44/9                  | Little Marvel                     | 21/5                                |
| Italy                                      | 31/31                 | Mahndorfer                        | 37/16                               |
| USA                                        | 28/22; 30/25;<br>44/6 | Paloma                            | 41/28                               |
| USSR                                       | 31/31; 40/16          | Parvus                            | 35/40                               |
|                                            |                       | Rondo                             | 22/6                                |
| <b>Pigeon pea</b> see <i>Cajanus cajan</i> |                       | S. Cristoforo                     | 37/38                               |
|                                            |                       | Santa Croce                       | 37/38                               |
| <b><i>Pisum sativum</i></b>                |                       | Sprinter                          | 21/9; 35/40                         |
| Mutant varieties                           |                       | Wt 3527                           | 32/16; 33/10                        |
| Agra                                       | 43/51                 | Wt 4042                           | 33/10                               |
| Bitug                                      | 40/16                 | Zernograd 2                       | 31/31                               |
| Bosman                                     | 37/37                 | Other varieties mentioned         |                                     |
| Caoyuan 10                                 | 37/38                 | Allround                          | 37/37                               |
| Diament                                    | 35/40                 | Aschersleben                      | 30/26                               |
| Esedra                                     | 21/9                  | Biala                             | 26/14                               |
| Hamil                                      | 30/26; 35/40          | Cud Ameryki                       | 35/40                               |
| Heiga                                      | 30/26                 | Delisa II                         | 30/26                               |
| Jaran                                      | 30/26                 | Flavanda                          | 26/14; 35/40                        |
| Kwestor                                    | 41/28                 | Gome                              | 26/14                               |
| Mihan                                      | 26/14                 | Karat                             | 43/51                               |
| Miko                                       | 35/40                 | Kujawski Wczesny                  | 35/40                               |
| Milewska                                   | 26/14                 | Melzer                            | 43/51                               |
| Navona                                     | 21/9                  | Nemnichovskii 766                 | 31/31                               |
| Nemchinovskii 85                           | 31/31                 | Neugatersleben                    | 26/14                               |
| Orfej                                      | 41/28                 | Porta                             | 26/14                               |
| Orphei                                     | 40/16, 17             | Smaragd                           | 40/16; 41/28                        |
| Paride                                     | 37/38                 | Sum                               | 26/14                               |
| Piast                                      | 43/51                 | Wielkolistna                      | 30/26                               |
| Pirro                                      | 37/38                 | Mutagens used                     |                                     |
| Priamo                                     | 37/38                 | Chemical mutagenesis              | 40/17                               |
| Ramir                                      | 26/14                 | EI                                | 31/31                               |
| Samara                                     | 40/17                 | EMS                               | 21/5; 25/2;<br>37/16                |
| Shikhan                                    | 37/38                 | Fast neutrons + NEU               | 32/16; 33/10                        |
| Stral                                      | 35/40                 | Fast neytrons                     | 33/10                               |
| Streletskii 11                             | 31/31                 | Gamma rays                        | 21/5; 37/16,<br>38; 41/28           |
| Sum                                        | 43/51                 | NEH (NEU) = (ENH)                 | 33/10; 37/16;<br>40/17              |
| Talovets 69                                | 41/28                 | X-rays                            | 37/38                               |
| Tatarastan 2                               | 40/17                 | Breeding objectives               |                                     |
| Trevi                                      | 21/9; 35/40           | Adaptability                      | 41/28                               |
| Wasata                                     | 26/14; 30/26          | Afila type                        | 26/14; 30/26;<br>35/7, 40;<br>37/37 |
| Other mutants mentioned                    |                       | Agronomic characters              | 21/9                                |
| 7238                                       | 35/40                 | Albumin/globulin ratio            | 21/9                                |
| JI 1358                                    | 32/16                 | Canning pea                       | 30/26                               |
| L 34                                       | 37/37                 | Determinate growth                | 32/16; 35/40;<br>37/38              |
| M235                                       | 35/40                 | Disease resistance                | 40/17                               |
| nod 3                                      | 22/6                  | Earliness                         | 40/17                               |
| Shtambovy mutant                           | 31/31                 | Early maturity                    | 31/31; 35/40;<br>37/38              |
| Wt 16100                                   | 32/16                 | Fodder pea                        | 30/26                               |
| Varieties treated                          |                       |                                   |                                     |
| Alderman                                   | 37/38                 |                                   |                                     |
| Arkel                                      | 37/16                 |                                   |                                     |
| Arvika                                     | 40/17                 |                                   |                                     |
| Caoyuan                                    | 37/38                 |                                   |                                     |
| F <sub>1</sub> Ahalkalaskii mestnyi x      | 40/17                 |                                   |                                     |

|                                            |                                                                       |                                            |                       |
|--------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------|-----------------------|
| Forage pea                                 | 40/17                                                                 | Flower shape and size                      | 37/39                 |
| Garden pea                                 | 30/26                                                                 | Plant regeneration <i>in vitro</i>         | 43/13                 |
| Green forage pea                           | 30/26                                                                 | Profuse blooming                           | 37/39                 |
| Leaf size                                  | 37/38                                                                 | Countries                                  |                       |
| Lodging resistance                         | 26/14; 30/26;<br>31/31; 37/37;<br>41/28; 43/51                        | India                                      | 37/39                 |
| Morphological mutants                      | 33/10                                                                 | Morocco                                    | 43/14                 |
| Mutation frequencies                       | 37/16                                                                 | Other information                          |                       |
| Nodulation                                 | 22/6; 25/2                                                            | <i>In vitro</i> cultures                   | 43/13                 |
| Plasticity                                 | 31/31                                                                 | <b>Potato see <i>Solanum tuberosum</i></b> |                       |
| Pod number                                 | 41/28                                                                 | <b><i>Prunus avium</i></b>                 |                       |
| Pod shape                                  | 37/38                                                                 | Mutant varieties                           |                       |
| Pod size                                   | 37/38                                                                 | Burlat C <sub>1</sub>                      | 31/32                 |
| Protein content                            | 21/9                                                                  | Ferrovia spur                              | 42/33                 |
| Seed colour                                | 37/38                                                                 | Lapinus                                    | 25/17                 |
| Seed size                                  | 40/16                                                                 | Nero II C <sub>1</sub>                     | 31/32                 |
| Seed smoothness                            | 40/16                                                                 | Sunburst                                   | 25/17                 |
| Shedding resistance                        | 37/38; 40/17                                                          | Stella                                     | 25/17                 |
| Short stature                              | 35/40                                                                 | Varieties treated                          |                       |
| Stem length                                | 41/28                                                                 | Bigarreau Burlat                           | 31/32                 |
| Stiffness                                  | 43/51                                                                 | Bing                                       | 33/8; 34/24;<br>35/27 |
| Tallness                                   | 37/38                                                                 | Durone Nero                                | 31/32                 |
| Terminal inflorescence                     | 35/7                                                                  | Ferrovia                                   | 42/33                 |
| <i>Uromyces pisi</i> resistance            | 21/5                                                                  | Napoleon                                   | 34/24                 |
| Yield                                      | 31/31; 37/38;<br>43/51                                                | Van                                        | 25/17                 |
| Countries                                  |                                                                       | Other varieties mentioned                  |                       |
| China                                      | 37/38                                                                 | Bing                                       | 25/17                 |
| Denmark                                    | 25/3                                                                  | Mutagens used                              |                       |
| Egypt                                      | 21/5                                                                  | Gamma rays                                 | 31/32; 33/8;<br>35/27 |
| India                                      | 37/17                                                                 | Radiation                                  | 34/25                 |
| Italy                                      | 21/9; 35/40;<br>37/38                                                 | X-rays                                     | 42/33                 |
| Poland                                     | 26/14; 30/26;<br>32/16; 33/10;<br>35/7, 40;<br>37/37; 41/28;<br>43/51 | Breeding objectives                        |                       |
| Russia                                     | 41/28                                                                 | Compact growth habit                       | 31/32                 |
| The Netherlands                            | 22/6                                                                  | Earliness                                  | 42/33                 |
| USSR                                       | 31/31; 37/38;<br>40/16, 17                                            | Fruit size                                 | 25/17                 |
|                                            |                                                                       | Growth habit                               | 25/17; 33/8           |
|                                            |                                                                       | Radiosensitivity                           | 34/24; 35/27          |
|                                            |                                                                       | Shortness                                  | 42/33                 |
|                                            |                                                                       | Yield                                      | 25/17; 42/33          |
|                                            |                                                                       | Countries                                  |                       |
|                                            |                                                                       | Canada                                     | 25/17                 |
|                                            |                                                                       | Italy                                      | 31/32; 42/33          |
|                                            |                                                                       | USA                                        | 34/24; 35/27          |
| <b>Plavine see <i>Lathyrus sativus</i></b> |                                                                       | <b><i>Prunus cerasus</i></b>               |                       |
| <b>Plum see <i>Prunus domestica</i></b>    |                                                                       | Other mutants mentioned                    |                       |
| <b><i>Portulaca grandiflora</i></b>        |                                                                       | Padocerus A                                | 35/11                 |
| Mutant varieties                           |                                                                       | Padocerus M                                | 35/11                 |
| Ratnam                                     | 37/39                                                                 | Varieties treated                          |                       |
| Varieties treated                          |                                                                       | Padocerus                                  | 35/11                 |
| PgBmj                                      | 43/13                                                                 | Other varieties mentioned                  |                       |
| Mutagens used                              |                                                                       | Almaz                                      | 35/11                 |
| EMS ( <i>in vitro</i> )                    | 43/13                                                                 | Mutagens used                              |                       |
| Gamma rays                                 | 37/39                                                                 | Gamma rays                                 | 35/11                 |
| Sodium azide ( <i>in vitro</i> )           | 43/13                                                                 | X-rays                                     | 35/11                 |
| Breeding objectives                        |                                                                       | Breeding objectives                        |                       |
| Callus induction                           | 43/13                                                                 |                                            |                       |
| Cross-fertile flowers                      | 37/39                                                                 |                                            |                       |

|                                           |                    |                                           |                    |
|-------------------------------------------|--------------------|-------------------------------------------|--------------------|
| Apomixis                                  | 35/11              | Semidwarfness                             | 28/3               |
| <i>Coccomyces hiemalis</i>                | 35/11              | Countries                                 |                    |
| resistance                                |                    | Gahna                                     | 34/15              |
| Countries                                 |                    | India                                     | 23/15; 28/3        |
| USSR                                      | 35/11              | <b><i>Psidium guajava</i></b>             |                    |
| <b><i>Prunus domestica</i></b>            |                    | Mutagens used                             |                    |
| Mutant varieties                          |                    | Gamma rays                                | 35/27              |
| Spurdente-Ferco                           | 35/40              | Breeding objectives                       |                    |
| Varieties treated                         |                    | Growth habit                              | 35/27              |
| Ente                                      | 35/40              | Seed sterility                            | 35/27              |
| Mutagens used                             |                    | Countries                                 |                    |
| Gamma rays                                | 35/40              | India                                     | 35/27              |
| Breeding objectives                       |                    | <b><i>Pyrus bretschneideri</i></b>        |                    |
| Branching                                 | 35/40              | Varieties treated                         |                    |
| Early flowering                           | 35/40              | Crystal Pear                              | 35/10              |
| Early fruiting                            | 35/40              | <b><i>Pyrus communis</i></b>              |                    |
| Countries                                 |                    | Varieties treated                         |                    |
| France                                    | 35/40              | Comice                                    | 35/10              |
| <b><i>Prunus dulcis</i></b>               |                    | Luise Bonne                               | 35/10              |
| Mutant varieties                          |                    | Seckel                                    | 35/10              |
| Supernova (Fascionello K)                 | 32/29              | Mutagens used                             |                    |
| Varieties treated                         |                    | Gamma rays ( <i>in vitro</i> )            | 35/10              |
| Fascionello                               | 32/29              | ENU ( <i>in vitro</i> )                   | 35/10              |
| Mutagens used                             |                    | Countries                                 |                    |
| Gamma rays                                | 32/29              | France                                    | 35/10              |
| Breeding objectives                       |                    | <b><i>Pyrus pyrifolia</i></b>             |                    |
| Late flowering                            | 32/29              | Mutant varieties                          |                    |
| Countries                                 |                    | Gold Nijisseiki                           | 39/3; 44/40        |
| Italy                                     | 32/29              | Kotobuki Shinsui                          | 44/40              |
| <b><i>Psathyrostachys juncea</i></b>      |                    | Varieties treated                         |                    |
| Mutant varieties                          |                    | Nijisseiki                                | 30/10; 44/40       |
| Tetracan                                  | 43/52              | Other varieties mentioned                 |                    |
| Varieties treated                         |                    | Chojuro                                   | 30/10              |
| Open pollinated population                | 43/52              | Mutagens used                             |                    |
| from 27 diploids                          |                    | Gamma field                               | 30/10; 44/40       |
| Mutagens used                             |                    | Breeding objectives                       |                    |
| Colchicine                                | 43/52              | <i>Alternaria alternata</i> resistance    | 30/10; 39/3        |
| Breeding objectives                       |                    | Disease resistance                        | 44/40              |
| Seed size                                 | 43/52              | Countries                                 |                    |
| Seed yield                                | 43/52              | Japan                                     | 30/10; 39/3; 44/40 |
| Vigour                                    | 43/52              | <b>R</b>                                  |                    |
| Countries                                 |                    | <b>Rapeseed see <i>Brassica napus</i></b> |                    |
| Canada                                    | 43/52              | <b>Raspberry see <i>Rubus idaeus</i></b>  |                    |
| <b><i>Psophocarpus tetragonolobus</i></b> |                    | <b><i>Rhododendron simsii</i></b>         |                    |
| Varieties treated                         |                    | Mutant varieties                          |                    |
| Kade 6/16                                 | 34/15              | Ingana                                    | 31/32              |
| Trivandrum                                | 23/15; 28/3        | Osta                                      | 28/22              |
| UPS 122                                   | 34/15              | Varieties treated                         |                    |
| Mutagens used                             |                    | Bertina                                   |                    |
| Gamma rays                                | 23/15; 28/3; 34/15 | Inga                                      | 31/32              |
| Breeding objectives                       |                    | Mutagens used                             |                    |
| Earliness                                 | 23/15; 28/3        | Gamma rays                                | 31/32              |
| Plant architecture                        | 23/15; 28/3        |                                           |                    |
| Seed colour                               | 34/15              |                                           |                    |
| Seed size                                 | 34/15              |                                           |                    |

|                                     |              |                                      |                            |
|-------------------------------------|--------------|--------------------------------------|----------------------------|
| X-rays                              | 28/22        | HZ                                   | 24/8                       |
| Breeding objectives                 |              | NEU                                  | 36/1                       |
| Flower colour                       | 28/22; 31/32 | NMU                                  | 36/1                       |
| Countries                           |              | Breeding objectives                  |                            |
| Belgium                             | 31/32        | Chlorophyll mutants                  | 24/9                       |
| FRG                                 | 28/22        | Early maturity                       | 24/9                       |
| <b><i>Rhododendron</i> sp.</b>      |              | GA response                          | 24/9                       |
| Mutant varieties                    |              | Morphological mutants                | 24/8, 9; 36/1              |
| Odilia                              | 34/33        | Oil content                          | 41/29                      |
| Stefan                              | 34/33        | Plant architecture                   | 24/8, 9                    |
| Varieties treated                   |              | Semi-dwarfness                       | 24/8, 9                    |
| Silvester                           | 34/33        | Short stem                           | 36/1                       |
| Mutagens used                       |              | Yield                                | 36/1; 41/29                |
| X-rays                              | 34/33        | Countries                            |                            |
| Breeding objectives                 |              | India                                | 24/9                       |
| Earliness                           | 34/33        | USSR                                 | 36/2; 41/29                |
| Flower colour                       | 34/33        | <b>Ridged gourd see <i>Luffa</i></b> |                            |
| Countries                           |              | <b><i>acutangula</i></b>             |                            |
| The Netherlands                     | 34/33        |                                      | 35/27                      |
| <b><i>Ribes nigrum</i></b>          |              | <b><i>Rosa</i> sp.</b>               |                            |
| Mutant varieties                    |              | Mutant varieties                     |                            |
| Burga                               | 29/26        | Abhisarika H.T.                      | 25/6; 26/14                |
| Varieties treated                   |              | Bridal Sonia                         | 32/29                      |
| Noire de Bourgogne                  | 29/26        | Curio                                | 31/32; 33/18               |
| Mutagens used                       |              | Ji Guang                             | 27/14; 31/33               |
| Gamma rays                          | 29/26        | Light Pink Prize                     | 33/18; 37/39               |
| Breeding objectives                 |              | Madhosh                              | 25/6                       |
| Earliness                           | 29/26        | Misu-ohmiya                          | 42/33                      |
| Countries                           |              | Nan Hai Lang Hua                     | 27/14; 31/33               |
| France                              | 29/26        | Ohmiyabito                           | 42/33                      |
| <b>Rice see <i>Oryza sativa</i></b> |              | Paula                                | 31/33                      |
| <b><i>Ricinus communis</i></b>      |              | Pink Contempo                        | 31/32; 33/18               |
| Mutant varieties                    |              | Pink Hat                             | 31/33                      |
| Khersonskaya                        | 41/29        | Pink Ilseta                          | 28/23; 35/41               |
| Other mutants mentioned             |              | Pusa Christina                       | 25/6; 26/15                |
| M1-284                              | 36/1         | Sharada                              | 33/18; 42/33               |
| M1-83                               | 36/1         | Saroda                               | 23/19                      |
| M2-119                              | 36/1         | Striped Christian Dior               | 25/6; 26/14                |
| M2-323                              | 36/1         | Striped Contempo (Stripe Contempo)   | 33/18; 37/39               |
| Varieties treated                   |              | Sukamari                             | 23/19; 33/18               |
| 279                                 | 24/8         | Tangerine Contempo                   | 23/19; 33/18               |
| Antika                              | 36/1         | Twinkle                              | 31/33; 33/18               |
| Chervonnaya                         | 36/1         | Xia Guang Wan Dao                    | 31/33                      |
| HC6                                 | 24/8         | Yellow Contempo                      | 23/19; 33/18               |
| HC8                                 | 24/8         | Zhen Jie                             | 31/33                      |
| VNIIMK 165-improved                 | 36/1         | Other mutants mentioned              |                            |
| VNIIMK 18                           | 36/1         | Orange Folklore                      | 25/7                       |
| Mutagens used                       |              | Varieties treated                    |                            |
| Chemical mutagen                    | 41/29        | America's Junior Miss                | 23/19; 33/18               |
| DAB                                 | 36/1         | Christian Dior                       | 26/14, 15                  |
| DES                                 | 24/8; 36/1   | Condesa de Sastago                   | 27/14                      |
| DMS                                 | 36/1         | Contempo                             | 23/19; 31/32; 33/18; 37/39 |
| EI                                  | 36/1         | Crimson Glory                        | 27/14                      |
| EMS                                 | 24/8         | Doris Tystermano                     | 25/6                       |
| Gamma rays                          | 24/8         | First Prize                          | 33/18; 37/39               |
|                                     |              | Folklore                             | 25/6                       |

|                                    |                                                                                            |                                                             |                                                       |
|------------------------------------|--------------------------------------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------|
| Ilseta                             | 35/41                                                                                      | USSR                                                        | 41/29                                                 |
| Imperator                          | 31/32, 33;<br>33/18                                                                        | <b>Russian wildrye</b> see<br><i>Psathyrostachys juncea</i> |                                                       |
| Kiss of Fire                       | 26/14                                                                                      | <b>Rye</b> see <i>Secale cereale</i>                        |                                                       |
| Peace                              | 27/14                                                                                      | <b>S</b>                                                    |                                                       |
| Pearl Ilseta                       | 28/2328/21                                                                                 | <i>Saccharum officinarum</i>                                |                                                       |
| Pink Peace                         | 27/14                                                                                      | Mutant varieties                                            |                                                       |
| Quenn Elizabeth                    | 23/19; 31/33;<br>33/18; 42/33                                                              | Co 8153                                                     | 30/26                                                 |
| Sonia                              | 32/29                                                                                      | Co 85017                                                    | 31/33                                                 |
| South Seas                         | 27/14                                                                                      | Co 85035                                                    | 31/34                                                 |
| Super Star                         | 27/14                                                                                      | Varieties treated                                           |                                                       |
| Unnamed floribunda                 | 31/33                                                                                      | BL4                                                         | 44/19                                                 |
| Mutagens used                      |                                                                                            | BO 91                                                       | 37/14                                                 |
| Gamma rays                         | 23/19; 25/6;<br>26/14, 15;<br>27/14; 31/32,<br>33; 32/29;<br>33/18; 37/39;<br>42/33        | Co 740                                                      | 31/33, 34                                             |
| X-rays                             | 28/23                                                                                      | CoC 671                                                     | 34/23                                                 |
| X-rays ( <i>in vitro</i> )         | 35/41                                                                                      | CoS 687                                                     | 42/20                                                 |
| Breeding objectives                |                                                                                            | Cross Co 6304 x Co 6806                                     | 30/26                                                 |
| Floriferousness                    | 31/33                                                                                      | Ni-5                                                        | 38/11                                                 |
| Flower colour                      | 25/7; 26/14;<br>27/14; 28/23;<br>31/32, 33;<br>32/29; 33/18;<br>35/27, 41;<br>37/39; 42/33 | Other varieties mentioned                                   |                                                       |
| Flower morphology                  | 31/32, 33;<br>35/27                                                                        | Co 6304                                                     | 30/26                                                 |
| Globular bud                       | 26/15                                                                                      | Co C761                                                     | 30/26                                                 |
| Leaf characteristics               | 31/33                                                                                      | CoC 671                                                     | 34/23                                                 |
| Mildew resistance                  | 31/33                                                                                      | G80-454                                                     | 34/23                                                 |
| Petal number                       | 25/7                                                                                       | Mutagens used                                               |                                                       |
| Countries                          |                                                                                            | 8-ethoxycaffeine ( <i>in vitro</i> )                        | 22/15                                                 |
| China                              | 27/14; 31/33                                                                               | Colchicine ( <i>in vitro</i> )                              | 22/15                                                 |
| FRG                                | 28/23                                                                                      | EMS                                                         | 42/20                                                 |
| India                              | 23/19; 25/7;<br>26/14, 15;<br>31/32, 33;<br>33/18; 35/27,<br>41; 37/39;<br>42/33           | EMS ( <i>in vitro</i> )                                     | 22/15                                                 |
| Japan                              | 32/29; 42/33                                                                               | Gamma field                                                 | 38/12                                                 |
| USA                                | 31/33                                                                                      | Gamma rays                                                  | 37/14; 42/20                                          |
| <b>Roselle</b> see <i>Hibiscus</i> |                                                                                            | Gamma rays ( <i>in vitro</i> )                              | 22/15; 30/26;<br>44/19                                |
| <b>Rubus idaeus</b>                |                                                                                            | MMS ( <i>in vitro</i> )                                     | 22/15                                                 |
| Mutant varieties                   |                                                                                            | MNH ( <i>in vitro</i> )                                     | 44/19                                                 |
| Kolokol'chik                       | 41/29                                                                                      | MNNG ( <i>in vitro</i> )                                    | 22/15                                                 |
| Varieties treated                  |                                                                                            | Breeding objectives                                         |                                                       |
| Karnaval                           | 41/29                                                                                      | Eye spot resistance                                         | 22/15                                                 |
| Mutagens used                      |                                                                                            | Fiji disease resistance                                     | 22/15                                                 |
| ENH                                | 41/29                                                                                      | Juice quality                                               | 30/26                                                 |
| Breeding objectives                |                                                                                            | Radiosensitivity test                                       | 44/19                                                 |
| Disease resistance                 | 41/29                                                                                      | Red rot resistance                                          | 42/20                                                 |
| Winter hardiness                   | 41/29                                                                                      | Smut resistance                                             | 22/15; 34/23                                          |
| Countries                          |                                                                                            | Sucrose content                                             | 31/33, 34;<br>37/14                                   |
|                                    |                                                                                            | <i>Ustilago scitaminea</i> resistance                       | 31/33, 43                                             |
|                                    |                                                                                            | Yield                                                       | 22/15; 30/26;<br>31/33, 34                            |
|                                    |                                                                                            | Countries                                                   |                                                       |
|                                    |                                                                                            | FAO/IAEA                                                    | 44/21                                                 |
|                                    |                                                                                            | India                                                       | 22/17; 30/26;<br>31/33, 34;<br>34/23; 37/14;<br>42/21 |
|                                    |                                                                                            | Japan                                                       | 38/12                                                 |
|                                    |                                                                                            | Pakistan                                                    | 44/21                                                 |
|                                    |                                                                                            | Poland                                                      | 44/21                                                 |

|                                                           |                        |                                                   |                        |
|-----------------------------------------------------------|------------------------|---------------------------------------------------|------------------------|
| Other                                                     |                        |                                                   |                        |
| <i>In vitro</i> cultures                                  | 34/23; 38/12;<br>44/19 | <b>Serradell</b> see <i>Ornithopus compressus</i> |                        |
| <b>Sainfoin</b> see <i>Onobrychis vicifolia</i>           |                        | <b>Sesamum indicum</b>                            |                        |
| <b>Saintpaulia</b> sp.                                    |                        | Mutant varieties                                  |                        |
| Mutant varieties                                          |                        | Ahnsanggae (Ahnsankkae) =                         | 29/6; 42/21            |
| Halley                                                    | 31/34                  | (Suwon 55)                                        |                        |
| Varieties treated                                         |                        | ANK-S2                                            | 43/52                  |
| Superba                                                   | 31/34                  | Babil                                             | 43/52                  |
| Mutagens used                                             |                        | Cairo White 8                                     | 42/34                  |
| Gamma rays                                                | 31/34                  | Eshtar                                            | 43/52                  |
| Breeding objectives                                       |                        | Pungsankkae                                       | 43/52                  |
| Flower colour                                             | 31/34                  | Rafiden                                           | 43/53                  |
| Countries                                                 |                        | Seodukkae                                         | 44/41                  |
| The Netherlands                                           | 31/34                  | Sinai White 48                                    | 42/34                  |
|                                                           |                        | Suwon 155                                         | 44/41                  |
|                                                           |                        | Suwonkkae                                         | 42/21, 34              |
|                                                           |                        | UMA                                               | 43/53                  |
|                                                           |                        | USHA                                              | 43/53                  |
|                                                           |                        | Yangbackkae                                       | 42/21, 34              |
| <b>Scarlet runner bean</b> see <i>Phaseolus coccineus</i> |                        | Other mutants mentioned                           |                        |
| <b>Sea buckthorn</b> see <i>Hippophae rhamnoides</i>      |                        | 76ME-B-100-4-2 (Suwon 55)                         | 29/6, 26               |
| <b>Secale cereale</b>                                     |                        | CF 25-9382                                        | 32/17                  |
| Mutant varieties                                          |                        | CF 35-9306                                        | 32/17                  |
| Donar                                                     | 23/20                  | CF 53-8874                                        | 32/17                  |
| HJA 6902                                                  | 35/41                  | CF 6-N3H494                                       | 32/17                  |
| Jussi                                                     | 25/8                   | dt-45                                             | 42/22; 43/52           |
| Pollux                                                    | 23/20                  | III-8408                                          | 32/17                  |
| Other mutants mentioned                                   |                        | ME-93-4                                           | 42/34                  |
| No. 2714                                                  | 35/31                  | N62-32 mutants                                    | 22/5; 29/5             |
| Varieties treated                                         |                        | P-10-7412                                         | 32/17                  |
| Dankowskie Zlote                                          | 35/12                  | S36-10                                            | 29/5                   |
| LAD 2T80                                                  | 35/12                  | SI 90033-2B                                       | 42/22                  |
| Petkuser Winterrogen Stamm                                | 23/20                  | Suwon 128                                         | 42/21                  |
| 267/70                                                    |                        | Varieties treated                                 |                        |
| Vjatka                                                    | 35/41                  | Criollo Falcon                                    | 32/17                  |
| Mutagens used                                             |                        | Danbaeckkae                                       | 42/21, 34;<br>44/41    |
| Fast neutrons                                             | 35/12, 31              | Early Russian                                     | 29/6, 26;<br>42/21, 34 |
| Gamma rays                                                | 35/41                  | Giza 24                                           | 42/34                  |
| Gamma rays ( <i>in vitro</i> )                            | 35/12                  | Kanak                                             | 43/53                  |
| ISO-PMS                                                   | 23/20                  | MI-1                                              | 43/52                  |
| ENH                                                       | 35/31                  | N62-32                                            | 22/5; 29/5             |
| MNH                                                       | 35/12                  | Piritu                                            | 32/17                  |
| Sodium azide                                              | 35/31                  | S36-10                                            | 22/6                   |
| Breeding objectives                                       |                        | S337-1                                            | 22/6                   |
| Lodging resistance                                        | 23/20; 35/12,<br>41    | S1-7                                              | 22/6                   |
| Shorter culm                                              | 23/20; 35/12,<br>31    | S1-8                                              | 22/6                   |
| Sprouting resistance                                      | 23/20                  | S22-2                                             | 22/6                   |
| Countries                                                 |                        | S34-3                                             | 22/6                   |
| Finland                                                   | 25/8; 35/41            | Venezuela 44                                      | 31/17                  |
| GDR                                                       | 23/20                  | Other varieties mentioned                         |                        |
| Poland                                                    | 35/12, 31              | Hansumkkae                                        | 43/52                  |
| Other                                                     |                        | Kyum (local)                                      | 42/34                  |
| <i>In vitro</i> cultures                                  | 35/12                  | Suwon 9                                           | 29/6                   |
|                                                           |                        | Mutagens used                                     |                        |
|                                                           |                        | Chemical mutagen (Arsenic-                        | 43/53                  |

|                                   |                                                                    |                                          |              |
|-----------------------------------|--------------------------------------------------------------------|------------------------------------------|--------------|
| Q)                                |                                                                    |                                          |              |
| EMS                               | 29/5                                                               | <b><i>Setaria italica</i></b>            |              |
| Fast neutrons                     | 29/5                                                               | Mutant varieties                         |              |
| Gamma rays                        | 29/5; 42/34;<br>43/52, 53;<br>44/41                                | Changwei 74                              | 29/27        |
|                                   |                                                                    | Changwei 75                              | 29/27        |
| Sodium azide                      | 29/6; 42/21,<br>34; 44/41                                          | Lugu No. 7                               | 33/32        |
| Thermal neutrons                  | 29/5                                                               | Varieties treated                        |              |
| X-rays                            | 29/6, 26;<br>42/21, 34                                             | Changwei 69                              | 29/27        |
|                                   |                                                                    | Lugu No. 1                               | 33/32        |
| Breeding objectives               |                                                                    | Shuilihun                                | 29/27        |
| Capsule morphology                | 22/5; 29/5                                                         | Mutagens used                            |              |
| Capsule number                    | 22/5; 29/5;<br>42/34                                               | Gamma rays                               | 29/27; 33/32 |
| Capsule size                      | 43/52                                                              | Breeding objectives                      |              |
| <i>Cerospora</i> resistance       | 32/17                                                              | Disease resistance                       | 29/27        |
| <i>Cylindrosporium</i> resistance | 32/17                                                              | Early maturing                           | 29/27        |
| Determinate growth                | 42/22; 43/52                                                       | Lodging resistance                       | 33/32        |
| Disease resistance                | 29/6, 26;<br>42/21, 34;<br>43/52, 53;<br>44/41                     | Plant height                             | 33/32        |
|                                   |                                                                    | <i>Pyricularia setaria</i> resistance    | 29/27        |
| Drought resistance                | 32/17                                                              | Quality                                  | 29/27        |
| Earliness                         | 43/52, 53                                                          | Taste                                    | 29/27        |
| Early maturity                    | 32/17; 42/22;<br>43/53                                             | Yield                                    | 29/27        |
| Habitus                           | 43/52                                                              | Countries                                |              |
| Heterosis                         | 29/5                                                               | China                                    | 29/27; 33/32 |
| Linoleic fatty acid content       | 42/21                                                              |                                          |              |
| Lodging resistance                | 42/21, 22, 34                                                      | <b>Shadawang see <i>Astragalus</i></b>   |              |
| <i>Macrophomina</i> resistance    | 32/17                                                              | <b><i>huangheensis</i></b>               |              |
| Non-branching                     | 22/5; 42/22,<br>34                                                 | <b><i>Sinapis alba</i></b>               |              |
| Oil content                       | 22/6; 29/5;<br>43/52, 53                                           | Mutant varieties                         |              |
| Oil quality                       | 42/21, 34                                                          | Zlata                                    | 43/53        |
| Plant colour                      | 22/5; 44/41                                                        | Varieties treated                        |              |
| Protein content                   | 42/34                                                              | Prerovska Bila                           | 43/53        |
| Seed colour                       | 42/34                                                              | Mutagens used                            |              |
| Seed retention                    | 43/52                                                              | X-rays                                   | 43/53        |
| Seed size                         | 42/22                                                              | Breeding objectives                      |              |
| Semi-dwarfness                    | 42/21, 22                                                          | Early flowering                          | 43/53        |
| Split corolla                     | 22/5                                                               | Vigour                                   | 43/53        |
| Uniform maturity                  | 43/52, 53                                                          | Countries                                |              |
| Wilt resistance                   | 42/34                                                              | Czech Rep.                               | 43/53        |
| Yield                             | 22/6; 29/5,<br>26; 32/17;<br>42/21, 22, 34;<br>43/52, 53;<br>44/41 |                                          |              |
| Countries                         |                                                                    | <b>Snapdragon see <i>Antirrhinum</i></b> |              |
| Egypt                             | 42/34                                                              | <b><i>Solanum khasianum</i></b>          |              |
| India                             | 22/6; 29/5;<br>43/53                                               | Other mutants mentioned                  |              |
| Iraq                              | 43/52, 53                                                          | BARC                                     | 31/4         |
| Korea                             | 29/6, 26;<br>42/22, 34;<br>43/52; 44/41                            | Glaxo                                    | 31/4         |
|                                   |                                                                    | Other varieties mentioned                |              |
| Sri Lanka                         | 43/52                                                              | Pusa                                     | 31/4         |
| Venezuela                         | 32/17                                                              | RRL (Bhuhaneswar) Y-14                   | 31/5         |
|                                   |                                                                    | RRL (Jorhat)                             | 31/4         |
|                                   |                                                                    | Mutagens used                            |              |
|                                   |                                                                    | X rays ( <i>in vitro</i> )               | 22/14        |
|                                   |                                                                    | Breeding objectives                      |              |
|                                   |                                                                    | Morphological mutants                    | 22/14        |
|                                   |                                                                    | Physiological mutants                    | 22/14        |
|                                   |                                                                    | <i>Phytophthora infestans</i>            | 22/14        |
|                                   |                                                                    | resistance                               |              |
|                                   |                                                                    | Solasodine content                       | 31/4         |
|                                   |                                                                    | Spine character                          | 31/4         |
|                                   |                                                                    | Countries                                |              |

|                                    |                   |                                                      |                    |
|------------------------------------|-------------------|------------------------------------------------------|--------------------|
| India                              | 22/17; 31/5       | Breeding objectives                                  |                    |
| Other information                  |                   | Blackspot bruise tolerance                           | 37/11              |
| <i>In vitro</i> cultures           | 22/14             | Lateness                                             | 43/53              |
| <b><i>Solanum melongena</i></b>    |                   | Morphological traits                                 | 22/14; 24/10       |
| Mutant varieties                   |                   | M-virus resistance                                   | 33/6               |
| Floralba                           | 32/29             | Physiological traits                                 | 22/14              |
| Macla                              | 32/29             | <i>Phytophthora infestans</i>                        | 22/13              |
| Picentia                           | 32/29             | resistance                                           |                    |
| PKM 1                              | 32/29             | <i>Synchytrium endobioticum</i>                      | 23/9               |
| Varieties treated                  |                   | resistance                                           |                    |
| Florida Market                     | 32/29             | White skin                                           | 31/3, 34           |
| Lunga Violetta                     | 32/29             | Yield                                                | 43/53              |
| Puzhuthikathiri                    | 32/29             | Countries                                            |                    |
| Other varieties mentioned          |                   | Estonia                                              | 43/53              |
| Nagaoka                            | 32/229            | India                                                | 22/14              |
| Mutagens used                      |                   | Latvian SSR                                          | 23/9               |
| EMS                                | 32/29             | Italy                                                | 24/10; 31/3; 34    |
| Gamma rays                         | 32/29             | USA                                                  | 37/13              |
| Breeding objectives                |                   | USSR                                                 | 33/6               |
| Drought tolerance                  | 32/29             | Other information                                    |                    |
| Earliness                          | 32/29             | <i>In vitro</i> culture                              | 22/14; 24/9        |
| Fruit colour                       | 32/29             |                                                      |                    |
| Fruit size                         | 32/29             | <b><i>Solanum viarum</i> see <i>S. khasianum</i></b> |                    |
| Short plant                        | 32/29             |                                                      |                    |
| Suitable for processing            | 32/29             | <b><i>Sorghum bicolor</i> (<i>S. vulgare</i>)</b>    |                    |
| Suitable for transport and storage | 32/29             | Mutant varieties                                     |                    |
| <i>Vetillium dahliae</i> tolerance | 32/29             | Co.21 (Co 21)                                        | 28/13; 29/27       |
| Yield                              | 32/29             | Djeman                                               | 44/41              |
| Countries                          |                   | Djemanin                                             | 44/41              |
| India                              | 32/29             | Donetskaya 5                                         | 31/34              |
| Italy                              | 32/29             | Fambe                                                | 44/41              |
| <b><i>Solanum tuberosum</i></b>    |                   | Gnome                                                | 44/41              |
| Mutant varieties                   |                   | Gnoumanin                                            | 44/41              |
| Desital                            | 31/3, 34          | Jinfu No. 1                                          | 25/17              |
| Sarme                              | 43/53             | Jinza No. 1                                          | 25/17              |
| Other mutants mentioned            |                   | Longfuliang No. 1                                    | 25/17; 27/14; 33/5 |
| LM116                              | 37/13             | Sadje                                                | 44/42              |
| LM232                              | 37/13             | Sofin                                                | 44/42              |
| LM330                              | 37/13             | Tiedjan                                              | 44/42              |
| LM382                              | 37/13             | Other mutants mentioned                              |                    |
| Varieties treated                  |                   | CBA 81-1227                                          | 30/15              |
| Desiree                            | 24/9; 31/3, 34    | CBA-109                                              | 30/15              |
| Early rose                         | 23/9              | CBA-467                                              | 30/15              |
| F <sub>1</sub> Mariella x Xenia N  | 33/6              | CBA-469                                              | 30/15              |
| Lemhi Russet                       | 37/11             | CRP-1261                                             | 30/14              |
| Other varieties mentioned          |                   | CRP-1265                                             | 30/14              |
| Commandeur                         | 43/53             | CRP-1279                                             | 30/14              |
| USA No. 1                          | 37/13             | CRP-1359                                             | 30/14              |
| Mutagens used                      |                   | CRP-1543                                             | 30/14              |
| DMS                                | 33/6              | CRP-2085                                             | 30/14              |
| Gamma rays                         | 23/9; 24/9; 37/13 | fuxin 9-1                                            | 33/5               |
| Gamma rays ( <i>in vitro</i> )     | 31/3, 34          | Lifu 119-3                                           | 33/5               |
| X rays ( <i>in vitro</i> )         | 22/13             | Varieties treated                                    |                    |
| NEH                                | 33/6              | Criollo Rojo Pequeno (CRP)                           | 21/8; 30/13        |
| NMH                                | 33/6              | Criollo Rojo Alto                                    | 21/8               |
|                                    |                   | Criollo Blanco Alto (CRP)                            | 21/8; 30/13        |

|                            |               |                                              |               |
|----------------------------|---------------|----------------------------------------------|---------------|
| CSM 228                    | 44/41, 42     |                                              | 44/42         |
| CSM 338                    | 44/41, 42     | Tallness                                     | 28/13; 29/27; |
| CSV.5 (CSV 5)              | 28/13; 29/27  |                                              | 30/14, 15     |
| IPS 0001                   | 44/41, 42     | Yield                                        | 21/8; 25/17;  |
| Krupnosemyannaya 3         | 31/34         |                                              | 27/14; 28/13; |
| Male steile line 296A      | 35/31         |                                              | 29/27; 30/14; |
| Restorer line 5501         | 35/31         |                                              | 31/34; 33/5   |
| Xinliang No. 7             | 25/17; 27/14; | Countries                                    |               |
|                            | 33/5          | China                                        | 25/17; 27/14; |
| Other varieties mentioned  |               |                                              | 33/6; 35/13   |
| 296A                       | 35/13         | India                                        | 28/14; 29/27; |
| 3197A                      | 25/17         |                                              | 35/31         |
| Feterita                   | 30/14         | Mali                                         | 44/41, 42     |
| Mironovskaya 10            | 31/34         | Nigeria                                      | 36/5          |
| P-815 B                    | 30/14         | USSR                                         | 31/34         |
| Hybrid 11A x fuxin 9-1     | 33/5          | Venezuela                                    | 21/8; 30/16   |
| Mutagens used              |               | <b><i>Sorghum dura</i></b>                   |               |
| DMS                        | 31/34         | Mutant varieties                             |               |
| EMS                        | 36/5          | Volzhskoye 4                                 | 40/20         |
| Gamma rays                 | 21/8; 25/17;  | Varieties treated                            |               |
|                            | 30/13; 44/41, | F <sub>1</sub> mutant of Efremovskoye 2 x    | 40/20         |
|                            | 42            | mutant of Volgskoye 2                        |               |
| Laser                      | 27/14         | Breeding objectives                          |               |
| Microwaves                 | 27/14         | Shortness                                    | 40/20         |
| MMS                        | 35/13; 35/31  | Treshability                                 | 40/20         |
| Sodium azide + gamma rays  | 21/8; 30/13   | Countries                                    |               |
| Thermal neutrons           | 27/14         | USSR                                         | 40/20         |
| X rays                     | 28/13; 29/27  | <b><i>Sorghum sudanense</i></b>              |               |
| Breeding objectives        |               | Mutant varieties                             |               |
| Adaptability               | 21/8; 25/17   | Donetskaya 5                                 | 41/29         |
| Charcoal rot resistance    | 21/8; 30/14,  | Mironovskaya 8                               | 41/29         |
|                            | 15            | Other varieties mentioned                    |               |
| Combining ability          | 35/13, 31     | Kubanskii jantar 84/327                      | 41/29         |
| Disease tolerance          | 28/13; 29/27; | Mironovskaya 10                              | 41/29         |
|                            | 31/34; 33/5   | Mutagens used                                |               |
| Drought resistance         | 30/14; 31/34  | DMS                                          | 41/29         |
| Dwarfness                  | 33/5          | Breeding objectives                          |               |
| Earliness                  | 44/42         | Drought tolerance                            | 41/29         |
| Early maturity             | 25/17; 27/14; | Earliness                                    | 41/29         |
|                            | 30/14, 15;    | Lodging resistance                           | 41/29         |
|                            | 31/34; 33/5   | Countries                                    |               |
| Fodder type                | 28/13; 29/27  | USSR                                         | 41/29         |
| <i>Fusarium</i> resistance | 30/14         | <b>Sour cherry see <i>Prunus cerasus</i></b> |               |
| Grain colour               | 44/41         | <b>Soybean see <i>Glycine max</i></b>        |               |
| Grain size                 | 44/42         | <b><i>Spinacia oleracea</i></b>              |               |
| Grain yield                | 44/41, 42     | Mutant varieties                             |               |
| Herbicide resistance       | 36/5          | Lavewa                                       | 37/39         |
| Insect tolerance           | 28/13; 29/27  | Varieties treated                            |               |
| Large grain                | 30/14, 15     | Frü-Remona                                   | 37/39         |
| Lodging resistance         | 44/42         | Mutagens used                                |               |
| Mechanical harvest         | 27/14; 33/5   | EMS                                          | 37/39         |
| Morphological mutants      | 36/5          | Breeding objectives                          |               |
| Panicle size               | 30/14, 15;    | Dry matter content                           | 37/39         |
|                            | 44/42         | Late bolting                                 | 37/39         |
| Panicle number             | 30/14, 15     | Long harvest time                            | 37/39         |
| Pest resistance            | 31/34         | Long vegetative growth                       | 37/39         |
| Quality                    | 25/17         |                                              |               |
| Root activity              | 30/14         |                                              |               |
| Short straw                | 25/17; 30/15; |                                              |               |

|                                                               |                      |        |
|---------------------------------------------------------------|----------------------|--------|
| Low nitrate content                                           | 37/39                | 40, 41 |
| Countries                                                     |                      |        |
| FRG                                                           | 37/39                |        |
| <b>St. Augustine grass</b> see <i>Stenotaphrum secundatum</i> |                      |        |
| <b>Stenotaphrum secundatum</b>                                |                      |        |
| Mutant varieties                                              |                      |        |
| TXSA 8202                                                     | 31/35                |        |
| TXSA 8212                                                     | 31/35                |        |
| Varieties treated                                             |                      |        |
| Floritam                                                      | 31/35                |        |
| Gamma rays                                                    | 31/35                |        |
| Breeding objectives                                           |                      |        |
| <i>Blissus insularis</i> resistance                           | 31/35                |        |
| Disease resistance                                            | 31/35                |        |
| <i>Panicum</i> mosaic virus resistance                        | 31/35                |        |
| Countries                                                     |                      |        |
| USA                                                           | 31/35                |        |
| <b>Streptocarpus sp.</b>                                      |                      |        |
| Mutant varieties                                              |                      |        |
| Aurora                                                        | 37/39                |        |
| Blue Windor                                                   | 31/35                |        |
| Dark Windor r                                                 | 31/35                |        |
| Dolly                                                         | 37/40                |        |
| Freya                                                         | 37/40                |        |
| Helle Glocke                                                  | 37/40                |        |
| Minidor                                                       | 31/35                |        |
| Nanna                                                         | 37/40                |        |
| Rosalie                                                       | 37/40                |        |
| Selene                                                        | 37/41                |        |
| Vando                                                         | 31/35                |        |
| White Windor                                                  | 31/35                |        |
| Varieties treated                                             |                      |        |
| Cynthia                                                       | 31/35                |        |
| Hera                                                          | 37/41                |        |
| Margaret                                                      | 31/35                |        |
| Mini Nymph                                                    | 31/35                |        |
| Juwel                                                         | 37/40                |        |
| Nadja                                                         | 37/40                |        |
| Neptun blau (Cupido)                                          | 37/40                |        |
| Neptun rose (Carmen)                                          | 37/39, 40            |        |
| Mutagens used                                                 |                      |        |
| X-rays                                                        | 31/35; 37/39, 40, 41 |        |
| Breeding objectives                                           |                      |        |
| Compact growth habit                                          | 37/40                |        |
| Earliness                                                     | 37/40                |        |
| Flower colour                                                 | 31/35; 37/39, 40, 41 |        |
| Flower number                                                 | 31/35                |        |
| Flower stalk length                                           | 31/35                |        |
| Flower size                                                   | 31/35                |        |
| Leaf size                                                     | 31/35                |        |
| Countries                                                     |                      |        |
| FRG                                                           | 31/35; 37/39,        |        |
| <b>Sugar beet</b> see <i>Beta vulgaris</i>                    |                      |        |
| <b>Sugarcane</b> see <i>Saccharum officinarum</i>             |                      |        |
| <b>Sunflower</b> see <i>Helianthus annuus</i>                 |                      |        |
| <b>Sweet cherry</b> see <i>Prunus avium</i>                   |                      |        |
| <b>Sweet potato</b> see <i>Ipomoea batatas</i>                |                      |        |
| <b>Stylosanthes guyanensis</b>                                |                      |        |
| Varieties treated                                             |                      |        |
| Accession No. 1336                                            |                      | 41/5   |
| Mutagens used                                                 |                      |        |
| Gamma rays                                                    |                      | 41/5   |
| Breeding objectives                                           |                      |        |
| Antracnosis ( <i>Colletrichum gleosporiodes</i> ) resistance  |                      | 41/5   |
| Forage production                                             |                      | 41/5   |
| Shrubby type                                                  |                      | 41/5   |
| Upright growth habit                                          |                      | 41/5   |
| Countries                                                     |                      |        |
| Brazil                                                        |                      | 41/5   |
| <b>Syringa vulgaris</b>                                       |                      |        |
| Mutant varieties                                              |                      |        |
| Prairie Petite                                                |                      | 44/42  |
| Mutagens used                                                 |                      |        |
| Thermal neutrons                                              |                      | 44/42  |
| Breeding objectives                                           |                      |        |
| Dwarfness                                                     |                      | 44/42  |
| Leaf morphology                                               |                      | 44/42  |
| Countries                                                     |                      |        |
| USA                                                           |                      | 44/42  |
| <b>T</b>                                                      |                      |        |
| <b>Tannia</b> see <i>Xanthosoma sagittifolium</i>             |                      |        |
| <b>Taro</b> see <i>Colocasia esculenta</i>                    |                      |        |
| <b>Tea</b> see <i>Camelia sinensis</i>                        |                      |        |
| <b>Tobacco</b> see <i>Nicotiana tabacum</i>                   |                      |        |
| <b>Tomato</b> see <i>Lycopersicon esculentum</i>              |                      |        |
| <b>Tossa jute</b> see <i>Corchorus olitorius</i>              |                      |        |
| <b>Trifolium alexandrinum</b>                                 |                      |        |
| Mutant varieties                                              |                      |        |
| BL-22                                                         |                      | 26/15  |
| Other mutants mentioned                                       |                      |        |
| BL-22                                                         |                      | 26/4   |
| Varieties treated                                             |                      |        |

|                                         |             |                                 |                        |
|-----------------------------------------|-------------|---------------------------------|------------------------|
| Mescavi                                 | 26/4, 15    | EMS                             | 24/7; 32/6             |
| Other varieties mentioned               |             | Fast neutrons                   | 35/12                  |
| S-99-1                                  | 26/4        | Gamma rays                      | 24/7; 32/6             |
| Mutagens used                           |             | Gamma rays (anther culture)     | 27/8                   |
| Gamma rays                              | 26/4, 15    | HZ                              | 24/7                   |
| Breeding objectives                     |             | MNH                             | 34/17; 35/12           |
| Dry matter yield                        | 26/4, 15    | NEH                             | 34/24                  |
| Green fodder yield                      | 26/4, 15    | Sodium azide                    | 34/24                  |
| Late flowering                          | 26/4, 15    | Breeding objectives             |                        |
| Countries                               |             | Amylase activity                | 24/8                   |
| India                                   | 26/5, 15    | Chlorophyll mutants             | 34/24                  |
| <b><i>Trigonella corniculata</i></b>    |             | Dwarfness                       | 24/7; 32/6             |
| Mutagens used                           |             | Early heading                   | 24/7                   |
| DES                                     | 42/12       | Early maturity                  | 34/24                  |
| DMS                                     | 42/12       | GA productuin and utilization   | 24/7, 8                |
| Gamma rays                              | 42/12       | Grain characters                | 24/7                   |
| Breeding objectives                     |             | Lodging resistance              | 35/12                  |
| Chlorophyll mutants                     | 42/12       | Semi-dwarfness                  | 32/6; 34/18, 24; 35/12 |
| Countries                               |             | Stunted                         | 32/6                   |
| India                                   | 42/13       | Countries                       |                        |
| <b><i>Trigonella foenum graecum</i></b> |             | China                           | 27/8                   |
| Varieties treated                       |             | Czechoslovakia                  | 34/18, 24              |
| FOS 8                                   | 24/3        | India                           | 24/8; 32/6             |
| Mutagens used                           |             | Poland                          | 35/12                  |
| EMS                                     | 35/26       | Other information               |                        |
| Gamma rays                              | 24/3; 35/26 | <i>In vitro</i> cultures        | 24/8                   |
| Irradiation                             | 23/5        | <b><i>Triticum aestivum</i></b> |                        |
| Breeding objectives                     |             | Mutant varieties                |                        |
| Earliness                               | 24/3        | 092                             | 25/17                  |
| Reduced coumarins content               | 23/5        | 1161                            | 25/18                  |
| Tolerance to water stress               | 24/3        | 62-8                            | 30/27                  |
| Reduced bitterness                      | 24/3        | 62-10                           | 30/27                  |
| Yield                                   | 24/3; 35/26 | 79p-17                          | 25/20                  |
| Countries                               |             | Albidum 12                      | 31/36                  |
| India                                   | 24/3; 35/26 | Bakhtawar-92                    | 44/42                  |
| Italy                                   | 23/5        | Bel'chanka 5                    | 40/17                  |
| <b><i>Triticale</i></b>                 |             | Birlik                          | 40/17                  |
| Other mutants mentioned                 |             | BR4                             | 26/15                  |
| ADD 143-m8                              | 34/18       | Changwei 19                     | 25/19                  |
| Varieties treated                       |             | Changwei 20                     | 25/19                  |
| ADD 143/71                              | 34/17       | Chuanfu 1                       | 27/7                   |
| Beagle                                  | 32/6        | Chuanfu 2                       | 37/41                  |
| Coorong                                 | 32/6        | Chuanfu 3                       | 37/41                  |
| DTS 330                                 | 24/7        | Darkhan-35                      | 44/42                  |
| DTS 34-3                                | 24/7        | Darkhan-49                      | 44/43                  |
| h739                                    | 27/8        | Deda                            | 31/36                  |
| KS126                                   | 34/24       | Dnestrlyanka                    | 40/17                  |
| KS60                                    | 34/24       | Emai No. 6                      | 25/17                  |
| Lasko                                   | 35/12       | Eritropermum 103                | 40/17                  |
| PS728                                   | 34/24       | Fu 66                           | 32/30                  |
| TL 419                                  | 32/6        | Fushiabo                        | 37/41                  |
| V2-2Z                                   | 34/24       | Fusi No. 4                      | 25/19                  |
| V2-30                                   | 34/24       | Henong 1 (Henong No. 1)         | 30/27; 41/29           |
| Welsh                                   | 32/6        | Hezu 8                          | 41/29                  |
| Mutagens used                           |             | Inna                            | 40/17                  |
| DES                                     | 24/7        | Intesar                         | 43/53                  |

|                           |                      |                              |                      |
|---------------------------|----------------------|------------------------------|----------------------|
| Iratom                    | 43/54                | Tambo                        | 30/26                |
| Jenmai No. 2              | 25/18                | Tammuz-2                     | 43/54                |
| Jingfen No. 1             | 25/19                | Tammuz-3                     | 43/54                |
| Jinmai 22                 | 35/41                | Wanyuan 28-88                | 25/20                |
| Kazanskaya 84             | 40/18                | Wei Fu 6757                  | 32/31                |
| Kharkovskaya 90           | 40/18                | Xifu 4                       | 37/42                |
| Khara-86                  | 44/43                | Xifu 5                       | 37/42                |
| Khersonskaya 86           | 40/18                | Xinchun No. 2                | 32/31                |
| Kijanka                   | 25/20; 40/18         | Xin Cun 2                    | 27/8                 |
| Kormovaya 30              | 31/36                | Xinong-Mai 2                 | 44/43                |
| Krasnodarskii karlik 1    | 40/18, 19            | Xinshukuang No. 1            | 25/19                |
| Ljubov                    | 35/41                | Yannoun 685                  | 25/19                |
| Longfu 77-4096            | 32/30                | Yuandong 94                  | 30/27                |
| Longfumai No. 1           | 30/26; 41/29         | Yuandong No. 1               | 25/20                |
| Longfumai No. 2           | 32/30                | Yuandong No. 3               | 27/7; 30/26;<br>42/3 |
| Longfumai No. 3           | 32/30                |                              |                      |
| Longfumei No. 1           | 27/8; 33/5           | Yuanfeng No. 1               | 25/18                |
| Lu Mai No. 4              | 32/30                | Yuanfeng No. 2               | 25/18                |
| Lu Mai No. 5              | 32/30                | Yuanfeng No. 3               | 25/18                |
| Lu Mai No. 6              | 32/30                | Yuanfeng No. 4               | 25/19                |
| Lu Mai No. 8              | 32/30                | Yuanfeng No. 5               | 37/42                |
| Luten No. 1               | 25/18                | Yubileinaya 75               | 40/20                |
| Lutescens 7               | 40/18                | Yunfunzao                    | 25/20                |
| Meshenskaya               | 40/18                | Yunnant odesskii             | 40/20                |
| Moskovskaya 70            | 40/18                | Yuyuan No. 1                 | 25/19                |
| Moskovskaya nizkosteb.    | 40/18                | Zhemai No. 3                 | 32/31                |
| Motsinave 100             | 37/41                | Zhengliufu                   | 25/20                |
| Mriya Khersona            | 40/19                | Zlatostrui                   | 32/31                |
| MV-8                      | 22/18                | Other mutants mentioned      |                      |
| Nanyang 75-6              | 25/20                | 2460-2                       | 26/3                 |
| Nechinovskaya 52          | 40/19                | 2460-16                      | 26/3                 |
| Nechinovskaya 86          | 40/17, 19            | 2460-18                      | 26/3                 |
| Ningmai No. 3             | 25/19                | 2460-19                      | 26/3                 |
| Nishte-95                 | 44/43                | 2460-22                      | 26/3                 |
| Odesskaya polukarlikovaya | 40/17, 18, 19,<br>20 | 2460-23                      | 26/3                 |
| Omskaya ozimaya           | 40/19                | 34157                        | 36/4                 |
| Pitikul                   | 40/19                | 34158                        | 36/4                 |
| Polukarlik 3              | 40/19                | 63-5-I                       | 34/16                |
| Polukarlikovaya 49        | 40/17, 18            | 64-1                         | 34/17                |
| Progress                  | 40/19                | 64-4                         | 34/17                |
| Qicheng 115               | 32/31                | 72r-16                       | 37/42                |
| Qunzhong 42               | 25/18                | 79p-17                       | 27/7                 |
| Rabia                     | 43/54                | 82 Nan 389                   | 27/9                 |
| Sali                      | 43/54                | Har Shi 82-14 (Harshi 82-14) | 27/10; 33/6          |
| Shchedraya Polesya        | 31/36                | Harshi 82-1-1                | 33/6                 |
| SGT 17                    | 37/42                | Harshi 82-2-23-1             | 33/6                 |
| Shirowase-komugi          | 21/17                | Har Shi 82-1-4               | 27/10                |
| Short Mengiu              | 32/30                | Har Shi 84-18                | 27/10                |
| Sibirskaya niva           | 40/19                | Har Shi 83-449               | 27/10                |
| Skifyanka                 | 40/20                | Har Shi 1294                 | 27/10                |
| Soghat                    | 42/34                | IAS 20*3/Sinvalochi gama     | 26/15                |
| Spartanka                 | 40/20                | KS-5                         | 41/18                |
| Spinnaker                 | 37/42                | L30-3-2                      | 27/9                 |
| Taara                     | 25/8                 | Longfu 5009                  | 33/5                 |
| Tatara                    | 44/43                | Longfu 80-7006               | 33/5                 |
| Taifu 23                  | 25/18                | Longfu 82-92072              | 27/9                 |
| Taifu No. 6               | 25/17                | Longfu 82nen389              | 33/6                 |
|                           |                      | Longfu 92027                 | 33/6                 |

|                                            |             |                                                   |                         |
|--------------------------------------------|-------------|---------------------------------------------------|-------------------------|
| M 1576                                     | 26/8        | 4                                                 |                         |
| M 1658                                     | 26/8        | F <sub>1</sub> Taishan No. 1 x Shanqian mai       | 32/31                   |
| M 169                                      | 26/8        |                                                   |                         |
| M 1870                                     | 26/8        | F <sub>1</sub> triticale x wheat                  | 27/9                    |
| M 20/127                                   | 26/8        | F <sub>1</sub> Xin No. 3 x Lio No. 8              | 27/8; 33/5              |
| M 329                                      | 26/8        | F <sub>1</sub> Xinshuguang No. 1 x Lia No. 8      | 30/26                   |
| M 51/112                                   | 26/8        |                                                   |                         |
| M 524                                      | 26/8        | F <sub>2</sub> Mexican 225 x Sadovo 1             | 32/31                   |
| M 687                                      | 26/8        | F <sub>2</sub> Saberbeg x (Mexipak x AbuGhraib 4) | 35/30                   |
| M 688                                      | 26/8        |                                                   |                         |
| M 773                                      | 26/8        | F <sub>2</sub> SaberBeg x Araz                    | 35/30                   |
| MS-77                                      | 44/42       | F <sub>2</sub> SaberBeg x Mexipak                 | 35/30                   |
| MK-62                                      | 40/18       | F <sub>2</sub> St2422/464 x Neixiang              | 25/19, 20               |
| No. 1300                                   | 27/9        | No.5                                              |                         |
| No. 1309                                   | 27/9        | F <sub>3</sub> 12040 x Aurora                     | 27/7; 30/26             |
| No. 527                                    | 27/9        | Fengchen No. 2/Bima No. 4 x                       | 25/20                   |
| No. 650                                    | 27/9        | Nanda 2419                                        |                         |
| No. 663-1                                  | 27/9        | Forlani                                           | 37/42                   |
| No. 7412                                   | 27/9        | Guardian                                          | 34/11                   |
| UACH-2I                                    | 21/8        | Hairy Afu                                         | 25/19                   |
| UACH-3-I                                   | 21/8        | Heunufen                                          | 21/8                    |
| WM-6-17                                    | 32/14       | Hobbit sib                                        | 38/3                    |
| WM-81-2                                    | 32/14       | Huixianhong                                       | 25/18                   |
| WM-89-1                                    | 32/14       | Inia-66                                           | 34/10                   |
| Yuandong 94                                | 27/7        | IXIII-4 White                                     | 41/29                   |
| Yuandong 96                                | 27/7        | Jingzuo 348                                       | 27/8                    |
| ZB103                                      | 34/10       | Ironovskaya 61                                    | 35/12                   |
| ZC115                                      | 34/10       | Karcagi 522                                       | 33/8                    |
| Varieties treated                          |             | Kharkovskaya                                      | 35/12                   |
| 12040 x Aurora                             | 30/27       | Kiyanka                                           | 35/12                   |
| 70-4-92-1                                  | 32/30       | Line (Probus x Bankuti) x                         | 30/26                   |
| 77 Zhong 2882                              | 44/43       | Hoeser 52                                         |                         |
| Abbodanza                                  | 30/27       | Lalbahadur                                        | 34/23                   |
| Abo                                        | 37/41       | Lovlin 10                                         | 27/9                    |
| AboM <sub>4</sub> x Orofen                 | 25/19       | (Lovrin 13 x Yuoxuan 57) x                        | 37/42                   |
| Afu                                        | 25/18       | Xiayingsu                                         |                         |
| Alondra                                    | 27/8        | Lu-26                                             | 32/14                   |
| Anza                                       | 37/42       | Lutescens 62                                      | 40/17                   |
| Austral                                    | 21/8        | Lutescens 7                                       | 35/12                   |
| Avalon                                     | 32/3        | Mironovskaya 808                                  | 35/12                   |
| Azadi                                      | 28/3        | Motsinava                                         | 31/36                   |
| Beijing No. 6                              | 25/18       | Nanda 2419                                        | 25/17, 18               |
| Belotserkovskaya 198                       | 31/36       | Nannoundaheimang                                  | 25/18                   |
| BH-1146                                    | 43/38       | Ningmai 3                                         | 36/4                    |
| Bima No. 4                                 | 25/18       | Ningmai 6                                         | 36/4                    |
| Changnoun 17 x Norin 77                    | 27/7        | Norman                                            | 32/3                    |
| Chuanyu No. 5                              | 25/20; 27/5 | Nounda 183                                        | 25/17                   |
| E 70                                       | 32/31       | Nounda 183 x Neixiang No. 5                       | 25/18                   |
| Express                                    | 21/8        | Omid                                              | 34/17                   |
| F <sub>1</sub> Baimai 18 x 79P-6007        | 37/41       | Orkhon                                            | 44/43                   |
| F <sub>1</sub> Chernomorskaya x            | 40/18       | Pavon                                             | 42/34                   |
| Mironovskaya jubilejnaya                   |             | Polesskaya 70                                     | 31/36                   |
| F <sub>1</sub> Chuanfu 1 x 78-2882         | 37/41       | PPG-186                                           | 40/19                   |
| F <sub>1</sub> Henong No. 1 x Zhemai No. 1 | 41/29       | Rena                                              | 41/18                   |
| F <sub>1</sub> Longxi No. 35 x Ke 250      | 32/30       | Saber Beg (SaberBeg)                              | 34/14; 35/30; 43/53, 54 |
| F <sub>1</sub> Qifu 04 x Yaan 74-550       | 32/31       | San Pastore                                       | 35/2                    |
| F <sub>1</sub> Siette Cerros x Qichun No.  | 32/31       | Sarruvra                                          | 44/42                   |

|                                  |               |                                               |                |
|----------------------------------|---------------|-----------------------------------------------|----------------|
| Shijiazhuang 63                  | 25/19         | Priboj                                        | 40/20          |
| Shirogane-komugi                 | 21/17         | Pshenichno-pireen hybrid-186                  | 23/13          |
| Sonalika                         | 33/19         | S-A-25                                        | 32/30          |
| Spartanka                        | 40/20         | Sadovo 1                                      | 32/3           |
| St2422/464/506                   | 25/19         | Sava NS-611                                   | 40/17          |
| Stepnyak                         | 35/12         | Skorospelka-35                                | 23/13          |
| Tabassi                          | 34/16         | Shen 68-71                                    | 27/9           |
| Taishan No. 1                    | 25/19         | Youbo                                         | 25/19          |
| Tifton                           | 21/9          | Zarja                                         | 40/17, 18      |
| <i>Triticum-Agropyron</i> hybrid | 31/36         | Mutagens used                                 |                |
| 870                              |               | Beta rays                                     | 25/20; 41/29   |
| UACH-2-75                        | 21/8          | Chemical mutagens                             | 35/30; 40/20   |
| UK-8                             | 35/12         | DES                                           | 25/20; 40/18   |
| Velutinum 97 x Albidum 114       | 40/18         | EMS                                           | 21/9; 34/11    |
| WH 147                           | 26/3          | ENH (ENU)                                     | 41/18          |
| Yangmai 1                        | 30/27         | Ethylene imine (EI)                           | 27/8; 40/19    |
| Yangmai 3                        | 36/4          | Fast neutrons                                 | 30/27; 35/30;  |
| Yuandong 767 x Lovrin            | 27/7          |                                               | 37/42; 38/3;   |
| Yuandong 767 x Aurora            | 27/7          |                                               | 43/54          |
| Yuandong 771 x Naixue            |               | Gamma rays                                    | 21/8,9,17;     |
| Yuandong 771 x 80076 early       | 27/7          |                                               | 23/13; 25/17,  |
| Yuandong 777 x Gaodabei          | 27/7          |                                               | 18, 19, 20;    |
| Yuandong No. 1 x St.             | 27/7          |                                               | 27/7, 8, 9;    |
| 2422/464                         |               |                                               | 28/3, 5;       |
| Yuobobei x San Pastore           | 27/7          |                                               | 30/26, 27;     |
| Yuobobei x Aurora                | 27/7          |                                               | 31/36; 32/3,   |
| Zaoyang x Dongfenhong            | 25/20         |                                               | 14; 32/30, 31; |
| Zhengzhou No. 6                  | 25/20         |                                               | 33/6, 8;       |
| Other varieties mentioned        |               |                                               | 34/10, 14, 16, |
| 1520                             | 23/13         |                                               | 17, 21; 35/3,  |
| Ahtyrchanka                      | 40/18         |                                               | 12; 36/3;      |
| Aurora                           | 23/13         |                                               | 37/41, 42;     |
| Belocerkovskaka-198              | 23/13         |                                               | 41/29; 42/3;   |
| Chika                            | 40/20         |                                               | 43/38, 53, 54; |
| Donskaya ostistaya               | 40/17         | Gamma rays (anther culture)                   | 44/42, 43      |
| Fanxiumai                        | 37/42         | Gamma rays ( <i>in vitro</i> )                | 27/8           |
| Hohentrurmer 4891-67             | 40/18         | Gamma rays + EI                               | 28/5; 35/30    |
| Jubilejnaya                      | 40/17         | Gamma rays + laser                            | 40/17          |
| Kaukaz (Kavkaz)                  | 23/13; 40/17, | Irradiation                                   | 32/15          |
|                                  | 20            | Irradiation ( <i>in vitro</i> )               | 35/30          |
| Kefeng 1                         | 27/10         | Laser                                         | 35/30          |
| Kefu                             | 27/9          | KH <sub>2</sub> <sup>32</sup> PO <sub>4</sub> | 32/30, 31      |
| Kharkovskaya 63-1                | 40/19         | MNU (NMH) = (MNH)                             | 27/7           |
| Khersonskaya 170                 | 40/19         |                                               | 31/36; 34/23;  |
| Kosutkz                          | 41/18         | Neutrons                                      | 40/18          |
| Lerma Roho                       | 40/20         | Sodium azide                                  | 27/9; 33/6     |
| LMPG                             | 43/38         |                                               | 33/19; 34/11;  |
| Lutescens 1673h75                | 40/20         | Somaclonal variation                          | 42/34          |
| Mexipak                          | 23/14         | Thermal neutrons                              | 35/30          |
| Mironovskaya 808                 | 40/18, 19     |                                               | 27/8; 30/26;   |
| Mironovskaja jarovaya            | 44/42         |                                               | 33/5           |
| Norin 10                         | 27/9          | X-rays                                        | 34/11          |
| Obriii                           | 40/18         | Breeding objectives                           |                |
| Odesskaja-51 (Odesskaya 51)      | 23/13; 40/17, | Adaptability                                  | 25/17; 32/31;  |
|                                  | 19            |                                               | 37/42          |
| Odesskaya 16                     | 40/19         | Adopted to late planting                      | 32/30          |
| Pak-81                           | 32/14         | Alkaline tolerance                            | 25/19; 32/31;  |
| Pavlovka                         | 40/20         |                                               | 42/3           |
|                                  |               | Aphids resistance                             | 42/3           |
|                                  |               | Baking quality                                | 40/17, 18, 20; |
|                                  |               |                                               | 43/53          |

|                                     |                 |                                    |                |
|-------------------------------------|-----------------|------------------------------------|----------------|
| Chlorophyll mutants                 | 26/8            |                                    | 36/4; 41/18;   |
| Callus induction                    | 35/12           |                                    | 42/3           |
| Cold tolerance                      | 25/18; 26/8     | Protein content                    | 21/8; 26/8;    |
| Combining ability                   | 26/8            |                                    | 27/9; 30/27;   |
| Disease resistance                  | 25/19, 20;      |                                    | 33/5; 37/42;   |
|                                     | 26/8; 27/9;     | Quality                            | 42/34; 44/42   |
|                                     | 32/30; 33/5;    |                                    | 30/26; 32/31;  |
|                                     | 38/2; 38/5;     |                                    | 33/5; 37/42;   |
|                                     | 40/17, 18, 19,  |                                    | 41/29          |
|                                     | 20; 43/54;      | Root rot resistance                | 27/10; 33/5    |
|                                     | 44/42, 43       | Rust resistance                    | 25/17, 19;     |
| Drought tolerance                   | 25/17, 18, 19,  |                                    | 27/7; 30/26,   |
|                                     | 20; 27/8;       |                                    | 27; 32/14, 31; |
|                                     | 32/30, 31;      |                                    | 34/23; 42/3    |
|                                     | 33/6; 37/42;    | Rye-wheat translocation            | 27/9, 10; 33/6 |
|                                     | 40/17, 18, 19;  | Salt tolerance                     | 25/19; 32/31;  |
|                                     | 44/43           |                                    | 35/30; 42/3    |
| Dry and hot wind tolerance          | 25/18, 19;      | Scab resistance                    | 27/7, 10;      |
|                                     | 27/7; 30/26;    |                                    | 32/30, 31;     |
|                                     | 32/30           |                                    | 41/29          |
| Dwarfness                           | 33/8            | Seed retention                     | 40/17, 18, 19  |
| Earliness                           | 21/9; 31/36;    | Seed size                          | 40/17, 18, 19  |
|                                     | 40/17, 19;      | Semi-dwarfness                     | 25/18; 34/10;  |
|                                     | 41/29; 44/43    |                                    | 44/43          |
| Early maturity                      | 25/17, 18; 19,  | <i>Septoria tritici</i> resistance | 35/30          |
|                                     | 20; 27/7, 8, 9; | Shattering resistance              | 28/3           |
|                                     | 30/26; 32/3,    | Short culm                         | 23/13; 25/19,  |
|                                     | 30, 31; 33/5;   |                                    | 20; 26/8;      |
|                                     | 34/17; 37/41,   |                                    | 27/7, 8, 9;    |
|                                     | 42; 41/18, 29   |                                    | 30/26, 27;     |
| Enhanced recombination              | 27/8            |                                    | 32/30; 34/17;  |
| <i>Erysiphe graminis</i> resistance | 35/2            |                                    | 37/42; 40/17;  |
| Frost resistance                    | 31/36           |                                    | 41/18          |
| Glume colour                        | 33/19           | Silage production                  | 31/36          |
| Grain quality                       | 25/18, 19, 20;  | Spike length                       | 23/13, 25/19;  |
|                                     | 26/8; 27/7, 8   |                                    | 27/9, 10       |
| Hectolitre weight (HLW)             | 34/11           | Stem rust resistance               | 25/17, 19;     |
| Humidity tolerance                  | 25/20           |                                    | 26/15; 27/9;   |
| Insect resistance                   | 40/18, 20       |                                    | 32/30; 33/6;   |
| Isozyme pattern changes             | 34/21           |                                    | 35/3; 43/37,   |
| Large grain                         | 25/18, 19;      |                                    | 38             |
|                                     | 32/30           | Stripe rust resistance             | 25/17, 18, 19, |
| Leaf rust resistance                | 25/19; 26/3;    |                                    | 20; 27/7, 9;   |
|                                     | 27/10; 33/6;    |                                    | 30/27; 32/30;  |
|                                     | 35/3; 37/42;    |                                    | 37/41, 42      |
|                                     | 42/34           | Strong stem                        | 25/19; 32/31   |
| Lodging resistance                  | 25/17, 18, 19;  | Super early maturing               | 27/8           |
|                                     | 26/8; 27/8, 9;  | Talness                            | 31/35          |
|                                     | 30/27; 31/36;   | Tillering                          | 31/36; 32/30   |
|                                     | 32/30, 31;      | <i>Tilletia</i> ssp. resistance    | 34/14          |
|                                     | 34/16, 17;      | Tissue culture response            | 28/5           |
|                                     | 37/42; 40/17,   | Tolerance to wet, barren soil      | 27/7           |
|                                     | 18, 19, 20      | Uniformity                         | 25/20          |
| Lysine content                      | 21/8; 32/14;    | White grain                        | 25/18          |
|                                     | 33/5            | Winter hardiness                   | 40/17, 18, 19; |
| Morphological mutants               | 26/8; 35/12     |                                    | 41/18          |
| Plant height                        | 23/13; 27/10    | Yield                              | 25/17, 19, 20; |
| Plant type                          | 21/17           |                                    | 26/15; 27/8,   |
| Powdery mildew resistance           | 25/19; 27/7,    |                                    | 10; 28/3;      |
|                                     | 10; 30/26;      |                                    | 30/26, 27;     |
|                                     | 32/30, 31;      |                                    | 31/36; 32/14,  |
|                                     | 34/17, 21;      |                                    | 30, 31; 33/5,  |



|                                              |                        |                           |                                      |
|----------------------------------------------|------------------------|---------------------------|--------------------------------------|
| London                                       | 41/29                  | Uladowskii x Fribo        | 31/37                                |
| Lustige Witwe                                | 31/37; 37/43,<br>44    | Other varieties mentioned |                                      |
| Other varieties mentioned                    |                        | 3177/77                   | 43/55                                |
| Frederica                                    | 31/37                  | Alfred                    | 35/6                                 |
| Success                                      | 31/37                  | Minica                    | 35/6                                 |
| Mutagens used                                |                        | Mutagens used             |                                      |
| Chemical mutagen                             | 41/29                  | Chemical mutagens         | 31/37                                |
| X-rays                                       | 31/37; 37/43,<br>44    | DES                       | 40/32                                |
| Breeding objectives                          |                        | DMS                       | 40/22                                |
| Bulb production                              | 31/37                  | EI                        | 40/22                                |
| Disease resistance                           | 41/29                  | Gamma rays                | 29/27;<br>31/37,38;<br>37/44; 43/55  |
| Flower colour                                | 31/37; 37/43;<br>41/29 | MNH                       | 40/22                                |
| Short stalk                                  | 37/43                  | NEH (ENH)                 | 31/37; 40/22                         |
| Variegated leaves                            | 37/44                  | X-rays                    | 30/27                                |
| Countries                                    |                        | Breeding objectives       |                                      |
| Russia                                       | 41/29                  | Determinate growth habit  | 35/6; 41/30                          |
| The Netherlands                              | 31/37; 37/43,<br>44    | Disease resistance        | 31/37; 43/55                         |
| <b>Turmeric</b> see <i>Curcuma</i>           |                        | Dwarfness                 | 41/30                                |
| <i>domestica</i>                             |                        | Earliness                 | 43/55                                |
| <b>Turnip</b> see <i>Brassica campestris</i> |                        | Early maturity            | 30/27; 31/37,<br>38; 41/30           |
| <b>V</b>                                     |                        | Erect plant               | 29/27                                |
| <i>Vicia faba</i>                            |                        | Fodder type               | 29/27                                |
| Mutant varieties                             |                        | Indeterminate             | 29/27                                |
| Babylon                                      | 43/55                  | Lodging resistance        | 30/27; 35/5                          |
| Bronto                                       | 37/44                  | Mechanical harvest        | 30/27                                |
| Chabanskii                                   | 31/37                  | Protein content           | 40/22; 43/55                         |
| Dino (RAH 182)                               | 31/38                  | Seed size                 | 31/37, 38                            |
| Karna (H 448)                                | 29/27                  | Short stem                | 31/37, 38;<br>35/6                   |
| KIU-82                                       | 31/37                  | Stable yield              | 37/44                                |
| Martin                                       | 43/55                  | Stiff straw               | 35/5                                 |
| Prikarpatskie 4                              | 40/22                  | Uniform maturity          | 30/27; 43/55                         |
| Severinovskie 1                              | 40/22                  | Yield                     | 29/27; 31/37;<br>40/22               |
| Stego (RAH 282)                              | 31/37                  | Countries                 |                                      |
| Ticol                                        | 35/6                   | Austria                   | 29/27                                |
| Ti-Nova                                      | 30/27                  | FRG                       | 35/6                                 |
| Tinos                                        | 41/30                  | GDR                       | 30/27                                |
| Tuwaitha                                     | 43/55                  | Iraq                      | 43/55                                |
| Other mutants mentioned                      |                        | Poland                    | 31/37, 38;<br>37/44; 41/30;<br>43/55 |
| KYU-82                                       | 40/22                  | USSR                      | 31/37; 40/22                         |
| ti mutant                                    | 30/27; 35/6;<br>41/30  | <b>Vicia sativa</b>       |                                      |
| TJ 3177/77                                   | 43/55                  | Mutant varieties          |                                      |
| Varieties treated                            |                        | Nechinovskaya 84          | 40/22                                |
| Ekwadelgii                                   | 43/55                  | Nikian                    | 43/55                                |
| F <sub>1</sub> KYU-82 x Fribo                | 40/22                  | Toplesa                   | 43/55                                |
| Herz Freya                                   | 35/6                   | Other mutants mentioned   |                                      |
| Kornberger Kleinkönige                       | 29/27                  | Mutant TI                 | 43/55                                |
| Minden                                       | 41/30                  | Varieties treated         |                                      |
| Nadwislanski                                 | 31/37, 38;<br>37/44    | Mirabella                 | 43/55                                |
| Prikarpatskie 2                              | 40/22                  | VIR K-33583               | 40/22                                |
|                                              |                        | Other varieties mentioned |                                      |
|                                              |                        | CIVI                      | 43/55                                |

|                               |                                      |                                        |                                                                          |
|-------------------------------|--------------------------------------|----------------------------------------|--------------------------------------------------------------------------|
| Mutagens used                 |                                      | Gamma rays                             | 22/10; 28/23;<br>33/17; 42/34;<br>43/55                                  |
| DES                           | 40/22                                |                                        |                                                                          |
| EMS                           | 43/55                                | Gamma rays + EMS                       | 30/16; 33/8;<br>38/6                                                     |
| Breeding objectives           |                                      | Hydroxylamine                          | 36/9                                                                     |
| Biomass yield                 | 40/22                                | MMS                                    | 28/13; 29/27                                                             |
| Branching                     | 43/55                                | Sodium azide                           | 34/20; 35/26;<br>36/9                                                    |
| Dwarfness                     | 43/55                                |                                        |                                                                          |
| Leaf shape                    | 43/55                                | Breeding objectives                    |                                                                          |
| Leaf size                     | 40/22                                | Branching                              | 36/10                                                                    |
| Countries                     |                                      | Bold seed                              | 38/6                                                                     |
| CSFR                          | 43/55                                | Bushy plant type                       | 35/26                                                                    |
| Italy                         | 43/55                                | <i>Cerospora</i> leaf spot resistance  | 22/10                                                                    |
| USSR                          | 40/22                                | Day-length tolerance                   | 28/13; 29/28                                                             |
| <b><i>Vigna angularis</i></b> |                                      | Determinate growth                     | 28/13; 29/28                                                             |
| Mutant varieties              |                                      | Disease resistance                     | 43/55                                                                    |
| Beni-nambu                    | 21/17                                | Dwarfness                              | 35/26; 36/10                                                             |
| Varieties treated             |                                      | Early maturity                         | 28/13; 29/28;<br>34/20; 43/55                                            |
| Mombetsu 26                   | 21/17                                | Grain weight                           | 42/34                                                                    |
| Mutagens used                 |                                      | Multifoliate                           | 33/17                                                                    |
| Gamma rays                    | 21/17                                | Pentafoliate                           | 30/16; 34/20                                                             |
| Breeding objectives           |                                      | Plant height                           | 33/8                                                                     |
| Earliness                     | 21/17                                | Plant size                             | 38/6                                                                     |
| Shortness                     | 21/17                                | Plant type                             | 22/10; 28/13;<br>29/28                                                   |
| Seed colour                   | 21/17                                | Powdery mildew resistance              | 28/23                                                                    |
| Seed size                     | 21/17                                | Root nodulation                        | 30/17; 36/10                                                             |
| Yield                         | 21/17                                | Seed size                              | 28/23                                                                    |
| Countries                     |                                      | Short stature                          | 28/13                                                                    |
| Japan                         | 21/17                                | Vigorous growth                        |                                                                          |
| <b><i>Vigna mungo</i></b>     |                                      | Vine type                              | 33/8                                                                     |
| Mutant varieties              |                                      | Yield                                  | 22/10; 28/23;<br>35/26; 38/6;<br>42/34                                   |
| Binamash-1                    | 43/55                                | YMV resistance                         | 22/10; 34/20                                                             |
| Co.4 (Co 4)                   | 28/13; 29/28                         | Countries                              |                                                                          |
| TAU 1                         | 28/23                                | Bangladesh                             | 22/11; 35/26;<br>43/55                                                   |
| TPU-4                         | 42/34                                | India                                  | 28/14, 23;<br>29/28; 30/17;<br>33/8, 17;<br>34/20; 36/10;<br>38/6; 42/34 |
| Other mutants mentioned       |                                      | <b><i>Vigna radiata</i></b>            |                                                                          |
| 4-196                         | 28/23                                | Mutant varieties                       |                                                                          |
| B-10/M-25                     | 22/10                                | Binamoog-2                             | 43/56                                                                    |
| B-10/M-23                     | 22/10                                | Camar                                  | 42/35                                                                    |
| M-18                          | 22/10                                | Co.4 (Co 4)                            | 28/13; 29/28                                                             |
| M-58                          | 22/10                                | ML 26-10-3                             | 33/33                                                                    |
| M-36                          | 22/10                                | MUM-2                                  | 42/7; 43/56                                                              |
| M-63                          | 22/10                                | NIAB M 51 = (NIAB Mung<br>51) = (NM51) | 37/4; 42/35;<br>44/11, 12, 14                                            |
| UM-201                        | 42/34                                | NIAB M 54 = (NIAB Mung<br>54) = (NM54) | 37/4; 42/35;<br>44/11, 12, 14                                            |
| Varieties treated             |                                      | NIAB Mung 121-25 (NM121-<br>25)        | 30/28; 32/7;<br>37/4; 44/11,<br>12, 14                                   |
| B-10                          | 22/10                                |                                        |                                                                          |
| B-23                          | 22/10                                |                                        |                                                                          |
| BINA Acc. B-10                | 43/55                                |                                        |                                                                          |
| Co.1 (Co 1)                   | 28/13; 29/28                         |                                        |                                                                          |
| Netiminumu                    | 33/17                                |                                        |                                                                          |
| No. 55                        | 28/23; 42/34                         |                                        |                                                                          |
| T <sub>9</sub> (T-9)          | 30/16; 33/8;<br>34/20; 36/9;<br>38/5 |                                        |                                                                          |
| Other varieties mentioned     |                                      |                                        |                                                                          |
| T-9                           | 28/23; 42/34                         |                                        |                                                                          |
| Mutagens used                 |                                      |                                        |                                                                          |
| EMS                           | 35/26                                |                                        |                                                                          |

|                                                                      |                                             |                                        |                                                                                                                                    |
|----------------------------------------------------------------------|---------------------------------------------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| NIAB Mung 13-1 (NM13-1)                                              | 28/16; 29/28;<br>44/11, 14                  | Pak 22                                 | 28/15; 29/28;<br>30/28; 32/7, 9                                                                                                    |
| NIAB Mung 19-19 (NM19-19)                                            | 30/28; 32/7;<br>37/4; 44/11,<br>14          | Pak 32                                 | 32/11                                                                                                                              |
| NIAB Mung 20-21 (NM20-21)                                            | 28/16; 29/28;<br>37/4; 44/11,<br>12; 14, 43 | Pant Mung-2                            | 33/17                                                                                                                              |
| NIAB Mung 28 (NM28)                                                  | 23/21; 44/11,<br>14                         | Pusa 105                               | 30/12                                                                                                                              |
| NIAB Mung 36                                                         | 44/43                                       | RC 71-27                               | 30/28; 32/7                                                                                                                        |
| NIAB MUNG 92 (NIAB Mung<br>92)                                       | 44/14, 43                                   | S-8                                    | 22/7; 23/21                                                                                                                        |
| NIAB MUNG 98 (NIAB Mung<br>98)                                       | 44/11, 12, 43                               | T-44                                   | 22/1                                                                                                                               |
| Pant Moong 2                                                         | 22/1, 2; 23/21                              | Other varieties mentioned              |                                                                                                                                    |
| TAP-7                                                                | 23,21                                       | CES 14                                 | 23/11                                                                                                                              |
| Other mutants mentioned                                              |                                             | K 851                                  | 22/1                                                                                                                               |
| 24/20                                                                | 32/9                                        | Kopergaon                              | 23/21                                                                                                                              |
| 25/20                                                                | 32/9                                        | MG50-10A                               | 23/10                                                                                                                              |
| 2/40                                                                 | 32/9                                        | ML 5 (ML-5)                            | 22/1, 11                                                                                                                           |
| 6/20                                                                 | 32/9                                        | Pant Moong 1                           | 22/1                                                                                                                               |
| Hy I                                                                 | 30/12                                       | Pant Mung 2                            | 33/7                                                                                                                               |
| ML26/10/3                                                            | 22/1                                        | PS-16                                  | 42/6                                                                                                                               |
| M.76                                                                 | 22/7                                        | Pusa 46                                | 23/21                                                                                                                              |
| MB-55(4)                                                             | 43/56                                       | Pusa Baisakhi                          | 42/6                                                                                                                               |
| MUM-1                                                                | 42/6                                        | S-8                                    | 22/11                                                                                                                              |
| MUM-2                                                                | 42/6                                        | V-2773                                 | 43/56                                                                                                                              |
| MUM-3                                                                | 42/6                                        | VC 1482E                               | 44/12, 43                                                                                                                          |
| MUM-4                                                                | 42/6                                        | VC 2768B                               | 44/14, 43                                                                                                                          |
| Mut. 30-71                                                           | 29/3                                        | Mutagens used                          |                                                                                                                                    |
| Mut. 50-25                                                           | 29/3                                        | EMS                                    | 23/10; 35/25,<br>26; 42/6;<br>43/56                                                                                                |
| NM121-25                                                             | 32/7                                        | Gamma rays                             | 22/1; 23/21;<br>28/13, 15;<br>29/28; 30/12,<br>28; 32/6, 7, 9,<br>11; 33/7, 17,<br>33; 35/25;<br>37/4; 38/6;<br>42/6, 35;<br>44/11 |
| NM13-1                                                               | 28/15                                       | Gamma rays ( <i>in vitro</i> )         | 22/11; 38/6                                                                                                                        |
| NM19-19                                                              | 32/7                                        | Gamma rays + EMS                       | 32/6; 42/6                                                                                                                         |
| NM20-21 (NM 20-21)                                                   | 28/15; 40/10                                | Sodium azide                           | 35/25, 26                                                                                                                          |
| NM 36                                                                | 44/14                                       | X-rays                                 | 21/4                                                                                                                               |
| PAEC 1                                                               | 29/8                                        | Breeding objectives                    |                                                                                                                                    |
| PAEC 2                                                               | 29/8                                        | Acidity tolerance                      | 42/35                                                                                                                              |
| PAEC 3                                                               | 29/8                                        | Bold seeds                             | 37/4                                                                                                                               |
| PAEC 5                                                               | 29/8                                        | Bushy plant type                       | 35/26                                                                                                                              |
| PAEC 7                                                               | 29/8                                        | <i>Cercospora</i> leaf spot resistance | 21/4; 29/28;<br>37/4; 44/12                                                                                                        |
| Varieties treated                                                    |                                             | Determinate growth habit               | 28/15; 29/3;<br>30/28; 32/7;<br>40/10; 42/35                                                                                       |
| 6601                                                                 | 28/14; 29/28;<br>32/9                       | Disease tolerance/resistance           | 35/26; 43/56;<br>44/43                                                                                                             |
| 6601 x 1973A                                                         | 42/35                                       | Drought tolerance                      | 28/13; 29/28                                                                                                                       |
| Co.1 (Co 1)                                                          | 28/13; 29/28                                | Dwarfness                              | 29/3; 32/6                                                                                                                         |
| F <sub>1</sub> 6601 x VC1973A (F <sub>1</sub> CV<br>6601 x VC 1973A) | 37/4; 44/11                                 | Earliness                              | 42/35; 44/43                                                                                                                       |
| K 851                                                                | 32/6; 42/6;<br>43/56                        | Early maturity                         | 23/21; 28/13,<br>15, 16; 29/28;<br>30/28; 32/6,<br>7; 35/25, 26;<br>37/4                                                           |
| Kunggi No. 5                                                         | 21/4                                        | Green manure production                | 32/11                                                                                                                              |
| LGG 127                                                              | 33/7                                        |                                        |                                                                                                                                    |
| Manyar                                                               | 42/35                                       |                                        |                                                                                                                                    |
| Mara 1                                                               | 29/3                                        |                                        |                                                                                                                                    |
| ML 26                                                                | 22/1; 23/21;<br>33/33                       |                                        |                                                                                                                                    |
| ML-5                                                                 | 42/6                                        |                                        |                                                                                                                                    |
| Pak 17                                                               | 23/21                                       |                                        |                                                                                                                                    |

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|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------|
| Hairiness                       | 42/35                                                                                                                                               |  |                                             |
| Harvest index                   | 32/7; 40/10                                                                                                                                         |  |                                             |
| Large seed                      | 23/11                                                                                                                                               |  |                                             |
| Leaf spot resistance            | 23/21                                                                                                                                               |  |                                             |
| Mechanised harvest              | 37/4                                                                                                                                                |  |                                             |
| Multifoliata                    | 23/10; 29/8;<br>33/17                                                                                                                               |  |                                             |
| Mutation frequency              | 38/6                                                                                                                                                |  |                                             |
| MYMV resistance                 | 22/1; 23/21;<br>28/16; 33/33;<br>37/4; 42/6;<br>44/12                                                                                               |  |                                             |
| Nitrogen fixation               | 22/7                                                                                                                                                |  |                                             |
| Nodulation                      | 33/7                                                                                                                                                |  |                                             |
| Non-shattering                  | 42/35                                                                                                                                               |  |                                             |
| Pod number                      | 28/15; 29/28;<br>30/12; 44/12                                                                                                                       |  |                                             |
| Powdery mildew resistance       | 23/21                                                                                                                                               |  |                                             |
| Protein content                 | 35/25                                                                                                                                               |  |                                             |
| Reduced cleistogamy             | 23/10                                                                                                                                               |  |                                             |
| Response to fertilizer          | 40/10                                                                                                                                               |  |                                             |
| Salt tolerance                  | 42/35                                                                                                                                               |  |                                             |
| Seed size                       | 43/56; 44/43                                                                                                                                        |  |                                             |
| Serrated leaf                   | 32/11                                                                                                                                               |  |                                             |
| Shattering resistance           | 21/4; 37/4                                                                                                                                          |  |                                             |
| Short stature                   | 28/15; 29/28;<br>32/7; 40/10                                                                                                                        |  |                                             |
| Uniform maturity                | 32/7; 37/4;<br>42/6; 43/56                                                                                                                          |  |                                             |
| Uniform grain size              | 28/15                                                                                                                                               |  |                                             |
| Yield                           | 22/1,7; 23/11,<br>23; 28/13, 15,<br>16; 29/3, 8,<br>28; 30/12, 28;<br>32/6, 9;<br>33/33; 35/25;<br>37/4; 40/10;<br>42/6, 35;<br>43/56; 44/12,<br>43 |  |                                             |
| Countries                       |                                                                                                                                                     |  |                                             |
| Bangladesh                      | 35/26; 43/56                                                                                                                                        |  |                                             |
| Korea                           | 21/4                                                                                                                                                |  |                                             |
| India                           | 22/2, 8, 11;<br>23/21; 28/13,<br>29/28; 30/12;<br>32/6; 33/7,<br>17, 33; 35/25;<br>42/7; 43/56                                                      |  |                                             |
| Indonesia                       | 42/35                                                                                                                                               |  |                                             |
| Pakistan                        | 23/21; 28/16;<br>29/28; 30/28;<br>32/8, 9, 11;<br>37/4; 40/11;<br>42/35; 44/13,<br>43                                                               |  |                                             |
| The Philippines                 | 23/11; 29/9                                                                                                                                         |  |                                             |
| Venezuela                       | 29/3                                                                                                                                                |  |                                             |
| USA                             | 38/7                                                                                                                                                |  |                                             |
| Other information               |                                                                                                                                                     |  |                                             |
| <i>In vitro</i> cultures        | 22/11; 38/6                                                                                                                                         |  |                                             |
| <b><i>Vigna unguiculata</i></b> |                                                                                                                                                     |  |                                             |
| Mutant varieties                |                                                                                                                                                     |  |                                             |
| Co 5                            |                                                                                                                                                     |  | 29/27                                       |
| Cowpea-88                       |                                                                                                                                                     |  | 37/5, 44; 41/7                              |
| ICV 10                          |                                                                                                                                                     |  | 33/3                                        |
| ICV 11 (Reg. no. 62)            |                                                                                                                                                     |  | 28/23; 33/3;<br>39/3                        |
| ICV 12 (Reg. no. 63)            |                                                                                                                                                     |  | 28/23; 33/3;<br>39/3                        |
| Tvu 310                         |                                                                                                                                                     |  | 33/3                                        |
| Uneca Gama                      |                                                                                                                                                     |  | 34/33                                       |
| V16 (Amba)                      |                                                                                                                                                     |  | 25/21                                       |
| V37 (Shreshtha)                 |                                                                                                                                                     |  | 25/21                                       |
| V 38 (Swarna)                   |                                                                                                                                                     |  | 25/21                                       |
| V240                            |                                                                                                                                                     |  | 25/21                                       |
| Other mutants mentioned         |                                                                                                                                                     |  |                                             |
| Mut. 30-5                       |                                                                                                                                                     |  | 29/3                                        |
| Mut. 30-6                       |                                                                                                                                                     |  | 29/3                                        |
| Mut. 40-40                      |                                                                                                                                                     |  | 29/3                                        |
| Mut. 50-17                      |                                                                                                                                                     |  | 29/3                                        |
| V 16                            |                                                                                                                                                     |  | 21/6                                        |
| V 37                            |                                                                                                                                                     |  | 21/6                                        |
| V 38                            |                                                                                                                                                     |  | 21/6                                        |
| Varieties treated               |                                                                                                                                                     |  |                                             |
| C28                             |                                                                                                                                                     |  | 24/4                                        |
| Centa                           |                                                                                                                                                     |  | 34/33                                       |
| Co 1                            |                                                                                                                                                     |  | 29/27                                       |
| F <sub>1</sub> Cowpea-74 x H-2  |                                                                                                                                                     |  | 37/5, 44; 41/7                              |
| FS-68                           |                                                                                                                                                     |  | 36/6                                        |
| ICV 1                           |                                                                                                                                                     |  | 28/23                                       |
| Ojo Negro                       |                                                                                                                                                     |  | 29/3                                        |
| Pusa Phalguni                   |                                                                                                                                                     |  | 25/21                                       |
| San Joaquin                     |                                                                                                                                                     |  | 29/3                                        |
| Other varieties mentioned       |                                                                                                                                                     |  |                                             |
| C 152                           |                                                                                                                                                     |  | 21/6                                        |
| Mutagens used                   |                                                                                                                                                     |  |                                             |
| DMS                             |                                                                                                                                                     |  | 25/21                                       |
| Gamma rays                      |                                                                                                                                                     |  | 21/9; 24/4;<br>28/23; 29/27;<br>33/3; 34/33 |
| Radiation                       |                                                                                                                                                     |  | 37/5, 44; 41/7                              |
| Sodium azide                    |                                                                                                                                                     |  | 21/9                                        |
| Sodium azide (pH=7)             |                                                                                                                                                     |  | 36/6                                        |
| Breeding objectives             |                                                                                                                                                     |  |                                             |
| Anthracnose resistance          |                                                                                                                                                     |  | 41/7                                        |
| Cooking quality                 |                                                                                                                                                     |  | 37/5; 41/8                                  |
| Cowpea aphids resistance        |                                                                                                                                                     |  | 28/23; 33/3                                 |
| Delayed flowering               |                                                                                                                                                     |  | 36/7                                        |
| Determinate growth              |                                                                                                                                                     |  | 29/3                                        |
| Disease resistance              |                                                                                                                                                     |  | 25/21; 37/5;<br>39/3                        |
| Dwarfness                       |                                                                                                                                                     |  | 29/3                                        |
| Earliness                       |                                                                                                                                                     |  | 21/6                                        |
| Early maturity                  |                                                                                                                                                     |  | 25/21; 28/23                                |
| Fasciated stem                  |                                                                                                                                                     |  | 36/7                                        |
| Forage type                     |                                                                                                                                                     |  | 25/21                                       |
| Green fodder yield              |                                                                                                                                                     |  | 37/5, 44; 41/7                              |
| Grain quality                   |                                                                                                                                                     |  | 21/6                                        |

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|--------------------------------|-----------------------------------------------------------------------------|--|
| Grain yield                    | 37/44; 41/7                                                                 |  |
| Green stems and pods           | 28/23                                                                       |  |
| Large leaves                   | 28/23                                                                       |  |
| <i>Macrophomina</i> resistance | 21/9                                                                        |  |
| Nematode resistance            | 24/4                                                                        |  |
| Nodulation                     | 36/7                                                                        |  |
| Plant architecture             | 21/9; 24/4;<br>28/23                                                        |  |
| Quality                        | 25/21; 29/27                                                                |  |
| Reduced shattering             | 21/9                                                                        |  |
| Reduced internodal length      | 36/7                                                                        |  |
| Synchronous flowering          | 25/21                                                                       |  |
| Vegetative growth              | 25/21                                                                       |  |
| Yield                          | 21/6; 24/4;<br>25/21; 28/23;<br>29/3, 27;<br>34/33; 36/7;<br>37/5, 44; 41/8 |  |
| Yellow mosaic virus resistance | 37/5, 44; 41/7                                                              |  |
| Countries                      |                                                                             |  |
| Costa Rica                     | 34/33                                                                       |  |
| India                          | 21/6; 24/4;<br>25/21; 29/27;<br>36/7; 37/6,<br>44; 41/8                     |  |
| Kenya                          | 28/23; 33/3;<br>39/3                                                        |  |
| Venezuela                      | 21/9; 29/3                                                                  |  |
| <b><i>Vitis vinifera</i></b>   |                                                                             |  |
| Mutant varieties               |                                                                             |  |
| Fikreti (AZ U66-22)            | 32/31                                                                       |  |
| Varieties treated              |                                                                             |  |
| Blauer Spätburgunder           | 33/15                                                                       |  |
| Marandi                        | 32/31                                                                       |  |
| Müller-Thurgau                 | 33/15                                                                       |  |
| Ruländer                       | 33/15                                                                       |  |
| Trollinger                     | 33/15                                                                       |  |
| White Riesling                 | 33/15                                                                       |  |
| Mutagens used                  |                                                                             |  |
| Fast neutrons                  | 33/15                                                                       |  |
| Gamma rays                     | 32/31                                                                       |  |
| X-rays                         | 33/15                                                                       |  |
| Breeding objectives            |                                                                             |  |
| Early ripening                 | 33/15                                                                       |  |
| Fruit colour                   | 33/15                                                                       |  |
| Quality                        | 33/15                                                                       |  |
| Resistance to stem rot         | 33/15                                                                       |  |
| Yield                          | 32/31                                                                       |  |
| Countries                      |                                                                             |  |
| FRG                            | 33/15                                                                       |  |
| USSR                           | 32/31                                                                       |  |
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|-----------------------------------------------|--------------|----------------------------------------|---------------|
| Tuber shape                                   | 37/11        | Yuanqi 123                             | 31/38; 33/33  |
| Morphological characters                      | 37/11        | Yuanqi 722                             | 33/33         |
| Yield                                         | 37/11        | Yuanwu 02 (Yuan-wu 02)                 | 25/22; 33/33; |
| Countries                                     |              |                                        | 41/30         |
| India                                         | 37/11        | Yubileinyi 60 (H)                      | 40/21         |
|                                               |              | Yubileinyi 60 MV (H)                   | 40/22         |
|                                               |              | Zhongyuandan No. 4                     | 25/22         |
| <b>Y</b>                                      |              | Other mutants mentioned                |               |
| <b>Yam</b> see <i>Discorea alata</i>          |              | 7147                                   | 33/6          |
|                                               |              | 8005                                   | 33/6          |
| <b>Yam bean</b> see <i>Pachyrrhizus</i>       |              | 8007                                   | 33/6          |
| <i>erosus</i>                                 |              | ChK 1                                  | 41/30         |
| <b>Yellow lupin</b> see <i>Lupinus luteus</i> |              | ChK 218 MV                             | 40/21, 22     |
|                                               |              | ChK 2T                                 | 40/21         |
|                                               |              | ChK 2TV                                | 40/21         |
|                                               |              | ChK 3                                  | 41/30         |
|                                               |              | ChK 3 3T                               | 40/21         |
|                                               |              | ChK 3DTV                               | 40/21         |
|                                               |              | ChK3 SV                                | 41/30         |
|                                               |              | ChKR 8                                 | 40/21         |
|                                               |              | Cr 25 waxy                             | 40/21         |
|                                               |              | DevizTV                                | 30/28         |
|                                               |              | Fu 746 (fu746)                         | 31/38; 33/5   |
|                                               |              | Longfu 1747                            | 33/5          |
|                                               |              | Longfu 508                             | 33/5          |
|                                               |              | Longfu 6227                            | 33/6          |
|                                               |              | Mutant No. 50                          | 37/45         |
|                                               |              | Mutant No. 61                          | 37/45         |
|                                               |              | P 346M                                 | 40/21         |
|                                               |              | P 502M                                 | 40/21         |
|                                               |              | Shindelmayer MV                        | 40/21         |
|                                               |              | XM-199 rf <sub>3</sub> rf <sub>4</sub> | 41/30         |
|                                               |              | XM-199 rf <sub>3</sub> Rf <sub>4</sub> | 32/33         |
|                                               |              | XM-521 rf <sub>3</sub> Rf <sub>4</sub> | 32/32         |
|                                               |              | XM-532 Rf <sub>3</sub> Rf <sub>4</sub> | 32/32         |
|                                               |              | XM-552 rf <sub>3</sub> rf <sub>4</sub> | 32/32         |
|                                               |              | XM-552-1-C                             | 32/32         |
|                                               |              | XM-568 rf <sub>3</sub> Rf <sub>4</sub> | 32/33         |
|                                               |              | Yaun-Wu No. 2                          | 27/12         |
|                                               |              | Varieties treated                      |               |
|                                               |              | ChK208TV x Dbe42TV                     | 30/28         |
|                                               |              | F <sub>1</sub> Hua 160 x Feng Ke 1     | 41/30         |
|                                               |              | F <sub>1</sub> T133 x C 103            | 31/38         |
|                                               |              | Huang-Zao No. 4                        | 27/12         |
|                                               |              | Hybrid DE 04                           | 41/30         |
|                                               |              | Tuxpeño                                | 43/56         |
|                                               |              | Wudan Zao                              | 41/30         |
|                                               |              | Other varieties mentioned              |               |
|                                               |              | Drujba                                 | 40/21         |
|                                               |              | Druzhba                                | 30/28         |
|                                               |              | Hunzao No. 4                           | 25/22         |
|                                               |              | Huangzao 4                             | 33/33         |
|                                               |              | Pioneer 3978                           | 40/21         |
|                                               |              | Mir                                    | 40/21, 22     |
|                                               |              | Mo 14                                  | 25/22         |
|                                               |              | Mo 17                                  | 25/22         |
|                                               |              | Q 31                                   | 33/33         |
|                                               |              | SONGLAM                                | 43/56         |
| <b>Z</b>                                      |              |                                        |               |
| <b>Zea mays</b>                               |              |                                        |               |
| Mutant varieties                              |              |                                        |               |
| De 2205 SC                                    | 37/45        |                                        |               |
| DT-6                                          | 43/56        |                                        |               |
| DT-8                                          | 43/56        |                                        |               |
| Hua Feng 100                                  | 41/30        |                                        |               |
| Hunfeng 100                                   | 25/22        |                                        |               |
| Hybrid ChK 3-18 TV                            | 41/30        |                                        |               |
| Hybrid ChKG 280 MV                            | 40/21        |                                        |               |
| Ji63                                          | 25/22        |                                        |               |
| Jidan 101                                     | 25/22        |                                        |               |
| KNEJA-674                                     | 41/30        |                                        |               |
| KNEJA-HP-510 (hybrid)                         | 32/32        |                                        |               |
| KNEJA-HP-556 (hybrid)                         | 32/32        |                                        |               |
| KNEJA-HP-633 (hybrid)                         | 32/32        |                                        |               |
| KNEJA-HP-641 (hybrid)                         | 32/33        |                                        |               |
| KNEJA-HP-666 (hybrid)                         | 32/33        |                                        |               |
| KNEJA-HP-712 (hybrid)                         | 32/32        |                                        |               |
| Knezha MHP 556                                | 37/45        |                                        |               |
| Kollektivnyi 100SV                            | 41/30        |                                        |               |
| Kollektivnyi 100 TV (H)                       | 40/21        |                                        |               |
| Kollektivnyi 210 (H)                          | 40/21        |                                        |               |
| Kollektivnyi 210 ATV                          | 30/28        |                                        |               |
| Kollektivnyi 225 MV (H)                       | 40/21        |                                        |               |
| Kollektivnyi 244 MV (H)                       | 40/21        |                                        |               |
| Kollektivnyi 95 M (H)                         | 40/21        |                                        |               |
| Krasnodarskii 303 VK                          | 40/21        |                                        |               |
| Lau Yu No. 5 (Lauyu No. 5, hybrid)            | 27/12; 31/38 |                                        |               |
| Longfuyu No. 1 (hybrid) (Longfuju No. 1)      | 31/38; 33/5  |                                        |               |
| Lu Yuan S.C. No. 4                            | 27/12        |                                        |               |
| Luyan S.C. 9 (hybrid)                         | 33/33        |                                        |               |
| Luyu No. 3                                    | 25/22        |                                        |               |
| Luyu No. 5 (hybrid)                           | 33/33        |                                        |               |
| Luyuandan No. 1                               | 25/22        |                                        |               |
| Luyuandan No. 5                               | 25/22        |                                        |               |
| Luyuandan No. 7                               | 25/22        |                                        |               |
| Luyuanshan No. 2                              | 25/22        |                                        |               |
| Yuan 7123                                     | 31/38        |                                        |               |
| Yuanfu 01                                     | 25/22        |                                        |               |
| Yuanfu 17                                     | 25/22        |                                        |               |

|                                     |                                                         |                                   |                                                                           |
|-------------------------------------|---------------------------------------------------------|-----------------------------------|---------------------------------------------------------------------------|
| Va 35                               | 25/22                                                   | Silage maize                      | 32/33                                                                     |
| W 64 waxy                           | 40/21                                                   | Stiffness                         | 40/21                                                                     |
| Weifng 322                          | 25/22                                                   | Yield                             | 25/22; 27/12;<br>30/27; 31/38;<br>32/32, 33;<br>33/5, 33;<br>37/45; 40/21 |
| Zi 330                              | 25/22                                                   |                                   |                                                                           |
| Mutagens used                       |                                                         | Countries                         |                                                                           |
| Chemical mutagenesis                | 30/28; 37/45;<br>40/21                                  | Bulgaria                          | 32/32, 33;<br>37/45; 41/30                                                |
| DMS                                 | 32/32                                                   | China                             | 25/22; 27/12;<br>31/38; 33/6,<br>33; 41/30                                |
| EMS +DAB                            | 32/33                                                   | India                             | 22/17                                                                     |
| ENH                                 | 40/21, 22                                               | Hungary                           | 23/8; 37/45                                                               |
| Fast neutrons                       | 37/45                                                   | The Netherlands                   | 35/15                                                                     |
| Gamma rays                          | 23/9; 27/12;<br>31/38; 33/33;<br>41/30                  | USSR                              | 30/28; 35/15;<br>40/21, 22                                                |
| Gamma rays + NMU                    | 43/56                                                   | Vietnam                           | 43/56                                                                     |
| NENG                                | 40/21; 41/30                                            | Other information                 |                                                                           |
| NMU (MNU) = (MNH) =                 | 32/32, 33;<br>35/15; 40/21                              | <i>In vitro</i> cultures          | 22/15                                                                     |
| (NMH)                               |                                                         |                                   |                                                                           |
| Radiation                           | 33/5                                                    | <b><i>Zinnia elegans</i></b>      |                                                                           |
| Sodium azide ( <i>in vitro</i> )    | 22/15                                                   | Varieties treated                 |                                                                           |
| Transposon (Ac) mutagenesis         | 35/15                                                   | Crimson Red                       | 39/10                                                                     |
| Breeding objectives                 |                                                         | Mutagens used                     |                                                                           |
| Adaptability                        | 33/33                                                   | Gamma rays                        | 38/10                                                                     |
| Biochemical mutants                 | 22/15                                                   | Breeding objectives               |                                                                           |
| Cold tolerance                      | 31/38                                                   | Flower colour                     | 38/10                                                                     |
| Combining ability                   | 33/33; 41/30                                            | Countries                         |                                                                           |
| Disease resistance                  | 25/22; 33/33;<br>40/21                                  | India                             | 38/10                                                                     |
| <i>Drechslera maydis</i> resistance | 22/15                                                   | <b><i>Ziziphus mauritiana</i></b> |                                                                           |
| Dry matter content                  | 32/33                                                   | Mutant varieties                  |                                                                           |
| Dwarfness                           | 33/6                                                    | Dao tien                          | 34/13, 34                                                                 |
| Ear length                          | 25/22; 41/30                                            | Ma hong                           | 34/13, 34                                                                 |
| Earliness                           | 40/21, 22;<br>41/30                                     | Varieties treated                 |                                                                           |
| Early maturity                      | 25/22; 31/38;<br>33/5, 6, 33;<br>37/45; 41/30;<br>43/56 | Gia Loc                           | 34/13                                                                     |
| Endosperm and seedling              | 22/15                                                   | Thien Phien                       | 34/13                                                                     |
| mutants                             |                                                         | Mutagens used                     |                                                                           |
| Grain size                          | 25/22                                                   | MNH                               | 34/13, 34                                                                 |
| Grain weight                        | 41/30                                                   | Breeding objectives               |                                                                           |
| Head smut resistance                | 33/6                                                    | Early maturing                    | 34/14, 34                                                                 |
| Heterosis                           | 27/12                                                   | Fruit shape                       | 34/13, 34                                                                 |
| Insect resistance                   | 40/21                                                   | Fruit size                        | 34/13, 34                                                                 |
| Leaf blight resistance              | 31/38; 33/5, 6                                          | Fruit taste                       | 34/13, 34                                                                 |
| Leaf spot resistance                | 25/22; 31/38                                            | Countries                         |                                                                           |
| Lodging resistance                  | 25/22; 40/21;<br>43/56                                  | Vietnam                           | 34/13, 34                                                                 |
| Lysine content                      | 31/38; 33/5                                             |                                   |                                                                           |
| Mutability studies                  | 35/15                                                   |                                   |                                                                           |
| Nutrient conversion                 | 23/9                                                    |                                   |                                                                           |
| Quality                             | 25/22; 31/38;<br>33/5, 33                               |                                   |                                                                           |
| Plant architecture                  | 33/6                                                    |                                   |                                                                           |
| Protein content                     | 31/38; 32/32,<br>33; 33/5                               |                                   |                                                                           |
| Root system                         | 25/22                                                   |                                   |                                                                           |
| Shorter vegetation period           | 23/9                                                    |                                   |                                                                           |
| Shortness                           | 43/56                                                   |                                   |                                                                           |

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