Azadi Ka Amrit Mahotsav

75 TRAIT SPECIFIC GERMPLASM IDENTIFIED BY ICAR-NBPGR

ICAR-National Bureau of Plant Genetic Resources
Pusa Campus, New Delhi 110 012, India
www.nbpgr.ernet.in

75 Trait Specific Germplasm Identified by ICAR-NBPGR

ICAR-National Bureau of Plant Genetic Resources
Pusa Campus, New Delhi 110012, India
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त्रिलोचन महापात्र, पीएच.डी.
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SECRETARY & DIRECTOR GENERAL

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कृषि अनुसंधान और शिक्षा विभाग एवं
भारतीय कृषि अनुसंधान परिषद
कृषि एवं किसान कल्याण मंत्रालय, कृषि भवन, नई दिल्ली 110 001

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MESSAGE

ICAR- National Bureau of Plant Genetic Resources (NBPGR) is the nodal organization in India for all activities concerning exploration, acquisition, evaluation, conservation and documentation of plant genetic resources. The 75th Year of Nation's Independence is being celebrated as ***Azadi Ka Amrut Mahotsav*** among constituent organizations of the Indian Council of Agricultural Research. I am happy to know that the NBPGR is bringing out a series of publications as part of ***Azaadi Ka Amrit Mahotsav***. These include "75 Unique Introductions in Plant Genetic Resources", "75 Quarantine Pests Intercepted by ICAR-NBPGR", "75 Trait Specific Germplasm Identified by ICAR-NBPGR", "75 Unique Germplasm Collected by ICAR-NBPGR" and "75 Accessions Utilized in Varietal Development".

These publications will be released on the occasion of NBPGR's 46th Foundation Day. I do hope that these publications will create awareness about the value of the germplasm and enhance their utilization.

I congratulate NBPGR on the occasion of 46th Foundation Day and convey my best wishes to the staff of NBPGR in their sustained endeavour.

(T. MOHAPATRA)

Dated the 29th July, 2022
New Delhi

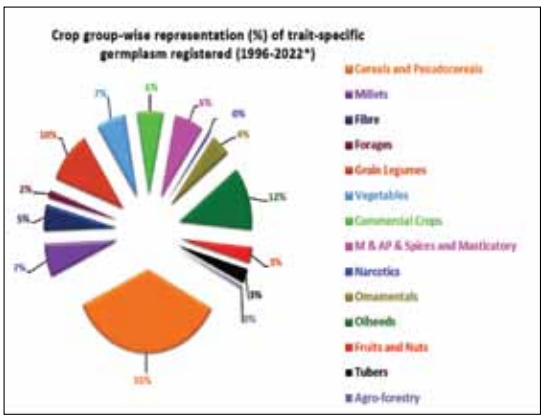
INTRODUCTION

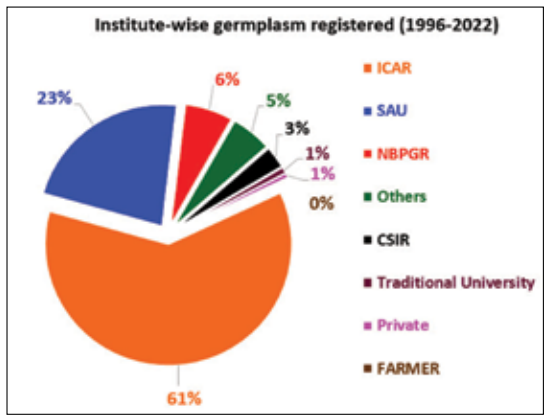
National Bureau Plant Genetic Resources (NBPGR) is a national institute of Indian Council for Agricultural Research (ICAR) with a broad mandate to collect, conserve and provide genetic resources to support the country's crop improvement programme. Plant genetic resources are the economically valuable part of ecosystem and of paramount important for future crop production which is being negatively affected by the climatic changes in diverse geographic/ environmental zones. Many abiotic and biotic stresses are affecting major agricultural crops and are further expected to worsen with anticipated climate change. In the last 30 years, legal developments at national and international levels have completely reshaped the ways in which plant genetic resources are used in global agriculture for breeding new varieties. With these legal systems, Intellectual Property Rights have emerged as a strong recognition instruments to breeders/scientist who were involved in the development of these varieties. In India, the need for recognition to the developers of new improved varieties is being served by the Central Sub-Committees on Crop Standards, Notification and Release of Varieties of Agricultural Crops (CVRC) as part of the Indian National Agricultural Research System (NARS). Further, the enactment of Protection of Plant Varieties and Farmers' Rights Act (PPV&FRA) 2001 provides for protection of the intellectual property rights of plants breeders and farmers involved in development of plant varieties. During the development of a variety large number of germplasm is used in breeding programmes which remains un-recognised but possess certain traits of scientific/adademic interest. ICAR realized that due recognition should be accorded to the persons/institutions who are associated with the development and identification of improved or unique potentially valuable germplasm and genetic stocks. This also includes the useful material resulting from various research projects, where genes from wild or exotic sources are integrated into adapted material, which have resistance to biotic and abiotic stresses which need to be identified and assembled for use in breeding programmes. Accessibility of these unique genetic resources for use by the breeders depends upon the availibility of information and material in public domain. To address these issues, in 1996, ICAR constituted Plant Germplasm Registration Committee (PGRC) under chairmanship of Deputy Director General (Crop Science), to register such unique germplasm to provide protection to the germplasm as well as recognition to the developer. NBPGR, being the trustee of the India's plant genetic resources and their wild relatives including wild species and playing a vital role in identifying trait specific germplasm, this responsibility of plant germplasm Registration was entrusted to NBPGR with Head, Division of Germplasm Conservation as Member-Secretary of this committee.

In 1996, detailed guidelines and proforma for registration was formalised to facilitate the process of germplasm registration. Taking into consideration of the upcoming developments in management of plant genetic resources and related policies at global and national level, the guidelines and proforma was revised time to time. The guidelines were first published in 2005 and distributed at various foras to give wider publicity of the activity. The major revisions were incorporated in 2014 with respect to submission of application for registration, data requirement

and deposition of seed/genetic material in compliance to provisions required as per the changing scenario. Again in 2021, the guidelines with respect to registration of vegetatively propogated horticultural crops where propogules are to be maintained at National Active Germplasm Sites were revised, as new crop based institutions were established by ICAR.

With implementation of registration of germplasm procedures, total 48 meetings of Plant Germplasm Registration Committee have been held till date about 4300 proposals were considered so far. Out of these 1948 potentially valuable germplasm/genetic stocks have been registered belonging to 253 crop species. Considering total number of proposals submitted and number of germplasm registered 61% proposals submitted by ICAR crop-based institutes, followed by 23% by SAUs. Some 6% proposals belonged to NBPGR alone. It is to be noted that a very few germplasm accessions were registered by private sector (1%).





ICAR-NBPGR has also been in the forefront of identifying and developing unique trait specific germplasm. The Division of Germplasm Evaluation and NBPGR regional stations have the mandate of characterization and evaluation of germplasm. Lot of germplasm has been evaluated and trait specific germplasm identified under CRP (AB). With dedicated efforts of the scientists, one hundred and twenty-three genetic stocks have been registered by NBPGR and its regional stations which is 6 percent of the total germplasm registered.

Accessibility of these unique genetic resources for use by breeders depends upon the availibility of information and material in public domain. On the ocassion of the 75 years information on 75 unique germplasm identified and developed by ICAR-NBPGR have been presented in this compilation. In this compilation each of the genetic stocks have been provided with the QR Code to access detailed information related to these lines. It is hoped that this compilation would generate interest and promote use of these genetic resources in crop improvement and serve the need of all those searching for new genes for incorporation in existing cultivars.

Abiotic stress

Abiotic stress

01

Wheat (*Triticum aestivum*)
Accession number (Other ID): IC0321906
Registration No.: INGR21188
Year of Registration: 2021

Trait

Terminal heat tolerance. Presence of QTLs with favorable alleles for 3 different traits viz. grain yield, grain filling rate and biomass.

Developers: *Sundeep Kumar, Jyoti Kumari, Nabin Bhusal, Anjan Kumar Pradhan, Neeraj Budhlakoti, Dwijesh Chandra Mishra, BK Meena, Divya Chauhan, Suneel Kumar, Amit Kumar Singh, Gyanendra Pratap Singh, Kuldeep Singh and Sindhu Sareen*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Abiotic stress

02

Wheat (*Triticum aestivum*)
Accession number (Other ID): EC0531185
Registration No.: INGR18011
Year of Registration: 2018

Trait

Low DSI (drought susceptibility Index) <0.5 for 5-6 traits including yield/m2. High & stable grain/spike under irrigated and non-irrigated conditions. Also showing the presence of genes associated with various drought responsive traits viz., thylakoid membrane stability (Fv/Fm), grain filling duration (GYD), grain yield (GY) and gene maintaining low leaf temperature under drought stress condition.

Developers: *Sundeep Kumar, Jyoti Kumari, Rakesh Singh, Ruchi Bansal, AK Singh,Ashok Kumar, RS Sengar, MK Yadav, BR Kuri, D Upadhyay, A Srivastava, B Rana, Vikas VK and GP Singh*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Biotic stress

Biotic stress

03

Ber (*Ziziphus mauritiana*)
Accession number (Other ID): IC0625848
Registration No.: INGR19099
Year of Registration: 2019

Trait

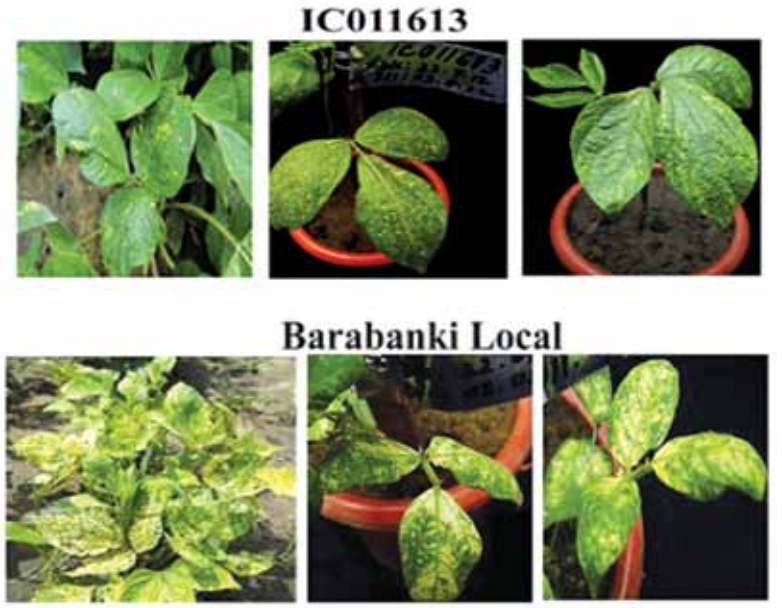
Fruit Fly Resistant.

Developers: *Om Vir Singh, Kartar Singh, Sharmila Roy, R K Tyagi, A K Singh, P R Meghwal, Nisha Patel and Veena Gupta*

Developing Centre: ICAR-NBPGR Regional Station, Jodhpur-342008, Rajasthan

Biotic stress

04



Black gram (*Vigna mungo*)
Accession number (Other ID): IC011613
Registration No.: INGR18027
Year of Registration: 2018

Trait

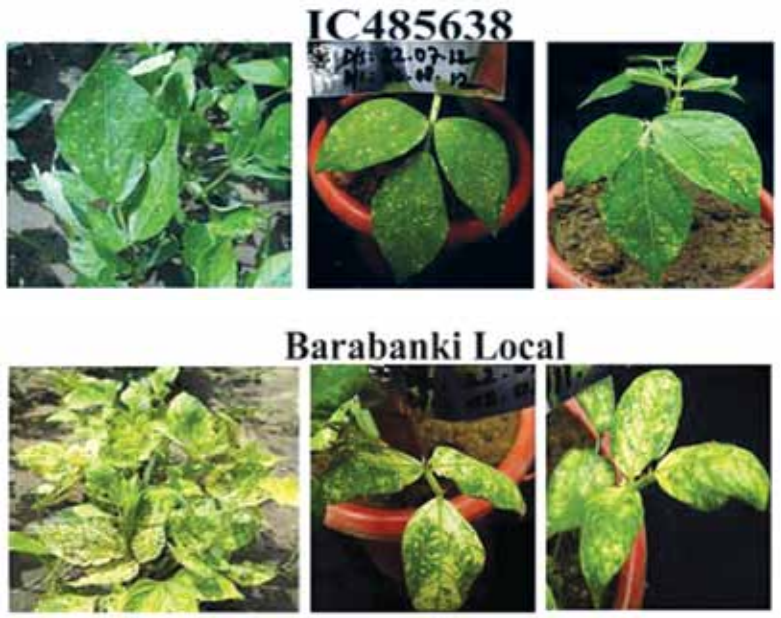
Resistant to *Mung Bean Yellow Mosaic Virus (MYMV).*

Developers: *NK Gautam, Manas Bag, Neeta Singh, M Dutta, TV Prasad, Sushil Pandey, Babu Ram, Anirban Roy and Ashok Kumar*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Biotic stress

05



Black gram (*Vigna mungo*)
Accession number (Other ID): IC0485638
Registration No.: INGR18028
Year of Registration: 2018

Trait

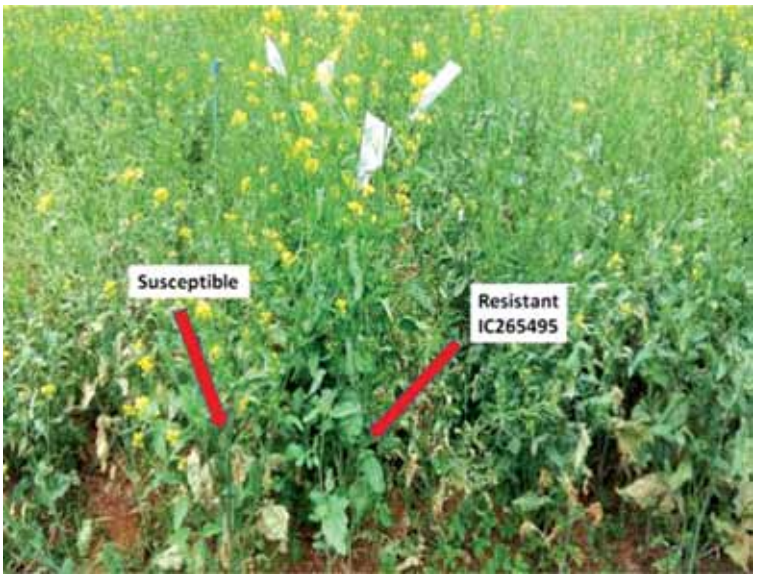
Resistant to *Mung Bean Yellow Mosaic Virus (MYMV).*

Developers: *NK Gautam, Manas Bag, Neeta Singh, M Dutta, TV Prasad, Sushil Pandey, Babu Ram and Anirban Roy*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Biotic stress

06



Indian Mustard (*Brassica juncea*)
Accession number (Other ID): IC0265495
Registration No.: INGR18032
Year of Registration: 2018

Trait

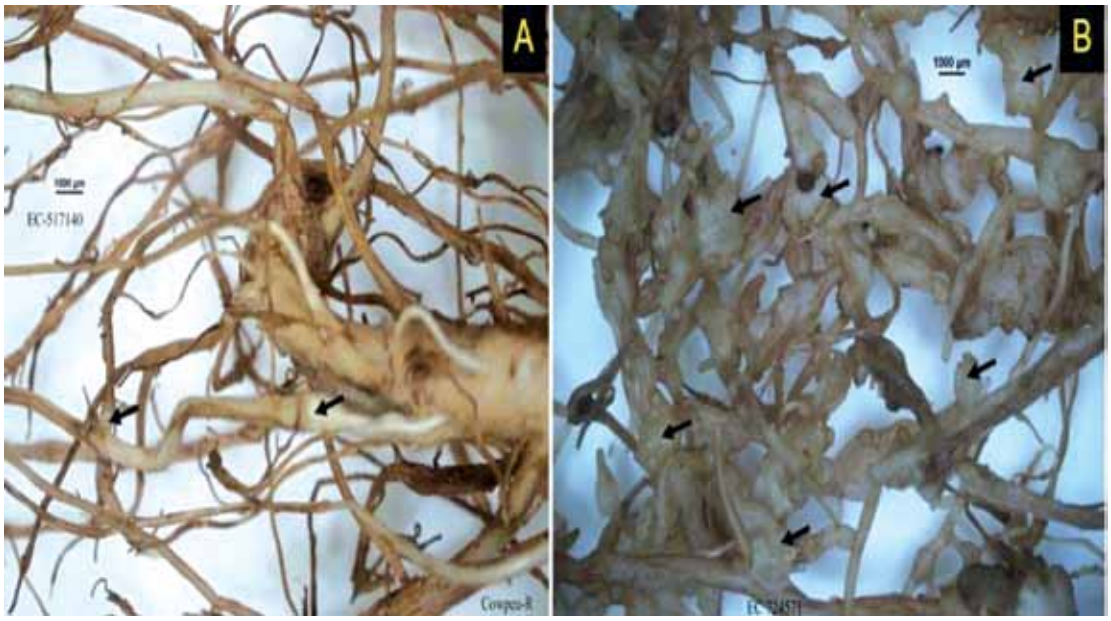
White Rust resistant (PDI = 0) against DELHI isolate under artificial inoculation.

Developers: *Rashmi Yadav, J Nanjundan, AK Tewari, PS Sandhu, Mahesh Rao, Laxman Prasad, Sandeep Kumar,Vikender Kaur, Ashok Kumar, JC Rana and J Radhamani*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Biotic stress

07



Cowpea (*Vigna unguiculata*)
Accession number (Other ID): EC724523
Registration No.: INGR19065
Year of Registration: 2019

Trait

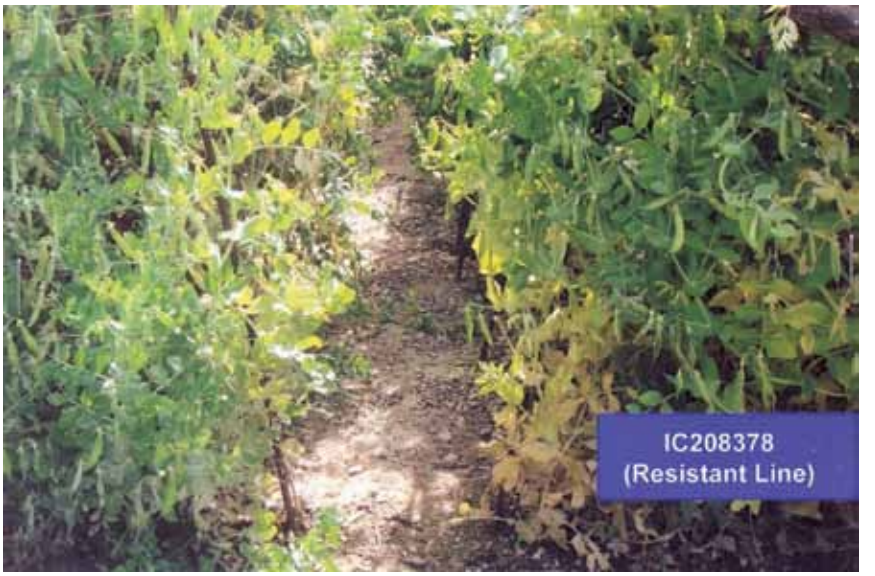
Resistant to root-knot nematode, *Meloidogyne incognita*.

Developers: *Narinder Kumar Gautam, Z Khan, Bharat H Gawade, SC Dubey, Neeta Singh, Babu Ram, Ashok Kumar and Kuldeep Tripathi*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Biotic stress

08



Pea (*Pisum sativum*)
Accession number (Other ID): IC0208378 (SD23/57)
Registration No.: INGR14008
Year of Registration: 2014

Trait

Resistance against four isolated strains viz. *rangway, trilkinath, sti, kangra* of powdery mildew (*Erysiphe pisi*) in pea.

Developers: *JC Rana, DK Banyal, SK Yadav and KD Sharma*

Developing Centre: ICAR-NBPGR Regional Station, Shimla-171004, H.P.

Biotic stress

09

Pea (*Pisum sativum*)
Accession number (Other ID): IC0208366 (SD23/6)
Registration No.: INGR14007
Year of Registration: 2014

Trait

Resistance against four isolated strains viz. *rangway, trilkinath, sti, kangra* of powdery mildew (*Erysiphe pisi*) in pea.

Developers: *JC Rana, DK Banyal, SK Yadav and KD Sharma*

Developing Centre: ICAR-NBPGR Regional Station, Shimla-171004, H.P.

Biotic stress

10

Resistant- IC313380

Susceptible Check- RGN 73

Indian mustard (*Brassica juncea*)
Accession number (Other ID): IC0313380 (NS/2009/042)
Registration No.: INGR18033
Year of Registration: 2018

Trait

White Rust resistance (PDI = 0) against DELHI isolate under artificial inoculation.

Developers: *Rashmi Yadav, J Nanjundan, AK Tewari, PS Sandhu, Mahesh Rao, Laxman Prasad, Sandeep Kumar,Vikender Kaur, Ashok Kumar, JC Rana and J Radhamani*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Biotic stress

11

Chilli (*Capsicum annuum*)
Accession number (Other ID): IC0565015 (PBC-534)
Registration No.: INGR08095
Year of Registration: 2008

Trait

Resistant to thrips and mites.

Developers: *Someswara Rao Pandravada, B Sarath Babu, N Sivaraj, V Kamala, N Sunil and KS Varaprasad*

Developing Centre: ICAR-NBPGR Regional Station, Hyderabad-500030, Telangana

Biotic stress

12

Chilli (*Capsicum annuum*)
Accession number (Other ID): IC0505489 (SDS-4493)
Registration No.: INGR08097
Year of Registration: 2008

Trait

Resistant to thrips & powdery mildew.

Developers: *Someswara Rao Pandravada, B Sarath Babu, K Anitha, SK Chakrabarty. N Sivaraj, V Kamala, N Sunil, RDVJ Prasada Rao and KS Varaprasad*

Developing Centre: ICAR-NBPGR Regional Station, Hyderabad-500030, Telangana

Biotic stress

13

Chilli (*Capsicum annuum*)
Accession number (Other ID): IC0570408 (SBT-12549)
Registration No.: INGR14041
Year of Registration: 2014

Trait

Immune to Anthracnose caused by *Colletotrichum capsici*.

Developers: *K Anitha, K Narendra Varma, SR Panadravada, G Suresh Kumar and SK Chakrabarty*

Developing Centre: ICAR-NBPGR Regional Station, Hyderabad-500030, Telangana

Biotic stress

14

Black gram (*Vigana mungo*)
Accession number (Other ID): IC0426765 (BAR-062)
Registration No.: INGR13057
Year of Registration: 2013

Trait

Resistant to *Mungbean Yellow Mosaic Virus (MYMV)* causing yellow mosaic disease.

Developers: *Babu Abraham, KS Varaprasad, M Vanaja, N Sunil, N Sivaraj, V Kamala and SK Chakrabarty*

Developing Centre: ICAR-NBPGR Regional Station, Hyderabad-500030, Telangana

Biotic stress

15

Wheat (*Triticum aestivum*)
Accession number (Other ID): IC0529684
Registration No.: INGR19045
Year of Registration: 2019

Trait

Highly resistant to spot blotch (*Bipolaris sorokinina*).

Developers: *Jyoti Kumari, Sundeep Kumar, Nidhi Singh, SS Vaish, Saikat Das, Arun Gupta, MS Saharan, JC Rana, Ruchi Bansal, Sherry R Jacob, AK Singh, Lakshmi Kant and Ashok Kumar*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Biotic stress

16

Wheat (*Triticum aestivum*)
Accession number (Other ID): IC0564121
Registration No.: INGR18014
Year of Registration: 2018

Trait

Highly resistant to spot blotch.

Developers: *Jyoti Kumari, Sundeep Kumar, Nidhi Singh, SS Vaish, Saikat Das, Arun Gupta, JC Rana, AK Singh, Ruchi Bansal, SR Jacob and Ashok Kumar*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Biotic stress

17

Wheat (*Triticum aestivum*)
Accession number (Other ID): IC0443669
Registration No.: INGR18015
Year of Registration: 2018

Trait

Highly resistant to spot blotch.

Developers: *Jyoti Kumari, Sundeep Kumar, Nidhi Singh, SS Vaish, Saikat Das, Arun Gupta, SK Singh, JC Rana, AK Singh, Ruchi Bansal, SR Jacob and Ashok Kumar*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Biotic stress

18

Wheat (*Triticum aestivum*)
Accession number (Other ID): IC0128565
Registration No.: INGR21030
Year of Registration: 2021

Trait

Resistant to leaf rust.

Developers: *Sundeep Kumar, BS Phogat, VK Vikas, LP Tiwari, AK Sharma, MS Saharan, Amit Kumar Singh, Jyoti Kumari, Rakesh Singh, Sherry Rachel Jacob, M Sivasamy, M Meeta, JP Jaiswal, Deep Shikha, SP Singh, PC Mishra, GP Singh and Kuldeep Singh*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Biotic stress

19

Wheat (*Triticum aestivum*)
Accession number (Other ID): IC0128638
Registration No.: INGR21031
Year of Registration: 2021

Trait

Resistance to leaf rust and yield stability across the locations.

Developers: *Sundeep Kumar, BS Phogat, VK Vikas, LP Tiwari, AK Sharma, MS Saharan, Amit Kumar Singh, Jyoti Kumari, Rakesh Singh, Sherry Rachel Jacob, M Sivasamy, P Jayaprakash, M Meeta, JP Jaiswal, Deep Shikha, GP Singh and Kuldeep Singh*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Biotic stress

20

Wheat (*Triticum aestivum*)
Accession number (Other ID): EC0339604
Registration No.: INGR18012
Year of Registration: 2018

Trait

Resistant to prevailing leaf rust pathotypes. Presence of leaf rust resistance genes viz., *Lr22a*, *Lr46*+, *Lr67*+ and additionally carries stripe rust resistance genes *Yr5, Yr15* and *Yr48*.

Developers: *Sundeep Kumar, S Archak, RK Tyagi, Jagdish Kumar, VK Vika, Ashok Kumar, SR Jacob, K Srinivasan, J Radhamani, R Parimalan, Jyoti Kumari, BS Phogat, AK Singh, Manas Bag, Anirban Roy, TV Prasad, M Datta, KC Bansal, M Sivasamy, P Jayaprakash, SC Bharadwaj, P Parsad, OP Gangwar, MS Saharan, Indoo Bhagat, Madhu Meeta, NS Bains, JB Sharma, Robin Gogoi and GP Singh*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Biotic stress

21

Wheat (*Triticum aestivum*)
Accession number (Other ID): IC0252459
Registration No.: INGR18013
Year of Registration: 2018

Trait

Resistant to stripe rust pathotypes K (47S102), P (46S103), L (70S69), 13 (67S8), I (38S102), 46S119 & 78S84 Carries stripe rust resistance genes viz., *Yr5, Yr15* and *Yr48* additionally also carries leaf rust resistance genes *Lr46+*, *Lr50* and *Lr24/Sr24*. Can be used as source for developing yellow rust resistant as well as multiple rust resistance wheat cultivars.

Developers: *Sundeep Kumar, Sunil Archak, RK Tyagi, Jagdish Kumar, VK Vikas, AK Sharma, Jyoti Kumari, Sherry Rachel Jacob, Kalyani Srinivasan, J Radhamani, BS Phogat, R Parimalan, Amit K Singh, Manas Bag, Anirban Roy, TV Prasad, M Datta, KC Bansal, M Sivasamy, P Jayaprakash, SC Bharadwaj, P Parsad, OP Gangwar, MS Saharan, Indoo Bhagat,Madhu Meeta, NS Bains, AK Chaudhary, BC Saha, PM Bhattacharya, JB Sharma, Robin Gogoi, Deep Shikha, SP Singh, SS Vaish, PC Mishra, BK Honrao, IK Kalappanavar, VA Solanki and GP Singh*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Biotic stress

22

Wheat (*Triticum aestivum*)
Accession number (Other ID): IC0290150
Registration No.: INGR19046
Year of Registration: 2019

Trait

Resistant to stem rust, leaf rust and stripe rust pathotypes prevalent in Indian condition. Combination of different leaf rust, stem rust, stripe rust and spot blotch resistance genes *Lr*46+, *Lr*67+, *Yr*5, *Yr*15, *Yr*36, *Yr*48, *Sr*13, *Sr*24/*Lr*24, QSb.bhu-2B

Developers: *Sundeep Kumar, Sunil Archak, RK Tyagi, Jagdish Kumar,VK Vikas, AK Sharma, Jyoti Kumari, Sherry R Jacob, R Parimalan, Amit Kumar Singh, KC Bansal, Ashok Kumar, M Sivasamy, P Jayaprakash, SC Bhardwaj, MS Saharan, Robin Gogoi, Kuldeep Singh and GP Singh*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Biotic stress

23

Kidney bean (*Phaselous vulgaris*)
Accession number (Other ID): IC0341862 (JCR/PLB299)
Registration No.: INGR15065
Year of Registration: 2015

Trait

Resistant to anthracnose caused by *Colletotrichum lindmuthianum*.

Developers: *JC Rana, PN Sharma, TR Sharma and Anju Pathania*

Developing Centre: ICAR-NBPGR Regional Station, Shimla-171004, Himachal Pradesh

Biotic stress

24

French Bean (*Phaseolus vulgaris*)
Accession number (Other ID): EC0271515
Registration No.: INGR20090
Year of Registration: 2020

Trait

Resistant against white mold disease (*Sclerotinia sclerotiorum*).

Developers: *Mohar Singh, Sonali Chauhan, Shabnam Katoch, SK Sharma, PN Sharma, JC Rana, Kuldeep Singh, Nikhil Malhotra and Ashok Kumar*

Developing Centre: ICAR-NBPGR Regional Station, Shimla-171004, Himachal Pradesh

Biotic stress

25

Cowpea (*Vigna unguiculata*)
Accession number (Other ID): IC0519745 (KDRS-205)
Registration No.: INGR08084
Year of Registration: 2008

Trait

Resistance to black eye cowpea mosaic virus.

Developers: *Kamla Venkateswaran, RDVJ Prasada Rao, KS Varaprasad, Someswara Rao Pandravada, N Sivaraj and Sunil Neelam*

Developing Centre: ICAR-NBPGR Regional Station, Hyderabad-500030, Telangana

Biotic stress

26

Wheat (*Triticum aestivum*)
Accession number (Other ID): IC0290156
Registration No.: INGR21187
Year of Registration: 2021

Trait

Resistant to stripe rust pathotypes 46S119 and 47S103 due to presence of favourable alleles for resistance against these prominent races and thus, showed less disease severity Presence of 11 novel significant QTLs confers resistance against stripe rust. Associated with a candidate gene Traes CS6D02G384800, which functions as leucine-rich repeat receptor-like protein kinases (LRR).

Developers: *Sundeep Kumar, Anjan Kumar Pradhan, Amit Kumar Singh, Neeraj Budhlakoti, Dwijesh Chandra Mishra, Divya Chauhan, Suneel Kumar Meena, Subodh Kumar, SC Bhardwaj, Anil Rai and Kuldeep Singh*

Developing centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Breeding/Academic

Breeding/Academic

27

Cucumber (*Cucumis sativus* var. *sativus*)
Accession number (Other ID): IC0257296
Registration No.: INGR18030
Year of Registration: 2018

Trait

Two female flowers per node. Earliness.

Developers: *Pragya, KK Gangopadhyay, Chithra Devi Pandey, RS Rathi, BC Marandi, Rakesh Shrivastava, BL Meena, and M Dutta*

Developing centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Breeding/Academic

28

Chilli (*Capsicum annuum*)
Accession number (Other ID): IC436231 (PSRKK-11287)
Registration No.: INGR14040
Year of Registration: 2014

Trait

Purple phenotype as a morphological marker.

Developers: *SR Panadravada, N Sivaraj, V Kamla, N Sunil and SK Chakrabarty*

Developing Centre: ICAR-NBPGR Regional Station, Hyderabad-500030, Telangana

Breeding/Academic

29

Musk mallow (*Abelmoschus moschatus*)
Accession number (Other ID): IC0599974
(NAIP (PB)-01 TCR W390)
Registration No.: INGR16036
Year of Registration: 2016

Trait

Perennial with bright red flower.

Developers: *Joseph John K, VA Md. Nissar, M Latha and KV Bhat*

Developing Centre: ICAR-NBPGR Regional Station, Thrissur- 680656, Kerala

Breeding/Academic

30

Barley (*Hordeum vulgare*)
Accession number (Other ID): IC0113045
Registration No.: INGR19055
Year of Registration: 2019

Trait

Extra dwarf plant stature along with early maturity in six-rowed and hulled genetic background.

Developers: *Vikender Kaur, Jyoti Kumari, Sherry R Jacob and Ashok Kumar*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Breeding/Academic

31

Barley (*Hordeum vulgare*)
Accession number (Other ID): EC492301
Registration No.: INGR19058
Year of Registration: 2019

Trait

Awnless spikes

Developers: *Vikender Kaur, Jyoti Kumari, Sherry R Jacob and Ashok Kumar*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Breeding/Academic

32

Barley (*Hordeum vulgare*)
Accession number (Other ID): IC0113052
Registration No.: INGR19056
Year of Registration: 2019

Trait

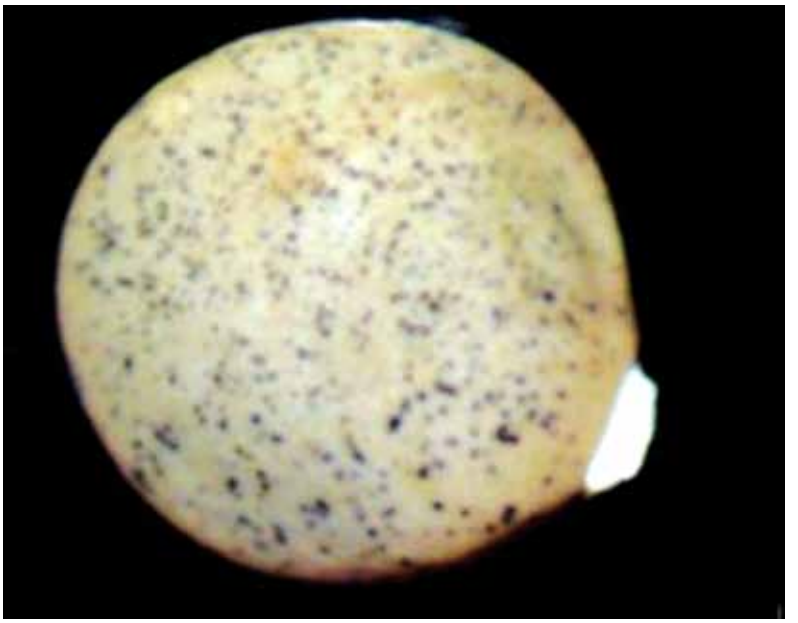
Long spikes coupled with more number of grains/spike in two-rowed and hulless genetic background.

Developers: *Vikender Kaur, Jyoti Kumari, Sherry R Jacob and Ashok Kumar*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Breeding/Academic

33



Lentil (*Lens culinaris*)
Accession number (Other ID): IC0317520
Registration No.: INGR19072
Year of Registration: 2019

Trait

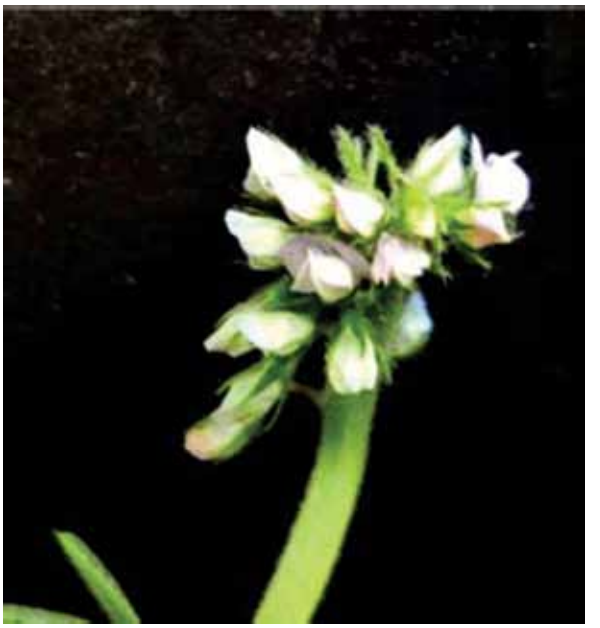
Extended funiculus. Fast water uptake.

Developers: *Kuldeep Tripathi, Anjula Pandey, Padmavati Ganpat Gore, Rakesh Bhardwaj, Neeta Singh, Gayacharan, JC Rana, Veena Gupta, Mamta Arya, Shashi Bhushan Choudhary, Gyan P Mishra and Ashok Kumar*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Breeding/Academic

34



Lentil (*Lens culinaris*)
Accession number (Other ID): IC0241473
Registration No.: INGR21223
Year of Registration: 2021

Trait

Multiflowering and multipodding germplasm with fasciated stem.

Developers: *Kuldeep Tripathi, Gyan P Mishra, Gayacharan, HK Dikshit, Padmavati G Gore, Dileep Tripathi, Reena Mehra, Neeta Singh, Ashok Kumar, Ashutosh Sarker and Kuldeep Singh*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Breeding/Academic

35

Mung Bean (*Vigna radiate*)
Accession number (Other ID): IC039289
Registration No.: INGR19074
Year of Registration: 2019

Trait

Early maturing genotype (50 days).

Developers: *Omvir Singh, Kartar Singh, Neelam Shekhawat, Anil Kumar Singh, Veena Gupta and Kuldeep Singh*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Breeding/Academic

36

Pea (*Pisum sativum*)
Accession number (Other ID): EC414478
Registration No.: INGR21225
Year of Registration: 2021

Trait

Unique seed morphotype with extended funiculus.

Developers: *Kuldeep Tripathi, Padmavati G. Gore, Ruchi Bansal, Gayacharan, Vinod Kumar, Neeta Singh, Chithra Devi Pandey, BB Sharma, SB Choudhary, AK Parihar and Ashok Kumar*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Breeding/Academic

37

Spiked zinger Lily (*Hedychium spicatum*)
Accession number (Other ID): IC0573223 (NKO-24)
Registration No.: INGR13069
Year of Registration: 2013

Trait

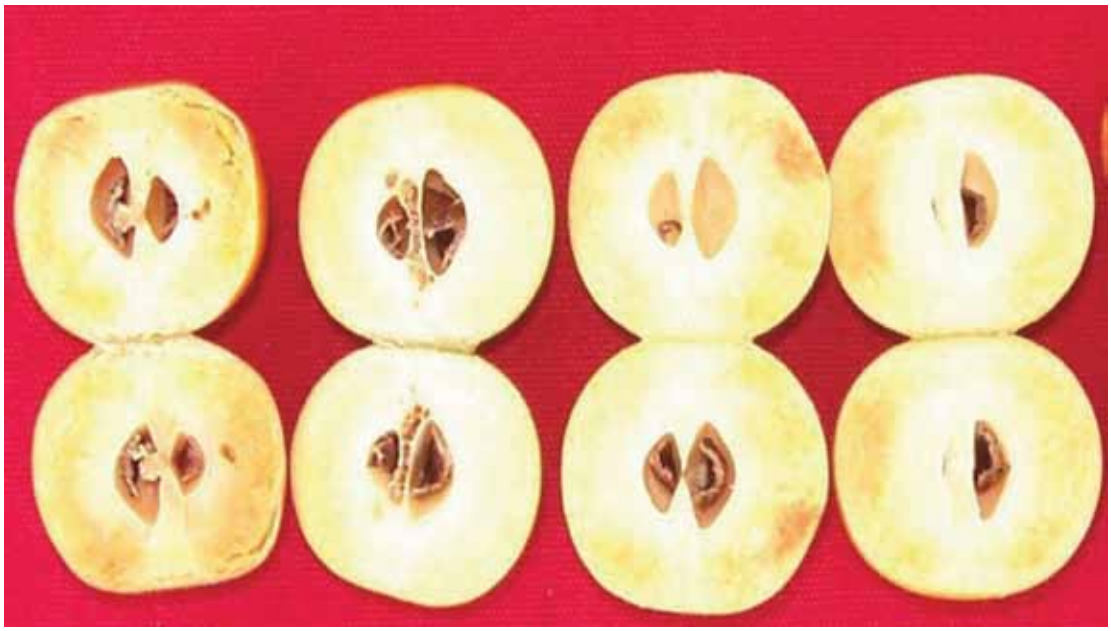
Bold seeded, early emergence and late senescence.

Developers: *KS Negi, SS Koranga, SN Ojha, AKS Rawat and S Srivastava*

Developing Centre: ICAR-NBPGR Regional Station, Bhowali-263132, Uttarakhand

Breeding/Academic

38



Ber (*Ziziphus mauritiana*)
Accession number (Other ID): IC0625849
Registration No.: INGR19100
Year of Registration: 2019

Trait

Stone less ber

Developers: *Om Vir Singh, Kartar Singh and Veena Gupta*

Developing Centre: ICAR-NBPGR Regional Station, Jodhpur-342008, Rajasthan

Breeding/Academic

39

Malabar tamarind (*Garcinia cambogia*)

Accession number (Other ID): IC0244111-1
Registration No.: INGR04062
Year of Registration: 2004

Trait

Early bearing (7 years after transplanting), number of fruits 3464/per tree and fruit yield (156.5kg/per year).

Developers: *Z Abraham*

Developing Centre: ICAR-NBPGR Regional Station, Hyderabad-500030, Telangana

Breeding/Academic

40

Kokum (*Garcinia indica*)
Accession number (Other ID): IC0136687-3
Registration No.: INGR04063
Year of Registration: 2004

Trait

High yielding (Number of fruits 3935/per tree). Fruits yield per year (55.1 kg).

Developers: *Z Abraham*

Developing Centre: ICAR-NBPGR Regional Station, Thrissur-680656, Kerala

Breeding/Academic

41

Black Pepper (*Piper nigrum*)
Accession number (Other ID): IC0266417
(Coll.NO V 90/P-92 or TCR-301)
Registration No.: INGR10065
Year of Registration: 2010

Trait

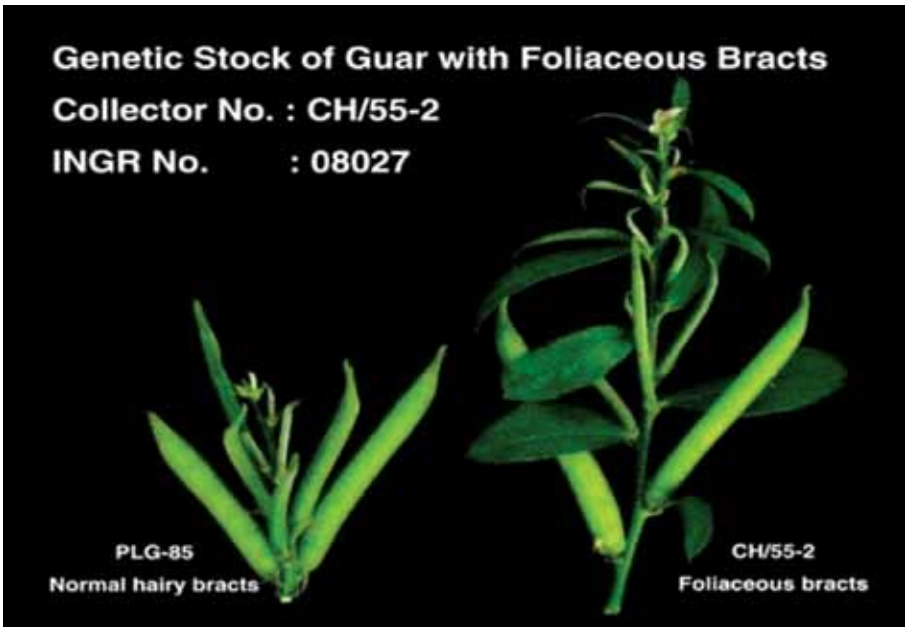
Oval shaped berries.

Developers: *M Latha, KC Velayudhan, VS Sujatha, C Rajalakshmi, S Mani and Z Abraham*

Developing Centre: ICAR-NBPGR Regional Station, Thrissur-680656, Kerala

Breeding/Academic

42



Guar (*Cyamopsis tetragonoloba*)
Accession number (Other ID): IC0116895 (CH/55-2)
Registration No.: INGR08027
Year of Registration: 2008

Trait

Foliaceous bracts.

Developers: *NK Dwivedi, S Gopala Krishnan, DC Bhandari, BS Dabas, S Mandal and RS Rana*

Developing Centre: ICAR-NBPGR Regional Station, Jodhpur-342008, Rajasthan

Breeding/Academic

43

Guar (*Cyamopsis tetragonoloba*)
Accession number (Other ID): IC0574580 (IC511744-P1)
Registration No.: INGR10020
Year of Registration: 2010

Trait

Unique dwarf type spontaneous mutant with shortened internode (<1.5 cm).

Developers: *S Gopala Krishnan and NK Dwivedi*

Developing Centre: ICAR-NBPGR Regional Station, Jodhpur-342008, Rajasthan

Breeding/Academic

44

Mungbean (*Vigna radiate*)
Accession number (Other ID): IC0418452 (MTS-37)
Registration No.: INGR10107
Year of Registration: 2010

Trait

High seed weight (9.43 g/100 seed).

Developers: *NK Dwivedi and S Gopala Krishnan*

Developing Centre: ICAR-NBPGR Regional Station, Jodhpur-342008, Rajasthan

Breeding/Academic

45

Moth bean (*Vigna aconitifolia*)
Accession number (Other ID): IC120963
Registration No.: INGR19073
Year of Registration: 2019

Trait

Extra Early maturing (53 days).

Developers: *Omvir Singh, Kartar Singh, Neelam Shekhawat, Anil Kumar Singh, Veena Gupta and Kuldeep Singh*

Developing Centre: ICAR-NBPGR Regional Station, Jodhpur-342008, Rajasthan

Breeding/Academic

46

Mungbean (*Vigna radiata*)
Accession number (Other ID): EC0398949
Registration No.: INGR21224
Year of Registration: 2021

Trait

Ability of the genotype to maintain a cool canopy even under moisture stress.

Developers: *SK Raina, Jagadish Rane, Nikhil Raskar, AK Singh, V Govindasamy, Mahesh Kumar, SC Ekatpure, PS Minhas and SM Sultan*

Developing Centre: ICAR-NBPGR Regional Station, Srinagar-191132, Jammu and Kashmir

Breeding/Academic

47

Rice Bean (*Vigna umbellata*)
Accession number (Other ID): IC009634
Registration No.: INGR22042
Year of Registration: 2022

Trait

Very bold seeds, weighing 37.44 g of 100 seed weight.

Developers: *Padmavati G Gore, Subarna Hajong, Mohar singh, Neeta Singh and Veena Gupta*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Breeding/Academic

48

Linseed (*Linum usitatissimum*)
Accession number (Other ID): IC096539
Registration No.: INGR18034
Year of Registration: 2018

Trait

Early maturity (102 days).

Developers: *Vikender Kaur, DP Wankhede, Rashmi Yadav, Sandeep Kumar, Ashok Kumar, JC Rana and J Radhamani*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Breeding/Academic

49

Linseed (*Linum usitatissimum*)
Accession number (Other ID): IC096496
Registration No.: INGR20037
Year of Registration: 2020

Trait

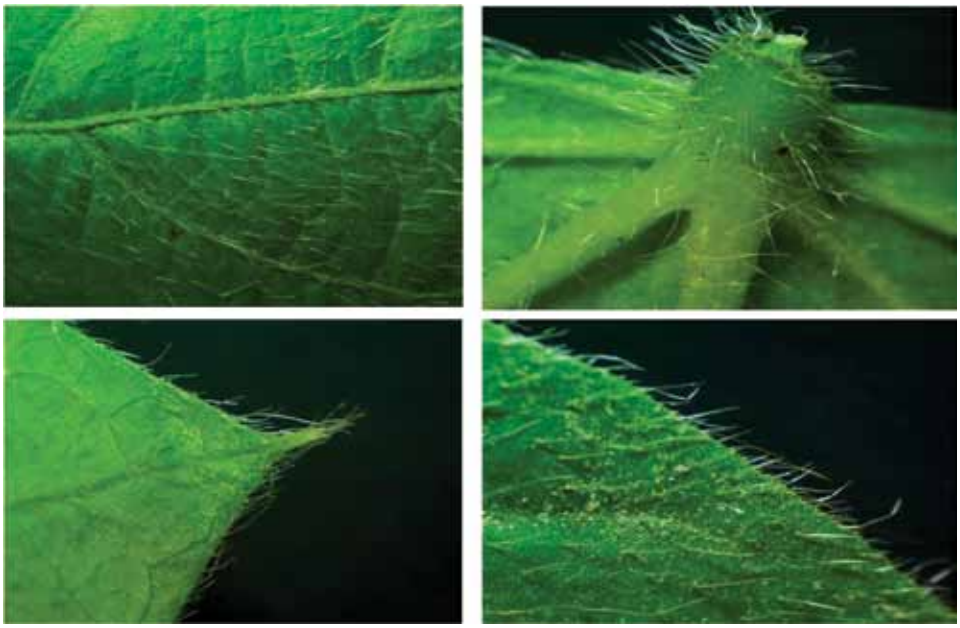
Early flowering (58.6 days).

Developers: *Dhammaprakash P Wankhede, Vikender Kaur, Sunil Shriram Gomashe, J Radhamani, J Aravind, Sandeep Kumar, S Rajkumar, Rajesh Kumar and Ashok Kumar*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Breeding/Academic

50



Cowpea (*Vigna unguiculata*)
Accession number (Other ID): EC762384
Registration No.: INGR21222
Year of Registration: 2021

Trait

Dense pubescence.

Developers: *Kuldeep Tripathi, AK Parihar, Niranjana Murthy, Revanasidda, DP Wankhede, Neeta Singh, SK Deshpande, Gayachara and Ashok Kumar*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Breeding/Academic

51

Bottle gourd (*Lagenaria siceraria*)
Accession number (Other ID): IC0571819 (NS/2009/042)
Registration No.: INGR10064
Year of Registration: 2010

Trait

Spindle shaped fruit with hard durable rind.

Developers: *N Sivaraj, Someswara Rao Pandravada, V Kamala, N Sunil and KS Varaprasad*

Developing Centre: ICAR-NBPGR Regional Station, Hyderabad-500030, Telangana

Breeding/Academic

52

Mungbean (*Vigna radiata*)
Accession number (Other ID): EC546478
Registration No.: INGR13010
Year of Registration: 2013

Trait

Photosensitive line.

Developers: *N Sunil, V Kamala, KS Varaprasad, N Sivaraj, SR Pandravada and SK Chakrabarty*

Developing Centre: ICAR-NBPGR Regional Station, Hyderabad-500030, Telangana

Breeding/Academic

53

Wheat (*Triticum aestivum*)
Accession number (Other ID): IC0529962
Registration No.: INGR19044
Year of Registration: 2019

Trait

Stability for grain yield performance.

Developers: *Jyoti Kumari, Sundeep Kumar, Nidhi Singh, SS Vaish, Saikat Das, Arun GuptaMS Saharan, JC Rana, Ruchi Bansal, Sherry R Jacob, AK Singh, Lakshmi Kant and Ashok Kumar*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Breeding/Academic

54

Meetha Karela (*Cyclanthera pedeata*)
Accession number (Other ID): IC0415397 (KP/AK/77)
Registration No.: INGR06020
Year of Registration: 2006

Trait

Spineless large fruit (Dia 2.56 cm).

Developers: *JC Rana, K Pradheep and VD Verma*

Developing Centre: ICAR-NBPGR Regional Station, Shimla-171004, Himachal Pradesh

Breeding/Academic

55

Buckwheat (*Fagopyrum tataricum*)
Accession number (Other ID): IC0258233
(JCR /TRS-489)
Registration No.: INGR04034
Year of Registration: 2004

Trait

Easy dehulling type.

Developers: *JC Rana, TR Sharma, VD Verma, SK Yadav and K Pradheep*

Developing Centre: ICAR-NBPGR Regional Station, Shimla-171004, Himachal Pradesh

Breeding/Academic

56

Malabar tamarind (*Garcinia cambogia)*
Accession number (Other ID): IC0244100-2
Registration No.: INGR04061
Year of Registration: 2004

Trait

Early bearing (6 years after transplant) with superior yield (number of fruits 4111/per tree and fruit yield (214kg/per year).

Developers: *Z Abraham*

Developing Centre: ICAR-NBPGR Regional Station, Hyderabad-500030, Telangana

Breeding/Academic

57

Maize (*Zea mays*)
Accession number (Other ID): IC0524594 (MCM-11/01)
Registration No.: INGR13054
Year of Registration: 2013

Trait

3-4 cobs per plant and early maturing (114 days).

Developers: *AK Misra, RS Rathi, S Roy, SK Singh and DC Bhandari*

Developing Centre: ICAR-NBPGR Regional Station, Umiam-793103, Meghalaya

Quality

Quality

58

Cucumber (*Cucumis sativus* var. *sativus*)
Accession number (Other ID): IC0420405
Registration No.: INGR18029
Year of Registration: 2018

Trait

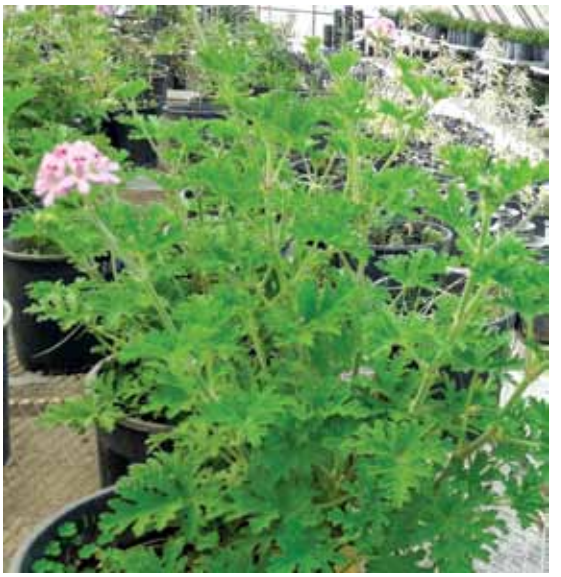
High carotenoid content is (18.5-29.2 µg/g). Orange flesh colour.

Developers: *Pragya, KK Gangopadhyay, Rakesh Bhardwaj, Chithra Devi Pandey, Rakesh Srivastava, Manas Kumar Bag, TV Prasad, BL Meena, M Dutta, KC Bansal, AK Pal, Tanmay Koley, Sudhakar Pandey, B Singh, AD Munshi and Harish GD*

Developing centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Quality

59



Rose geranium (*Pelargonium graveolens*)
Accession number (Other ID): IC0553286 (NIC 023413)
Registration No.: INGR07042
Year of Registration: 2007

Trait

Quality aroma

Developers: *KC Pant, KS Negi, ML Maheshwari, P Suneja, V Pant and KC Muneem*

Developing Centre: ICAR-NBPGR Regional Station, Bhowali-263132, Uttarakhand

Quality

60

Physic nut (*Jatropha curcas*)
Accession number (Other ID): IC0541650 (BAAS-51)
Registration No.: INGR08086
Year of Registration: 2008

Trait

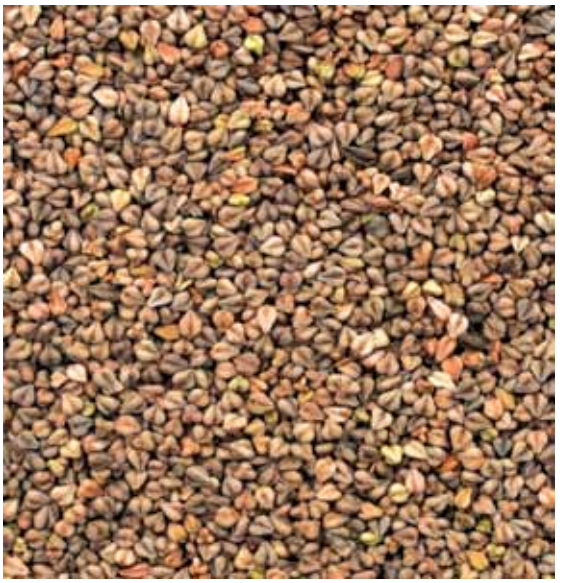
High oil content (40.6%)

Developers: *Sunil Neelam, Babu Abraham, N Sivaraj, KS Varaprasad, Somwswara Rao Pandravada and AS Rajput*

Developing Centre: ICAR-NBPGR Regional Station, Hyderabad-500030, Telangana

Quality

61



Buckwheat (*Fagopyrum tataricum*)
Accession number (Other ID): IC014889
Registration No.: INGR13004
Year of Registration: 2013

Trait

High rutin content (28.83ug/mg).

Developers: *JC Rana, RS Chauhan, Nidhi Gupta, SK Sharma and TR Sharma*

Developing Centre: ICAR-NBPGR Regional Station, Shimla-171004, Himachal Pradesh

Quality

62

Wild Bean (*Vigna vexillata*)
Accession number (Other ID): IC0259504
Registration No.: INGR21055
Year of Registration: 2021

Trait

High protein content (9.5%) in tuber. Bold seededness. Fodder type.

Developers: *Kuldeep Tripathi, Rakesh Bharadwaj, Padmavati G. Gore, Anjula Pandey, Gayacharan, Paras Sharma, RK Pamarthi, Neeta Singh, Ashok Kumar and Renu Pandey*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Quality

63

Oregano (*Origanum vulgare*)
Accession number (Other ID): IC589087 (NKO-68)
Registration No.: INGR13046
Year of Registration: 2013

Trait

Thymol rich (85.87%) in essential oil isolated from aerial parts and high yield of essential oil (2.07%) during flowering stage.

Developers: *KS Negi, SN Ojha, SS Koranga, AKS Rawat, MM Pandey and Archana P Raina*

Developing Centre: ICAR-NBPGR Regional Station, Bhowali-263132, Uttarakhand

Quality

64

Basil (*Ocimum basilicum*)
Accession number (Other ID): EC174527
Registration No.: INGR19091
Year of Registration: 2019

Trait

Essential oil rich in Linalool content (~ 61.18 ± 4.41%) in oil isolated from aerial plant parts.

Developers: *Archana P Raina, Ashok Kumar and Veena Gupta*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Quality

65

Ber (*Ziziphus mauritiana)*
Accession number (Other ID): IC625596
Registration No.: INGR21241
Year of Registration: 2021

Trait

Ber with small proportion of stone (7%). Excellent blend of T.S.S. of 17-18 (ºB) acidity (0.35 %) and Vitamin C (51.2 mg/100 gm). Superior in term of taste and fruit weight (23 gm) compare to stone less landrace (INGR No. 19100) which gives gumminess feeling after eating of fruit and also have smaller fruits (1-2 gm).

Developers: *Vijay Singh Meena, Rakesh Bhardwaj, RR Sharma, Manoj Mahawar, VK Sharma and Kuldeep Singh*

Developing Centre: ICAR-NBPGR Regional Station, Jodhpur-342008, Rajasthan

Quality

66

Yam (*Dioscorea pubera*)
Accession number (Other ID): IC0202382
Registration No.: INGR08061
Year of Registration: 2008

Trait

High diosgenin (1220 µg/g dry weight in tuber).

Developers: *Asha KI*

Developing Centre: ICAR-NBPGR Regional Station, Thrissur-680656, Kerala

Quality

67

Yam (*Dioscorea spicata*)
Accession number (Other ID): IC0202383
Registration No.: INGR08062
Year of Registration: 2008

Trait

High diosgenin yield (305 µg/g dry weight in tuber).

Developers: *Asha KI*

Developing Centre: ICAR-NBPGR Regional Station, Thrissur-680656, Kerala

Quality

68

Yam (*Dioscorea hispida*)
Accession number (Other ID): IC0202370
Registration No.: INGR08063
Year of Registration: 2008

Trait

High diosgenin yield (57 µg/g dry weight in tuber).

Developers: *Asha KI*

Developing Centre: ICAR-NBPGR Regional Station, Thrissur-680656, Kerala

Quality

69

Yam (*Dioscorea hamiltonii*)
Accession number (Other ID): IC202328 (AV-222)
Registration No.: INGR08064
Year of Registration: 2008

Trait

High diosgenin (3 µg/g dry weight in tuber).

Developers: *Asha KI*

Developing Centre: ICAR-NBPGR Regional Station, Thrissur-680656, Kerala

Quality

70

Velvet Bean (*Mucuna pruriens*)
Accession number (Other ID): IC0599290
Registration No.: INGR19092
Year of Registration: 2019

Trait

High L Dopa content of (7.1 %) on dry weight basis in seed cotyledons.

Developers: *Archana P Raina, RC Misra and DR Pani*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Quality

71

Oregano (*Origanum vulgare*)
Accession number (Other ID): IC0589079 (MMBO-3055)
Registration No.: INGR13018
Year of Registration: 2013

Trait

Thymol rich (85.87%) in essential oil isolated from aerial parts and high yield of essential oil (2.07%) during.

Developers: *KS Negi, SN Ojha, SS Koranga, AKS Rawat, S Srivastava, MM Pandey and Archana P Raina*

Developing Centre: ICAR-NBPGR Regional Station, Bhowali-263132, Uttarakhand

Quality

72

Pearl millet (*Pennisetum squamulatum*)
Accession number (Other ID): IC0283734 (NSS-7809)
Registration No.: INGR13056
Year of Registration: 2013

Trait

Popping trait.

Developers: *Jyoti Kumari, Sushil Pandey, SK Jha, S Chauhan, GK Jha, C Tara Satyavathi, NK Gautam and M Dutta*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

Quality

73

Linseed (*Linum usitatissimum*)
Accession number (Other ID): IC0564627 (NS/08/047)
Registration No.: INGR10027
Year of Registration: 2010

Trait

High oleic acid content in seed (32.0%).

Developers: *N Sivaraj, N Sunil, Someswara Rao Pandravada, V Kamala, Babuabraham and KS Varaprasad*

Developing Centre: ICAR-NBPGR Regional Station, Hyderabad-500030, Telangana

Quality

74

Physic nut (*Jatropha curcas*)
Accession number (Other ID): IC0537939
Registration No.: INGR08087
Year of Registration: 2008

Trait

High oil content (42%).

Developers: *Sunil Neelam, KS Varaprasad, T Suresh Kumar, N Sivaraj, V Kamala and Babu Abraham*

Developing Centre: ICAR-NBPGR Regional Station, Hyderabad-500030, Telangana

Quality

75

Wheat (*Triticum aestivum*)
Accession number (Other ID): IC0296727
Registration No.: INGR22007
Year of Registration: 2022

Trait

High level of grain zinc content (51.3 ppm). Protein content (13.8%).

Developers: *Jyoti Kumari, Sherry R Jacob, Sundeep Kumar, Sewa Ram, Arun Gupta, Gopala Reddy, KP Singh, SK Sharma, Sushil Pandey, Ashok Kumar and GP Singh*

Developing Centre: ICAR-NBPGR, Pusa Campus, New Delhi-110012

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Its headquarters is located in New Delhi with ten regional stations spread across the country. NBPGR is a constituent organization under the Indian Council of Agricultural Research.

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