



**Compendium and Breeder Seed Production
Scenario of Rapeseed-Mustard Varieties
Supplement (2006-2012)**

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Foreword

Oilseed Brassicas are important source of edible oil in India. These crops are grown under diverse agro-climatic situations of the country. The productivity of rapeseed-mustard has risen from 771 kg/ha during 1984-85 to 1182 kg/ha during 2009-10 which itself reflects the impact of research and development activities carried out in these crops. Considering the need and importance of strengthening research activities, Indian Council of Agricultural Research established National Research Centre on Rapeseed Mustard on 20th October 1993 at Bharatpur in Rajasthan and elevated its status to Directorate of Rapeseed Mustard Research (DRMR) on 19th February 2009 with a vision to enhance the access to quality edible oil.

178 high yielding varieties have been developed under the aegis of All India Coordinated Research Project on Rapeseed Mustard since 1967. It is essential to compile and document all available information at one place to safeguard the interest of plant breeders as well as of farming community. Directorate of Rapeseed Mustard Research has earlier compiled three publications on varieties *viz.*, Rapeseed Mustard Varieties of India by Kumar *et al* 2000; Database of Released Varieties of Rapeseed Mustard in India (1936-2002) by Chauhan *et al* 2003 and Compendium of Rapeseed Mustard Varieties Notified in India by Chauhan *et al* 2006. The present publication Compendium and Breeder Seed Production Scenario of Rapeseed Mustard Varieties: Supplement (2006-2012) is an effort in the same series to update the information about released varieties.

I am sure this publication will prove useful to rapeseed mustard researchers and planners. I congratulate Dr J.S. Chauhan, Dr. K.H. Singh and Dr. Vinod Kumar for their efforts in bringing out this publication.

Preface

Varietal Improvement programme carried out under the aegis of All India Coordinated Research Project on Rapeseed Mustard, has resulted in the release of 132 varieties since the inception. Compilation and documentation of available information related to varieties is essential to provide the information to all stakeholders and to safeguard the interest related to intellectual property. In this endeavour, Directorate of Rapeseed Mustard Research earlier brought out three publications which have proved very useful to the concerned researchers and planners engaged in rapeseed mustard improvement. The last publication Compendium of Rapeseed Mustard Varieties Notified in India by Chauhan et al 2006 contains information on all varieties notified in India till 2006. Since then 49 varieties have been notified till June 2012, hence it was felt necessary to compile information about these varieties. Development of commercial hybrids and varieties with quality traits (low erucic acid and/or low glucosinolate content) have been significant achievement of this period. This publication therefore is a supplement to earlier published compendium and hence we have kept the same criteria and format for description of varieties/hybrids. The information compiled in this document is mainly from release proposals of the varieties. We acknowledge the contribution of Scientists whose information has been the base of this document.

Though, utmost care has been taken in compilation however, suggestions for its improvement are welcome. we expect this document will serve its purpose of providing all related information on varieties released during 2006-2012.

**J.S. Chauahn
K.H. Singh
Vinod Kumar**

Contents

Foreword

Preface

1 Introduction

2 Description of varieties

2.1 Rapeseed

2.1.1 Brown sarson

2.1.2 Gobhi sarson

2.1.3 Taramira

2.1.4 Toria

2.1.5 Yellow sarson

2.2 Mustard

2.2.1 Indian mustard

2.2.2 Karan rai

3 Breeder seed production scenario

4 Appendices

I Varieties recommended for specific conditions/trait

II Rapeseed –Mustard varieties released/notified in India

III Alphabetic list of rapeseed mustard varieties notified during 2006-2012

IV References

Introduction

Oilseed Brassicas also known as rapeseed–mustard constitute an important group of oilseed crops in the world. The group comprises eight cultivated crops of tribe *Brassicaceae* belonging to four major species *viz.*, *Brassica napus*, *Brassica juncea*, *Brassica campestris* and *Brassica carinata* within the family *Cruciferae* (*Brassicaceae*). In Indian sub-continent rapeseed-mustard crops comprise traditionally grown indigenous species, namely toria (*Brassica campestris* syn. *Brassica rapa* L. var. toria), brown sarson (*Brassica campestris* syn. *Brassica rapa* L. var. brown sarson), yellow sarson (*Brassica campestris* syn. *Brassica rapa* L. var.. yellow sarson), Indian mustard [*Brassica juncea* (L.) Czernj & Cosson], black mustard (*Brassica nigra*) and taramira (*Eruca sativa* / *vesicaria* Mill.) which have been grown since about 3,500 BC along with non-traditional species like gobhi sarson (*B. napus* L. ssp *oleifera* DC var. *annua* L.), white mustard (*Sinapis alba* L.) and Ethiopian mustard or karan rai (*Brassica carinata* A. Braun). Rapeseed–mustard crops are grown in diverse agro-climatic conditions ranging from north-eastern / north-western hills to down south under irrigated/rainfed, timely/late-sown, saline soils and mixed cropping. Indian mustard accounts for about 75-80% of the total acreage under these crops in the country during 2009-10. The cultivation of brown sarson which once, dominated the entire rapeseed-mustard growing region, now shadowed by Indian mustard. Yellow sarson is now mainly grown in Asom, Bihar, north-eastern states, Odisha, eastern Uttar Pradesh and West Bengal. Toria is a short-duration crop cultivated largely in Asom, Bihar, Odisha and West Bengal in the east mainly as winter crop. In Haryana, Himachal Pradesh, Madhya Pradesh, Punjab, Uttarakhand and western Uttar Pradesh, it is grown as a catch crop. Taramira is grown in the drier parts of north-west India comprising Rajasthan, Haryana and Uttar Pradesh. Gobhi sarson and karan rai are the new emerging oilseed crops having limited area of cultivation. Gobhi sarson is a long duration crop confined to Haryana, Himachal Pradesh and Punjab. Rapeseed-mustard crops because of their low water requirement (80-240 mm) fit well in the rainfed cropping system of resource-poor farmers.

The estimated area, production and yield of rapeseed-mustard in the world was 33.57 million hectares (m ha), 65.56 million tonnes (m t) and 1,800 kg/ha, respectively, during 2010-11. Globally, India account for 21.6% and 10.8% of the total acreage and production (USDA 2012). In India, these crops on an average contributed 23.7% and 26.0%, respectively, to the total oilseed acreage and production during the last five years. During 2010-11, rapeseed-mustard contributed 24.6% and 24.3% to the total oilseeds production and acreage (Statistics at a glance 2011).

Current status of rapeseed mustard production: Soybean, groundnut and rapeseed-mustard are the major oilseed crops in India contributing nearly 78% and 87% to its total acreage and production, respectively. The contribution of rapeseed-mustard to the total oilseed acreage and production is 24.7% and 26.8%, respectively (Fig 1 a, b). During 2008-09, rapeseed-mustard contributed 21.7 % and 20.1 % to the total oilseeds production and acreage. The yield of rapeseed-mustard was 1190 kg / ha as compared to 1026 kg / ha of total oilseeds (Anonymous 2010a).

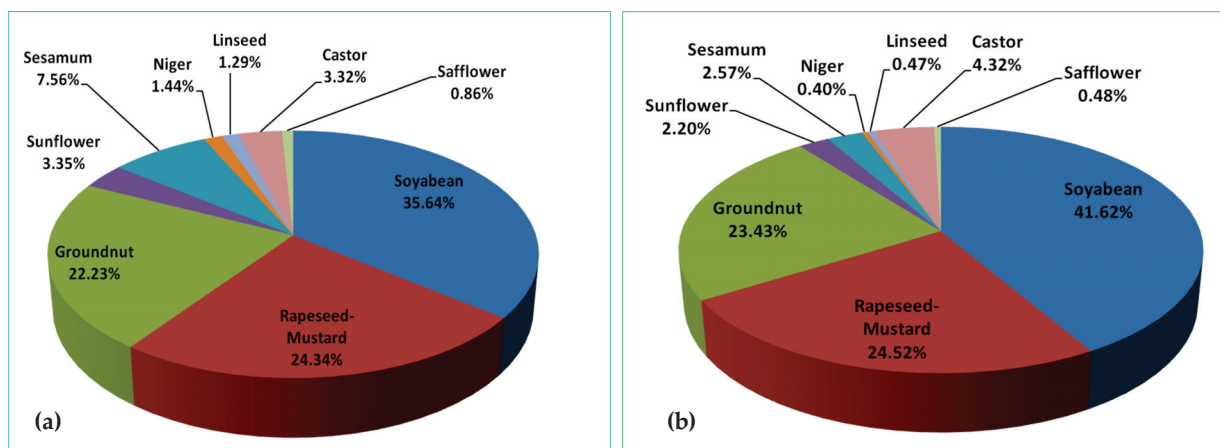


Fig.1.1: Contribution of rapeseed-mustard to India's total oilseed crop (a) acreage and (b) production during 2010-11

The rapeseed-mustard production trends represent fluctuating scenario with all time high production of 8.13 million tonnes from 7.28 million hectares during 2005-06. The yield levels also have been variable ranging from 902 in 2002-03 to 1159 kg/ha in 2009-10 (Fig 2). Rajasthan, Uttar Pradesh and Madhya Pradesh are the major rapeseed-mustard growing states with 45.5%, 13.1% and 11.1% contribution, respectively, to the national acreage during the last five years. The corresponding contribution to production was 48.6%, 13.4% and 9.8%, respectively (Fig 3 a, b). Nevertheless, yield (kg/ha) was in general higher in Gujarat varying from 1349-1635 but during 2008-09 and 2009-10, Haryana recorded the highest yield, 1738 and 1656 kg/ha, respectively (Agricultural Statistics at a Glance 2010. www.dacnet.nic.in).

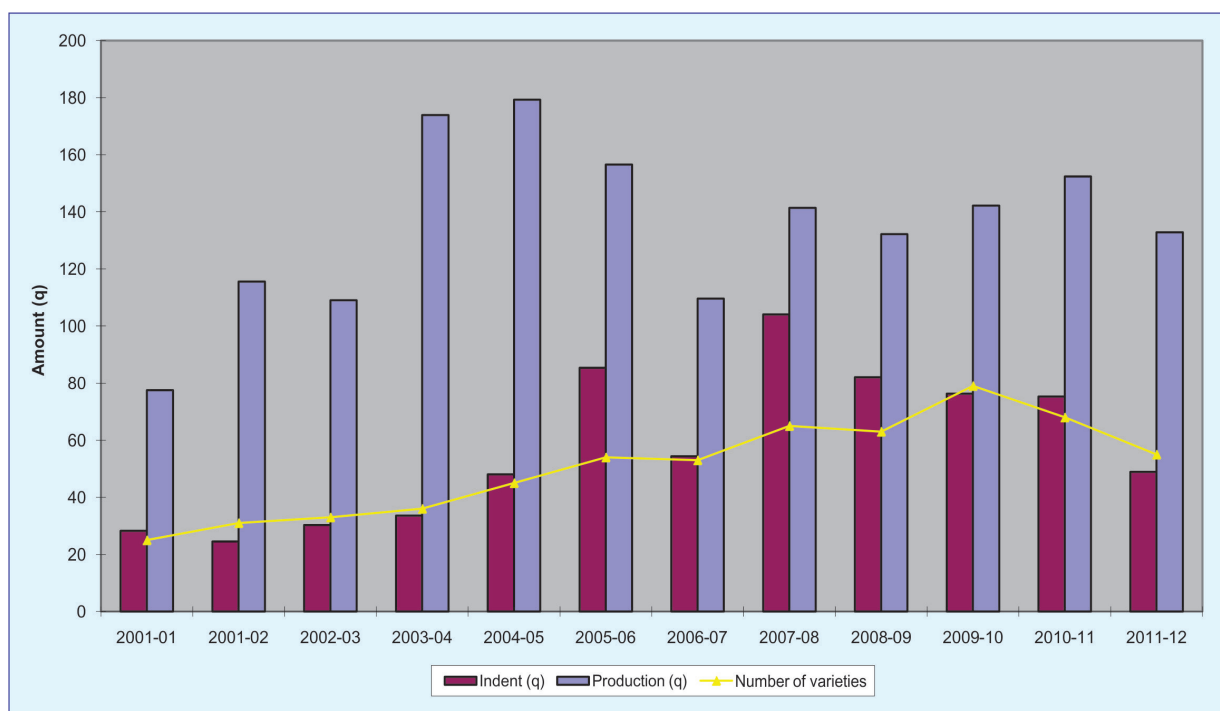


Fig 1.2 Area, production and yield of rapeseed-mustard in India during the last decade

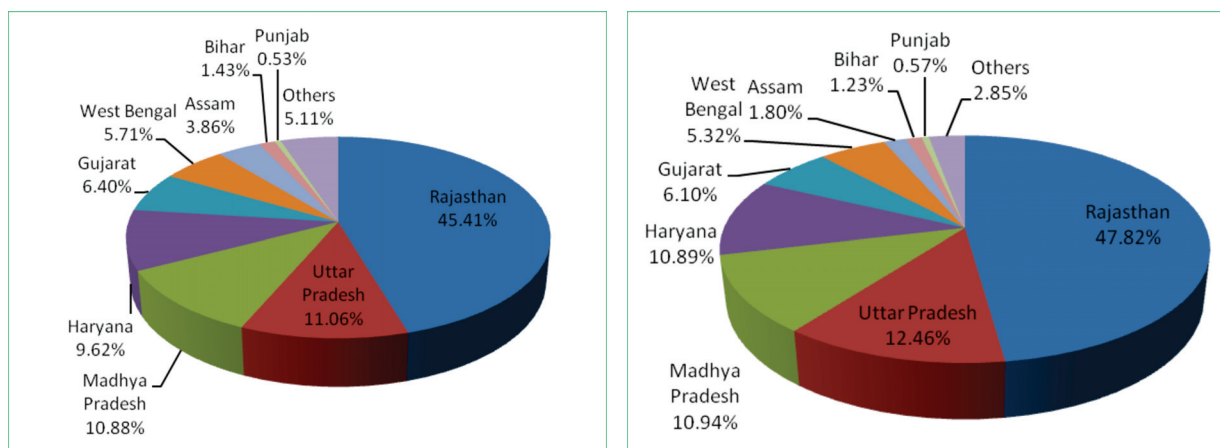


Fig 1.3: Contribution of different states of India to rapeseed-mustard (a) acreage and (b) production during 2006-07 to 2010-11

Crop Improvement Research in India

Pre-All India Coordinated Research Project on Rapeseed-mustard

The research work on the improvement of rapeseed-mustard started by the turn of the last century at Pusa (Bihar), the then Bengal Presidency through the collection of land races and their purification. The scientific work for varietal improvement of Indian oleiferous Brassicaceae started at Layallpur (now Faisalabad in Pakistan), then in Punjab of undivided India (NRCRM 2000). The initial efforts led to the identification and release for cultivation of 'RL 18' ('Raya Layallpur 18'), a variety of Indian mustard in 1937 and 'L1' of yellow sarson through selection. Indian mustard strain 'RT 11' from Uttar Pradesh was found superior to local varieties and released in 1936. However, systematic research efforts were started after independence. Until mid-forties, barring sporadic and isolated research efforts, the rapeseed-mustard crop commodity did not get attention in terms of research and development. The earliest attempt to organize research in oilseeds was made by constituting the Indian Central Oilseeds Committee (ICOC) in 1947 under the Indian Oilseeds Committee Act IX in 1946. The main objective of the ICOC was to increase production of individual oilseeds through ad hoc-funding of research programmes carried out by the State Department of Agriculture, Universities and Central Institutes. Oilseeds Development Council replaced the ICOC in 1966. During the course of about two decades (1947- 67), a number of high yielding varieties of mustard ('Laha 101', 'Varuna', 'Durgamani', 'Patan Mustard'), toria ('Abohar', 'BR 23', 'M 27', 'T 9', 'ITSA', 'T 36', 'DK 1'), brown sarson ('BSA', 'BSG', 'BSH 1', 'BS 2', 'BS 65', 'BS 70'), yellow sarson ('T 151', 'Patan sarson', 'YSPb 24', 'T 42') and Taramira ('ITSA') were developed (NRCRM 2007).

Post All India Coordinated Research Project on Rapeseed-mustard

The research programme, however, started in an organized way when the Indian Council of Agricultural Research (ICAR) took a step forward in April 1967 by launching a comprehensive multi-disciplinary research project for the improvement of oilseeds in the country under the banner of the All India Coordinated Research Project on Oilseeds (AICORPO) with a full time Project Coordinator and 32 research centres covering five major crops namely,

groundnut, rapeseed-mustard, sesame, linseed and castor. The project got a fillip in 1977(V plan) with the elevation of the then Project Coordinator (Oilseeds) as Project Director with seven Project Coordinators to monitor, coordinate and plan the research programmes of each of the seven individual crops namely, groundnut (Junagadh), rapeseed-mustard (Hisar), sesame and niger (Jabalpur), sunflower (Bangalore), safflower (Solapur), linseed (Kanpur) and castor (Hyderabad). The research programme was further intensified by strengthening the individual oilseed crop projects by setting up separate Project Coordinating Unit in the V plan to meet the necessary needs individual crops, the unit of the Project Coordinator (Rapeseed-Mustard) was accordingly established on 28 January, 1981 at the campus of the Haryana Agricultural University, Hisar. In order to provide a strong leadership to the rapeseed-mustard research activities in the country and for promoting mission oriented basic, strategic and applied research, the ICAR established National Research Centre on Rapeseed-Mustard on 20 October, 1993 at Bharatpur (Rajasthan) bringing under its umbrella, the All India Coordinated Research Project on Rapeseed-Mustard with 19 research centres across the country. In February 2009, the National Research Centre on Rapeseed-Mustard was re-designated as Directorate of Rapeseed-Mustard Research (DRMR).

Varietal development

The major objectives of the varietal improvement programme have been genetic enhancement for oil and seed yield through developing varieties for early, timely and late sown conditions to cater the need of diverse agro-ecological situations of the country, improvement of oil (low erucic acid) and seed meal (low glucosinolate) quality, introgression of resistance/tolerance against major biotic (white rust, Alternaria blight, Sclerotinia rot diseases and aphid and painted bug insects) and abiotic stresses (drought, high temperature and salinity). Major break through in varietal development programme came after the inception of the All India Coordinated Research Project on Oilseeds in 1967. Out of total 144 released varieties, only 12 were released before while, 132 were released after the inception of All India Coordinated Research Project on Oilseeds.

The recommended varieties recorded 9 to 53 per cent yield increase over national checks under varied situations. Concerted efforts led to the development of many trait/situation specific varieties (Table 1). Two significant achievement of varietal development programme have been the release of varieties with quality traits (low erucic and/or low glucosinolate content) and of commercial hybrids.

Concerted efforts over the last four decades led to the development and identification of 177 rapeseed-mustard varieties after the inception of the All India Coordinated Research Project on Oilseeds in 1967 for varied cropping systems and situations. In all 203 rapeseed-mustard varieties have been identified and Central Sub-Committee on Crop Standards, Notification and Release of Varieties for Agriculture Crops has notified 144 varieties (Table 1.) till December 2010.

Table 1.1 Present status of rapeseed-mustard varietal improvement programme in India

Crop	Varieties recommended /released/notified					
	Before inception (1936-1966)		After inception (1967- 2012*)		Total	
	Identified	Notified	Identified	Notified	Released/Identified	Notified
<i>Rapeseed</i>						
Brown sarson	4	1	6	3	10	4
Gobhi sarson			13	11	13	11
Taramira	1	1	7	5	8	6
Toria	9	4	26	16	35	20
Yellow sarson	6	4	17	11	23	15
<i>Mustard</i>						
Black mustard			1	1	1	1
Indian mustard	6	2	102	84	116	90
Karan rai			7	5	7	4
Total	26	12	178	132	204	151

*Updated till 63rd Meeting of Central Sub-committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops, June 29, 2012.

Gobhi sarsom (*Brassica napus*)

1. Name of the Crop	Gobhi sarson
2. Name of the Cultivar	GSC 6 (OCN 3)
3. Nature of Cultivar	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross (NECN-13 x Tribute) x NECN-13
5. Method of Breeding/Selection	Pedigree method
6. Method of Propagation	Self pollinated
7. If cross-pollinated, extent of natural out crossing (in %)	Not Applicable
8. Address of Originating Source / Institute	Punjab Agricultural University, Ludhiana
9. Name of the persons associated in the development of cultivar	S.S. Banga, S.K. Banga and M.L. Gupta
10. Year of Identification and name under which tested in All India Trial	2006, OCN 3
11. Year of Release	2007
12. Year of Notification	2007
13. Whether Release was at Central or State level	Central
14. If by CVRC mention S.O. No. and date	1108 (E), 08.05.2008
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Zone II (Punjab, Delhi, Haryana, South Rajasthan and Jammu)
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Punjab
18. Cultivar descriptor	Plant height : 160 cm Maturity : 132-167 days Oil content : 39.5-41.4 % Seed size : 2.9-3.9 g
19. Special Attributes, if any	Double low; low erucic acid (0.0-1.8%) low glucosinolate (19 μ mole/g defatted seed meal), oleic acid (60.1-70.0%)
20. Potential yield	2350 kg/ha
21. Average Yield	1555-2023 kg/ha
22. Additional Information, if any	Dwarf and early maturing

GSC 6 Photo

1. Name of the Crop	Gobhi sarson
2. Name of the Cultivar	Him Sarson 1 (ONK 1)
3. Nature of Cultivar	Variety
4. Pedigree (Plant-wise for Hybrids)	Selection from Sheetal (HPN 1)
5. Method of Breeding/Selection	Pure line selection
6. Method of Propagation	Self pollinated
7. If cross-pollinated, extent of natural out crossing (in %)	Not Applicable
8. Address of Originating Source / Institute	Shivalik Agricultural Research & Extension Centre, Kangra (HP)
9. Name of the persons associated in the development of cultivar	Vedna Kumari, H.L.Thakur and Amar Singh Bagh
10. Year of Identification and name under which tested in All India Trial	2008, ONK 1
11. Year of Release	2008
12. Year of Notification	2008
13. Whether Release was at Central or State level	Central
14. If by CVRC mention S.O. No. and date	2187 (E), 27.08.2009
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Zone I (Himachal Pradesh, Jammu & Kashmir)
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Not available
18. Cultivar descriptor	Plant height : 142-203 cm Maturity : 146-172 days Oil content : 37.9-42.2 % Seed size : 2.6-3.8 g
19. Special Attributes, if any	Low incidence of Alternaria leaf blight and Sclerotinia stem rot, resistance to white rust and moderate resistance to downy and powdery mildew
20. Potential yield	2733kg/ha
21. Average Yield	693-1789kg/ha
22. Additional Information, if any	Wider adaptability

1. Name of the Crop	Gobhi sarson
2. Name of the Cultivar	NUDB 26-11
3. Nature of Cultivar	Variety
4. Pedigree (Plant-wise for Hybrids)	Mutant of Wester (exotic variety)
5. Method of Breeding/Selection	Mutagenesis
6. Method of Propagation	Self pollinated
7. If cross-pollinated, extent of natural out crossing (in %)	Not Applicable
8. Address of Originating Source / Institute	Department of Botany, Nagpur University, Nagpur (Maharashtra) and Dhara Vegetable Oil & Foods Company Ltd., Om House, Ellora Park, Vaodara (Gujarat)
9. Name of the persons associated in the development of cultivar	S. P. Landge, Y.Y. Barve, S I Ghugal, S S Bhadauria and R. K. Gupta
10. Year of Identification and name under which tested in All India Trial	2007, NUDB 26-11
11. Year of Release	2007
12. Year of Notification	2008
13. Whether Release was at Central or State level	Central
14. If by CVRC mention S.O. No. and date	2458(E) 16.10.2008
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Zone I (Himachal Pradesh, Jammu & Kashmir)
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Not available
18. Cultivar descriptor	Plant height : 147 cm Maturity : 149-171 days Oil content : 37.6-41.8 % Seed size : 2.4-4.3g
19. Special Attributes, if any	Double low; low erucic acid (0.0-4.5%), low glucosinolate (23.0-27.5 μ mole/g defatted seed meal), oleic acid (55.2-80.2 %)
20. Potential yield	1644 kg/ha
21. Average Yield	996-1339kg/ha
22. Additional Information, if any	Suitable for double cropping
NUDB 26-11 Photo	

1. Name of the Crop	Gobhi sarson
2. Name of the Cultivar	TERI Uttam Jawahar
3. Nature of Cultivar	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross TERI (OE) R 03 x Cyclone
5. Method of Breeding/Selection	Pedigree method
6. Method of Propagation	Self pollinated
7. If cross-pollinated, extent of natural out crossing (in %)	Not Applicable
8. Address of Originating Source / Institute	The Energy Resources Institute (TERI), New Delhi
9. Name of the persons associated in the development of cultivar	Abha Agnihotri and Nutan Kaushik
10. Year of Identification and name under which tested in All India Trial	—, TERI (OO) R 9903
11. Year of Release	2004
12. Year of Notification	2007
13. Whether Release was at Central or State level	State
14. If by CVRC mention S.O. No. and date	1178 (E) 20.07.2007
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Madhya Pradesh
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Madhya Pradesh
18. Cultivar descriptor	Plant height : 125-130 cm Maturity : 124-151 days Oil content : 42-45% Seed size : 2.9-4.2 g
19. Special Attributes, if any	Double low; low erucic acid (<2.0%), low glucosinolate 10.25 µmole/g defatted seed meal, high oleic acid (60-64%)
20. Potential yield	2685 kg/ha
21. Average Yield	1441-1607 kg/ha
22. Additional Information, if any	Dwarf, early maturing, shattering resistant.

Taramira

(*Eruca sativa*)

1. Name of the Crop	Taramira
2. Name of the Cultivar	Narendra Tara
3. Nature of Cultivar	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross T-27 X RTM-969
5. Method of Breeding/Selection	Mass selection
6. Method of Propagation	Cross Pollinated
7. If cross pollinated, extent of natural out crossing (in %)	100%
8. Address of Originating Source / Institute	S.K.N. College of Agriculture, Jobner(Rajasthan Agricultural University, Bikaner)
9. Name of the persons associated in the development of cultivar	M.L. Jakhar and S. S. Yadav
10. Year of Identification and name under which tested in All India Trial	—, RTM 2002
11. Year of Release	2006
12. Year of Notification	2007
13. Whether Release was at Central or State level	State
14. If by CVRC mention S.O. No. and date	1703 (E) 05.10.2007
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Rajasthan
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Rajasthan
18. Cultivar descriptor	Plant height : 100-120 cm Maturity : 125-135 days Oil content : 37-38 %Seed size : 3.4-3.7 g
19. Special Attributes, if any	Nil
20. Potential yield	1479 kg/ha
21. Average Yield	1001-1115 kg/ha
22. Additional Information, if any	Nil

1. Name of the Crop	Taramira
2. Name of the Cultivar	Vallabh Taramira 1 (PUT 93-11)
3. Nature of Cultivar	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross PUT 23 X T 27
5. Method of Breeding/Selection	Pedigree
6. Method of Propagation	Cross Pollinated
7. If cross pollinated, extent of natural out crossing (in %)	100%
8. Address of Originating Source / Institute	Zonal Research Station, Ujhani (Badaun), S.V. Patel University of Agriculture & Technology, Meerut (Uttar Pradesh)
9. Name of the persons associated in the development of cultivar	S.B. Singh
10. Year of Identification and name under which tested in All India Trial	—, PUT 93-11
11. Year of Release	2009
12. Year of Notification	2010
13. Whether Release was at Central or State level	State
14. If by CVRC mention S.O. No. and date	632 (E), 25.03.2011
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Uttar Pradesh
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Uttar Pradesh
18. Cultivar descriptor	Plant height : 75-80 cm Maturity : 130-135 days Oil content : 38-40 % Seed size : 3.8 g
19. Special Attributes, if any	Nil
20. Potential yield	1417 kg/ha
21. Average Yield	616-1133 kg/ha
22. Additional Information, if any	Moderately resistant to Alternaria blight and aphid

Vallabh Taramira 1 photo

1. Name of the Crop	Taramira
2. Name of the Cultivar	Vallabh Taramira 2 (PUT 93-1)
3. Nature of Cultivar	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross PUT 97-7 X PUT 31-4
5. Method of Breeding/Selection	Pedigree
6. Method of Propagation	Cross Pollinated
7. If cross pollinated, extent of natural out crossing (in %)	100%
8. Address of Originating Source / Institute	Zonal Research Station, Ujhani (Badaun), S.V. Patel University of Agriculture & Technology, Meerut (Uttar Pradesh)
9. Name of the persons associated in the development of cultivar	S.B. Singh
10. Year of Identification and name under which tested in All India Trial	—, PUT 93-1
11. Year of Release	2009
12. Year of Notification	2010
13. Whether Release was at Central or State level	State
14. If by CVRC mention S.O. No. and date	632 (E), 25.03.2011
15. De-notification if any, with date	Not Applied
16. Recommended Region / Areas	Uttar Pradesh
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Uttar Pradesh
18. Cultivar descriptor	Plant height : 85-90 cm Maturity : 135-140 days Oil content : 38-39 % Seed size : 3.6 g
19. Special Attributes, if any	Nil
20. Potential yield	1306 kg/ha
21. Average Yield	500-1283 kg/ha
22. Additional Information, if any	Resistant to white rust, moderately resistant to Alternaria blight and aphid

Toria

(*Brassica campestris* syn. *B. rapa* var. *toria*)

1. Name of the Crop	Toria
2. Name of the Cultivar	Uttara
3. Nature of Cultivar	Variety
4. Pedigree (Plant-wise for Hybrids)	Population derivative of variety PT 303
5. Method of Breeding/Selection	Recurrent selection
6. Method of Propagation	Cross Pollinated
7. If cross-pollinated, extent of natural out crossing (in %)	100%
8. Address of Originating Source / Institute	G.B. Pant University of Agriculture & Technology, Pantnagar 263 145 (Uttarakhand)
9. Name of the persons associated in the development of cultivar	Rambhajan, J.N. Sachan, S.P. Singh, D.P. Pant, Dhirendra Singh, A.K. Singh
10. Year of Identification and name under which tested in All India Trial	—, PT 2002-25
11. Year of Release	2008
12. Year of Notification	2010
13. Whether Release was at Central or State level	State
14. If by CVRC mention S.O. No. and date	211(E), 29.01.10
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Uttarakhand Plains
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Irrigated areas of Uttarakhand Plains
18. Cultivar descriptor	Plant height : 120-140 cm Maturity : 93-101 days Oil content : 41.8 % Seed size : 3.0 g
19. Special Attributes, if any	Nil
20. Potential yield	2000 kg/ha
21. Average Yield	741-1846 kg/ha
22. Additional Information, if any	Moderately resistant to white rust, downy and powdery mildew diseases

Uttara photo

1. Name of the Crop	Toria
2. Name of the Cultivar	VL Toria 3
3. Nature of Cultivar	Variety
4. Pedigree (Plant-wise for Hybrids)	Selection from local material from Paulgawn (Barakot), Uttarkashi (Uttarakhand)
5. Method of Breeding/Selection	Mass selection
6. Method of Propagation	Cross Pollinated
7. If cross-pollinated, extent of natural out crossing (in %)	100%
8. Address of Originating Source / Institute	Vivekanand Krishi Anusandhan Sansthan, Almora (Uttarakhand)
9. Name of the persons associated in the development of cultivar	V. Mahajan, N.D. Majumder, S.K. Shukla, H.S. Gupta, M.S. Khati, Chandan Singh, K.S. Hooda and Narendra Kumar
10. Year of Identification and name under which tested in All India Trial	—, VLT-3
11. Year of Release	2006
12. Year of Notification	2007
13. Whether Release was at Central or State level	State
14. If by CVRC mention S.O. No. and date	1703(E) 05.10.2007
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Uttarakhand Hills
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Uttarakhand Hills
18. Cultivar descriptor	Plant height : 67-81 cm Maturity : 128-140 days Oil content : 39.0-41.0 % Seed size : 2.2-2.7 g
19. Special Attributes, if any	Nil
20. Potential yield	1330 kg/ha
21. Average Yield	769-1106 kg/ha
22. Additional Information, if any	Nil

Yellow Sarson

(*Brassica campestris* syn. *B. rapa* var. yellow sarson)

1. Name of the Crop	Yellow Sarson
2. Name of the Cultivar	NRCYS 05-02
3. Nature of Cultivar	Variety
4. Pedigree (Plant-wise for Hybrids)	Selection from local germplasm IC 355419
5. Method of Breeding/Selection	Pure line selection
6. Method of Propagation	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (in %)	Not Applicable
8. Address of Originating Source / Institute	National Research Centre on Rapeseed-Mustard (Directorate of Rapeseed-Mustard Research), Bharatpur (Rajasthan)
9. Name of the persons associated in the development of cultivar	A.K. Misra, Arvind Kumar, K.H. Singh, J.S. Chauhan, S.S. Meena, V.V. singh, Karnal Singh, M.L. Meena and S.S. Manohar
10. Year of Identification and name under which tested in All India Trial	2008, NRCYS 05-02
11. Year of Release	2008
12. Year of Notification	2009
13. Whether Release was at Central or State level	Central
14. If by CVRC mention S.O. No. and date	454(E) 11.02.2009
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Yellow sarson growing areas of the country
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Not Available
18. Cultivar descriptor	Plant height : 110-120 cm Maturity : 94-181 days Oil content : 38.2-46.5 % Seed size : 2.2-6.6 g
19. Special Attributes, if any	Early maturity, medium height and high oil content
20. Potential yield	2403 kg/ha
21. Average Yield	1239-1715 kg/ha
22. Additional Information, if any	-

NRCYS 05-02 Photo

1. Name of the Crop	Yellow Sarson
2. Name of the Cultivar	Pant Pili sarson 1 (PYS 1)
3. Nature of Cultivar	Variety
4. Pedigree (Plant-wise for Hybrids)	Selection from local
5. Method of Breeding/Selection	Pure line selection
6. Method of Propagation	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (in %)	Not Applicable
8. Address of Originating Source / Institute	G.B. Pant University of Agriculture & Technology Pantnagar (Uttarakhand)
9. Name of the persons associated in the development of cultivar	J.N. Sachan, Basudeo Singh, S.P. Singh, D.P. Pant, Dharendra Singh, A.K. Singh and Ishwar Prasad
10. Year of Identification and name under which tested in All India Trial	—, PYS-2005
11. Year of Release	2004
12. Year of Notification	2010
13. Whether Release was at Central or State level	State
14. If by CVRC mention S.O. No. and date	211(E), 29.01.10
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Uttarakhand plains
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Irrigated areas of Uttarakhand plains
18. Cultivar descriptor	Plant height : 110-120 cm Maturity : 107-113 days Oil content : 39.5-45.5% Seed size : 2.8-3.5 g
19. Special Attributes, if any	Droopy siliquae arrangement, tetralocular
20. Potential yield	2190 kg/ha
21. Average Yield	1056-1251 kg/ha
22. Additional Information, if any	-

1. Name of the Crop	Yellow Sarson
2. Name of the Cultivar	Pitambari (RYSK 05-02)
3. Nature of Cultivar	Variety
4. Pedigree (Plant-wise for Hybrids)	Selection from local germplasm
5. Method of Breeding/Selection	Pure line selection
6. Method of Propagation	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (in %)	Not Applicable
8. Address of Originating Source / Institute	CS Azad University of Agricultural & Technology, Kanpur (Uttar Pradesh)
9. Name of the persons associated in the development of cultivar	Ranjit, Mahak singh, R.K. Dixit, Lalta Prasad and S.B.L. Srivastava
10. Year of Identification and name under which tested in All India Trial	2009, RYSK 05-02
11. Year of Release	2009
12. Year of Notification	2010
13. Whether Release was at Central or State level	Central
14. If by CVRC mention S.O. No. and date	2137 (E), 31.08.2010
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Yellow sarson growing areas of the country
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Not Available
18. Cultivar descriptor	Plant height : 135-145 cm Maturity : 110-115 days Oil content : 39.6-48.8 % Seed size : 4.0-4.4 g
19. Special Attributes, if any	Bold seed and open type siliquae
20. Potential yield	2238 kg/ha
21. Average Yield	1417-1765 kg/ha
22. Additional Information, if any	Responsive to high fertility
Pitambari Photo	

1. Name of the Crop	Yellow Sarson
2. Name of the Cultivar	YSH-0401
3. Nature of Cultivar	Variety
4. Pedigree (Plant-wise for Hybrids)	Selection from germplasm
5. Method of Breeding/Selection	Pure line selection
6. Method of Propagation	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (in %)	Not Applicable
8. Address of Originating Source / Institute	CCS Haryana Agricultural University, Hisar
9. Name of the persons associated in the development of cultivar	Dhiraj Singh, N.K. Thakral, Yash Pal Yadav, Naveen Chandra and Amit Singh
10. Year of Identification and name under which tested in All India Trial	2008, YSH-0401
11. Year of Release	2008
12. Year of Notification	2009
13. Whether Release was at Central or State level	Central
14. If by CVRC mention S.O. No. and date	2187 (E), 27.08.2009
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Yellow sarson growing areas of the country
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Not Available
18. Cultivar descriptor	Plant height : 110-130 cm Maturity : 115-120 days Oil content : 43.0-45.0% Seed size : 4.0-4.5 g
19. Special Attributes, if any	Bold seeded
20. Potential yield	2210 kg/ha
21. Average Yield	1273-1651 kg/ha
22. Additional Information, if any	Nil

Mustard

Indian Mustard (*Brassica juncea*)

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	Chhattisgarh Sarson
3. Nature of Cultivar (Variety / Hybrid / Composite / Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	PCR 20 X RH 819
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated / Cross pollinated / Vegetative / Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source / Institute	Department of Plant Breeding and Genetics, S.G. College of Agriculture & Research Station, Indira Gandhi Krishi Vishwavidyalaya, Jagdalpur, Bastar
9. Name of the persons associated in the development of cultivar	Ajay Prakash Agrawal
10. Year of Identification with entry number allotted in All India Trial	Not Applicable, BBM 05-01
11. Year of Release (If any)	2007
12. Year of Notification (If any)	2010
13. State whether Release was at Central or State level: Central / State	State
14. If by CVRC mention S.O. No. and date	2137 (E), 31.08.2010
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Chhattishgarh
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Bastar region of Chhattisgarh
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 115-168 cm Maturity : 99-128 days Oil content : 35.8 -40.10% Seed size : 3.7-5.6 g

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	Coral 432 (PAC 432)
3. Nature of Cultivar (Variety / Hybrid / Composite / Synthetic)	Hybrid
4. Pedigree (Plant-wise for Hybrids)	PAC 432A (<i>ogu</i> CMS) X PAC 432 R
5. Method of Breeding/ Selection	Heterosis breeding
6. Method of Propagation- Self Pollinated / Cross pollinated / Vegetative / Tissue Culture	Hybrid Seed (A X R)
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source / Institute	Advanta India Ltd., Unicorn House, Plot No.3, Balaji Enclave, Transport Road, Secunderabad (AP)
9. Name of the persons associated in the development of cultivar	Advanta India Ltd.
10. Year of Identification with entry number allotted in All India Trial	2009, PAC 432
11. Year of Release (If any)	2009
12. Year of Notification (If any)	2010
13. State whether Release was at Central or State level: Central / State	Central
14. If by CVRC mention S.O. No. and date	733 (E), 01.04.2010
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Zone III (Uttar Pradesh, Uttarakhand, Rajasthan)
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Not Available
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 180-190 cm Maturity : 121-132 days Oil content : 40.0-42.0 % Seed size : 2.6-4.9 g
19. Special Attributes, if any	Hybrid, resistant to white rust
20. Potential yield	3113 kg/ha
21. Average Yield	1831-2581kg/ha
22. Additional Information, if any	Irrigated conditions, pearl millet-mustard cropping system

19. Special Attributes, if any	suitable for sowing after paddy harvest
20. Potential yield	1428 kg/ha
21. Average Yield	1180 – 1200 kg/ha
22. Additional Information, if any	Nil

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	Coral 437 (PAC 437)
3. Nature of Cultivar (Variety / Hybrid / Composite / Synthetic)	Hybrid
4. Pedigree (Plant-wise for Hybrids)	PAC 437 A X PAC 437 R
5. Method of Breeding/Selection	Heterosis Breeding
6. Method of Propagation- Self Pollinated / Cross pollinated / Vegetative / Tissue Culture	Hybrid Seed (A X R)
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source / Institute	Advanta India Ltd., Unicorn House, Plot No.3, Balaji Enclave, Transport Road, Secunderabad (AP)
9. Name of the persons associated in the development of cultivar	Virupakshappa, K., Mruthyunjaya, C.H., Sarala, B.S., Irranna, S.D.
10. Year of Identification with entry number allotted in All India Trial	2011, PAC 437
11. Year of Release (If any)	2011
12. Year of Notification (If any)	2012
13. State whether Release was at Central or State level: Central / State	Central
14. If by CVRC mention S.O. No. and date	
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Zone II (Haryana,Punjab, Delhi, Jammu & Kashmir, Parts of Rajasthan)
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Not Available
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 180 - 190 cm Maturity : 140 - 150 days Oil content : 39.2 - 41.2 % Seed size : 3.7 - 4.4 g
19. Special Attributes, if any	Hybrid, resistant to white rust
20. Potential yield	3113 kg/ha
21. Average Yield	1831-2581kg/ha
22. Additional Information, if any	Irrigated conditions, pearl millet-mustard cropping system

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	CS 56 (CS-234-2)
3. Nature of Cultivar (Variety / Hybrid / Composite / Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross RH-851 x Pusa bold
5. Method of Breeding/Selection	Pedigree Method
6. Method of Propagation- Self Pollinated / Cross pollinated / Vegetative / Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source / Institute	Central Soil Salinity Research Institute, Karnal (Haryana)
9. Name of the persons associated in the development of cultivar	T.S. Sinha and P.C. Sharma
10. Year of Identification with entry number allotted in All India Trial	2007, SAL 4 (CS 234-2)
11. Year of Release (If any)	2007
12. Year of Notification (If any)	2008
13. State whether Release was at Central or State level: Central / State	Central
14. If by CVRC mention S.O. No. and date	2458(E) 16.10.2008
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Zone III (Madhya Pradesh, Uttar Pradesh, Eastern Rajasthan)
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Not Available
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : cm Maturity : 113-147 days Oil content : 35.1- 39.6 % Seed size : 1.9-4.2 g
19. Special Attributes, if any	Tolerance to salinity
20. Potential yield	1696 kg/ha
21. Average Yield	1170- 1423 kg/ha
22. Additional Information, if any	Suitable for late sown conditions.

CS 56 Photo

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	Dhara mustard hybrid 1(DMH 1)
3. Nature of Cultivar	Hybrid
4. Pedigree (Plant-wise for Hybrids)	5247 A x 2332 R (1-126 CMS system based)
5. Method of Breeding/Selection	Heterosis breeding
6. Method of Propagation	Hybrid Seed (A X R)
7. If cross-pollinated, extent of natural out crossing (in %)	Not Applicable
8. Address of Originating Source / Institute	Dhara Vegetable Oil & Foods Company Ltd., Om House, Ellora Park, Vaodara (Gujarat) and Centre for Genetic Manipulation of Crop Plants, University of Delhi, South Campus, Benito Juarez Road, New Delhi
9. Name of the persons associated in the development of cultivar	Y.S Sodhi, A.K. Pradhan, Vibha Gupta, A. Mukhopadhyay, N. Armugam, J.K.Verma and D. Pental
10. Year of Identification and name under which tested in All India Trial	2008, DMH-1 (zoneII)2009, DMH- 1 (zoneIII)
11. Year of Release	2008/2009
12. Year of Notification	2009
13. Whether Release was at Central or State level	Central
14. If by CVRC mention S.O. No. and date	449(E), 11.02.2009
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Zone II (Delhi, , Haryana ,Punjab, J &K and Rajasthan)Zone III(Madhaya Pradesh, Uttar Pradesh, Eastern Rajasthan)
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Not Available
18. Cultivar descriptor	Zone II Plant height : 190-197 cm Maturity : 142-152 days Oil content : 35.4-42.1 % Seed size : 2.8-4.0 g Zone III Plant height : 191-207cm Maturity : 117-139 days Oil content : 34.5-42.1 % Seed size : 2.9-5.5 g
19. Special Attributes, if any	Resistant to white rust

20. Potential yield	2783kg/ha (zone II) 2765kg/ha (zone III)
21. Average Yield	1782-2249 kg/ha (zone II) 1726-2625 kg/ha (zone III)
22. Additional Information, if any	High pod density

DMH 1 Photo

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	Gujarat Mustard 3 (GM 3)
3. Nature of Cultivar (Variety / Hybrid / Composite / Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross RSK-78 x Varuna
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated / Cross pollinated / Vegetative / Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source / Institute	SD Agricultural University, S K Nagar (Gujarat)
9. Name of the persons associated in the development of cultivar	H.C. Pathak, K.M. Patel, D.A. Thakkar, K.P. Prajapati, C.J. Patel, A.R. Pathak and I.D.Patel, U.G. Fatteh, P.G. Patel
10. Year of Identification with entry number allotted in All India Trial	—, SKM-9927
11. Year of Release (If any)	2004
12. Year of Notification (If any)	2006
13. State whether Release was at Central or State level: Central / State	State
14. If by CVRC mention S.O. No. and date	597 (E), 25.04.2006
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Gujarat
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Gujarat
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 145-155 cm Maturity : 105-110 days Oil content : 35.5-40.3 % Seed size : 3.0-5.1g
19. Special Attributes, if any	High temperature tolerant
20. Potential yield	2994 kg/ha
21. Average Yield	1673-2317 kg/ha (irrigated)901-1362 kg/ha (rainfed)
22. Additional Information, if any	Tolerant to high temperature and salinity

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	Gujarat Mustard 4 (GM 4)
3. Nature of Cultivar (Variety / Hybrid / Composite / Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	SKM 9433 X GM 2
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated / Cross pollinated / Vegetative / Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source / Institute	SD Agricultural University, S K Nagar (Gujarat)
9. Name of the persons associated in the development of cultivar	P. S. Patel, D.A. Thakkar, K.M. Patel, K.P. Prajapati, S.D. Solanki, H.D. Parmar, M.P. Patel, S.S. Solanki, C.J. Patel
10. Year of Identification with entry number allotted in All India Trial	—, SKM-301
11. Year of Release (If any)	2011
12. Year of Notification (If any)	2012
13. State whether Release was at Central or State level: Central / State	State
14. If by CVRC mention S.O. No. and date	
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Gujarat
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Gujarat
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 157-190 cm Maturity : 104-115 days Oil content : 38.4-40.0 % Seed size : 5.6-5.8g
19. Special Attributes, if any	Tolerant to lodging and shattering
20. Potential yield	3165 kg/ha
21. Average Yield	1867 – 2212 kg/ha
22. Additional Information, if any	

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	Nav gold (YRN 6)
3. Nature of Cultivar (Variety / Hybrid / Composite / Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross BIO 902 X BM 185-11
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated / Cross pollinated / Vegetative / Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source / Institute	ARS, Navgaon, Rajasthan Agricultural University, Bikaner (Rajasthan)
9. Name of the persons associated in the development of cultivar	Chakresh Kumar and Suresh Muralia
10. Year of Identification with entry number allotted in All India Trial	2005, YRN 6
11. Year of Release (If any)	2005
12. Year of Notification (If any)	2006
13. State whether Release was at Central or State level: Central / State	Central
14. If by CVRC mention S.O. No. and date	1572 (E), 20.09.2006
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Zone II (Haryana, Punjab, Delhi and Jammu & Kashmir, Rajasthan)
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Not available
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 155-194 cm Maturity : 122-134 days Oil content : 34.0-41.3 % Seed size : 3.7-5.6 g
19. Special Attributes, if any	Yellow seeded
20. Potential yield	2553 kg/ha
21. Average Yield	1095-1803 kg/ha
22. Additional Information, if any	Suitable for late sown conditions, Moderately tolerant to White rust, Alternaria blight and Sclerotinia stem rot.

Navgold Photo

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	NRCDR 2
3. Nature of Cultivar (Variety / Hybrid / Composite / Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross MDOC-43 x NBPGR-36
5. Method of Breeding/Selection	Pedigree Method
6. Method of Propagation- Self Pollinated / Cross pollinated / Vegetative / Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source / Institute	National Research Centre on Rapeseed-Mustard (Directorate of Rapeseed-Mustard Research), Bharatpur (Rajasthan)
9. Name of the persons associated in the development of cultivar	Rajbir Yadav, Arvind Kumar, J.S. Chauhan, S.S. Meena and Bhairav Bhushan
10. Year of Identification with entry number allotted in All India Trial	2006, NRCDR-2
11. Year of Release (If any)	2006
12. Year of Notification (If any)	2007
13. State whether Release was at Central or State level: Central / State	Central
14. If by CVRC mention S.O. No. and date	122 (E), 06.02.2007
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Zone II (Haryana, Punjab, Delhi, parts of Rajasthan)
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Not available
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 165-212 cm Maturity : 131-156 days Oil content : 36.5- 42.5 % Seed size : 3.5-5.6 g
19. Special Attributes, if any	Hihgh oil content
20. Potential yield	3278 kg/ha
21. Average Yield	1951-2626 kg/ha
22. Additional Information, if any	Tolerant to salinity and high temperature at the time of sowing. Low incidence of white rust, Alternaria blight, Sclerotinia stem rot, powdery mildew and aphids

NRCDR - 02 Photo

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	NRCDR 601 (DRMR 601)
3. Nature of Cultivar (Variety / Hybrid / Composite / Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross NBPGR 272 X RK 9903
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated / Cross pollinated / Vegetative / Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source / Institute	Directorate of Rapeseed-Mustard Research, Bharatpur (Rajasthan)
9. Name of the persons associated in the development of cultivar	Rajbir Yadav, S.S. Meena , Arvind Kumar, P. D. Meena, V.V. Singh , K.H. Singh and M.L. Meena
10. Year of Identification with entry number allotted in All India Trial	2009, NRCDR-601
11. Year of Release (If any)	2009
12. Year of Notification (If any)	2010
13. State whether Release was at Central or State level: Central / State	Central
14. If by CVRC mention S.O. No. and date	733(E), 01.4.2010
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Zone II (Delhi, Haryana, Jammu & Kashmir, Punjab, Rajasthan)
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Not Available
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 161-210 cm Maturity : 137-151 days Oil content : 38.7-41.6 % Seed size : 4.2-4.9 g
19. Special Attributes, if any	Timely sown irrigated conditions
20. Potential yield	3723 kg/ha
21. Average Yield	1939-2626 kg/ha
22. Additional Information, if any	Tolerant to salinity and high temperature at the time of sowing. Low incidence of white rust (stag head), Alternaria blight and Sclerotinia stem rot

NRCDR 601 Photo

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	NRCHB 101
3. Nature of Cultivar (Variety / Hybrid / Composite / Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross BL 4 X Pusa Bold
5. Method of Breeding/Selection	Pedigree Method
6. Method of Propagation- Self Pollinated / Cross pollinated / Vegetative / Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source / Institute	National Research Centre on Rapeseed-Mustard (Directorate of Rapeseed-Mustard Research), Bharatpur (Rajasthan)
9. Name of the persons associated in the development of cultivar	K.H. Singh, Arvind Kumar, J.S. Chauhan, A.K. Misra, V.V. Singh, S.S. Meena , K.K. Srivastava and M.L.Meena
10. Year of Identification with entry number allotted in All India Trial	2008, NRCHB-101
11. Year of Release (If any)	2008
12. Year of Notification (If any)	2009
13. State whether Release was at Central or State level: Central / State	Central
14. If by CVRC mention S.O. No. and date	454(E), 11.02.2009
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Zone III (Madhaya Pradesh, Uttar Pradesh, Uttarakhand and Eastern Rajasthan)
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Uttar Pradesh, Madhya Pradesh and Rajasthan
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 170-200 cm Maturity : 105-135 days Oil content : 34.6- 42.1 % Seed size : 3.6-6.2 g
19. Special Attributes, if any	Stable under timely and late sown conditions
20. Potential yield	1732 kg/ha
21. Average Yield	1382-1491 kg/ha
22. Additional Information, if any	Suitable for late sown irrigated conditions

NRCHB 101 Photo

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	NRCHB 506
3. Nature of Cultivar (Variety / Hybrid / Composite / Synthetic)	Hybrid
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross MJA 5 X MJR 1 (<i>mori</i> CMS based)
5. Method of Breeding/Selection	Heterosis breeding
6. Method of Propagation- Self Pollinated / Cross pollinated / Vegetative / Tissue Culture	Hybrid Seed (A X R)
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source / Institute	National Research Centre on Rapeseed-Mustard (Directorate of Rapeseed-Mustard Research), Bharatpur (Rajasthan)
9. Name of the persons associated in the development of cultivar	K.H. Singh, Arvind Kumar, P.R. Kumar, J.S. Chauhan, A.K. Misra, V.V. Singh, S.S. Meena , K.K. Srivastava and M.L. Meena
10. Year of Identification with entry number allotted in All India Trial	2008, NRCHB 506
11. Year of Release (If any)	2008
12. Year of Notification (If any)	2009
13. State whether Release was at Central or State level: Central / State	Central
14. If by CVRC mention S.O. No. and date	454(E), 11.2.2009
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Uttar Pradesh and Rajasthan
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Uttar Pradesh, Madhya Pradesh and Rajasthan
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 180-205 cm Maturity : 127-148 days Oil content : 38.6- 42.5 % Seed size : 2.9-6.5 g
19. Special Attributes, if any	High oil content
20. Potential yield	3245 kg/ha
21. Average Yield	1550-2542 kg/ha
22. Additional Information, if any	High adaptation

NRCHB 506 Photo

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	PBR 210
3. Nature of Cultivar (Variety / Hybrid / Composite / Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated / Cross pollinated / Vegetative / Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source / Institute	RRS, Bathinda (PAU-Ludhiana), Punjab
9. Name of the persons associated in the development of cultivar	
10. Year of Identification with entry number allotted in All India Trial	—, PBR-210
11. Year of Release (If any)	2003
12. Year of Notification (If any)	2007
13. State whether Release was at Central or State level: Central / State	State
14. If by CVRC mention S.O. No. and date	122 (E), 06.02.2007
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Punjab
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Punjab
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 163-180 cm Maturity : 150-151 days Oil content : 38-39% Seed size : 4.6-4.7 g
19. Special Attributes, if any	Early maturity in Punjab conditions
20. Potential yield	3337 kg/ha
21. Average Yield	2080-2532 kg/ha
22. Additional Information, if any	Nil

1. Name of the Crop	Indian mustard
2. Name of the Cultivar	PR 2006-1
3. Nature of Cultivar (Variety / Hybrid / Composite / Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Krishna 2-1 X HS 027-1
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated / Cross pollinated / Vegetative / Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source / Institute	G.B. Pant University of Agriculture & Technology, Pantnagar, Uttarakhand
9. Name of the persons associated in the development of cultivar	Ram Bhajan, D.P. Pant, J.N. Sachan, Usha Bhatt, S.P. Singh and A.K. Singh
10. Year of Identification with entry number allotted in All India Trial	2011, PR 2006-1
11. Year of Release (If any)	2011
12. Year of Notification (If any)	2012
13. State whether Release was at Central or State level: Central / State	Central
14. If by CVRC mention S.O. No. and date	
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Zone II (Delhi, Haryana, Jammu & Kashmir, Punjab, Rajasthan)
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Not Available
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 141-181 cm Maturity : 99-123 days Oil content : 40.9-41.8% Seed size : 4.5-5.2 g
19. Special Attributes, if any	Tolerant to high temperature at early stage
20. Potential yield	3695 kg /ha
21. Average Yield	1831-2511 kg/ha
22. Additional Information, if any	Nil

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	Pusa Mustard 21 (LES 1-27)
3. Nature of Cultivar (Variety / Hybrid / Composite / Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross Pusa Bold x ZEM-2
5. Method of Breeding/Selection	Back crossing
6. Method of Propagation- Self Pollinated / Cross pollinated / Vegetative / Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source / Institute	Indian Agricultural Research Institute, Pusa, New Delhi
9. Name of the persons associated in the development of cultivar	R.S. Malik, Ritu Malik, Arvind Kumar
10. Year of Identification with entry number allotted in All India Trial	—, LES-1-272008, LES-1-27
11. Year of Release (If any)	2006
12. Year of Notification (If any)	2007
13. State whether Release was at Central or State level: Central / State	State (Delhi)-2006 Central- 2008
14. If by CVRC mention S.O. No. and date	1703 (E) 05.10.2007
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Delhi, Haryana, Jammu & Kashmir (Plains) Punjab, Rajasthan, Western Uttar Pradesh Zone III : (Madhya Pradesh, Uttar Pradesh, Uttarakhand and Eastern Rajasthan)
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Delhi
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Zone II Plant height : 160-185 cm Maturity : 137-152 days Oil content : 34.0 - 40.0 % Seed size : 3.5-5.5 g Zone III Plant height : 160-185 cm Maturity : 127-149 days Oil content : 30.0 - 42.0 % Seed size : 3.4-5.4 g
19. Special Attributes, if any	Low erucic acid (<2%)

20. Potential yield	2733kg/ha (ZoneII), 2535 kg/ha(ZoneIII)
21. Average Yield	1878-2277 kg/ha (ZoneII) , 1428-2197 kg/ha (ZoneIII)
22. Additional Information, if any	High pod density, Low incidence of white rust, Alternaria blight, Sclerotinia stem rot, downy and powdery mildew and aphids

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	Pusa Mustard 22 (LET 17)
3. Nature of Cultivar (Variety / Hybrid / Composite / Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Pusa Barani X ZEM 2
5. Method of Breeding/Selection	Back cross
6. Method of Propagation- Self Pollinated / Cross pollinated / Vegetative / Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source / Institute	Indian Agricultural Research Institute, Pusa, New Delhi
9. Name of the persons associated in the development of cultivar	R.S. Malik, Ritu Malik and Arvind Kumar
10. Year of Identification with entry number allotted in All India Trial	2006, LET-17
11. Year of Release (If any)	2007
12. Year of Notification (If any)	2008
13. State whether Release was at Central or State level: Central / State	Central
14. If by CVRC mention S.O. No. and date	2458(E), 16.10.2008
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Zone II (Delhi, Haryana, Punjab, Rajasthan)
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Delhi
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 165-200 cm Maturity : 138-148 days Oil content : 34.2-36.4 % Seed size : 3.5- 3.7 g
19. Special Attributes, if any	Low erucic acid (< 2%) variety
20. Potential yield	2750 kg/ha
21. Average Yield	1674-2528 kg/ha
22. Additional Information, if any	High pod density

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	Pusa Mustard 24 (LET 18)
3. Nature of Cultivar (Variety / Hybrid / Composite / Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross (Pusa Bold x LEB-15)x LES-29
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated / Cross pollinated / Vegetative / Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source / Institute	Indian Agricultural Research Institute, Pusa, New Delhi
9. Name of the persons associated in the development of cultivar	R.S. Malik, D.K. Yadava, Ritu Malik, Arvind Kumar, Sujata, Rajkumar and Narendra Singh
10. Year of Identification with entry number allotted in All India Trial	2007, LET 18
11. Year of Release (If any)	2007
12. Year of Notification (If any)	2009
13. State whether Release was at Central or State level: Central / State	Central
14. If by CVRC mention S.O. No. and date	449(E), 11.02.2009
15. De-notification if any, with date	Not Applicable
16. Recommended Region / Areas	Zone II (Delhi, Haryana, Punjab, Rajasthan)
17. Areas of Adoption (Regions where the cultivar was / is widely grown)	Not Available
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 195-245 cm Maturity : 134-150 days Oil content : 32.0-39.7 % Seed size : 3.6-5.2 g
19. Special Attributes, if any	Low erucic variety (<2%)
20. Potential yield	2904 kg/ha
21. Average Yield	1995-2044 kg/ha
22. Additional Information, if any	High siliquae density

Pusa Mustard 24 Photo

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	Pusa Mustard 25 (NPJ 112)
3. Nature of Cultivar (Variety/ Hybrid/ Composite/ Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross SEJ 8 X Pusa Jagannath
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated/ Cross pollinated/Vegetative/Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source/ Institute	Indian Agricultural Research Institute, Pusa, New Delhi
9. Name of the persons associated in the development of cultivar	D.K.Yadava, Sujata, K.V. Prabhu, T. Mohapatra, B. Dass, S.C.Giri, S.K.Yadav, Anil Kumar Yadav, Raj Kumar and Raj Kumar
10. Year of Identification with entry number allotted in All India Trial	2009, NPJ 112
11. Year of Release (If any)	2009
12. Year of Notification (If any)	2010
13. State whether Release was at Central or State level: Central/ State	Central
14. If by CVRC mention S.O. No. and date	211 (E), 29.01.2010
15. De-notification if any, with date	NA
16. Recommended Region/ Areas	Zone II (Delhi, Haryana, Jammu & Kashmir, Punjab, Rajasthan, Western Uttar Pradesh)
17. Areas of Adoption (Regions where the cultivar was/ is widely grown)	Delhi
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 154-175 cm Maturity : 94-120 days Oil content : 35.5-41.2 % Seed size : 3.7-5.2 g
19. Special Attributes, if any	Early maturing <i>B.juncea</i> variety with high temperature tolerance during juvenile stage
20. Potential yield	2405 kg/ha
21. Average Yield	1324-1654 kg/ha
22. Additional Information, if any	Suitable for early sown (September sowing) irrigated conditions in <i>rabi</i> season as an additional (catch) crop between <i>rabi</i> and <i>kharif</i> seasons

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	Pusa mustard 26 (NPJ 113)
3. Nature of Cultivar (Variety/Hybrid/ Composite/Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross VEJ Open x Pusa Agrani
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated/ Cross pollinated/ Vegetative/ Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source/ Institute	Indian Agricultural Research Institute, Pusa, New Delhi
9. Name of the persons associated in the development of cultivar	D.K.Yadava, Sujata, K.V. Prabhu, T. Mohapatra, B. Dass, S.C.Giri, Rajendra Singh, S.K.Yadav, M.S. Yadav, Anil Kumar Yadav, Raj Kumar and Raj Kumar
10. Year of Identification with entry number allotted in All India Trial	2010, NPJ 113
11. Year of Release (If any)	2010
12. Year of Notification (If any)	2011
13. State whether Release was at Central or State level: Central/ State	Central
14. If by CVRC mention S.O. No. and date	632 (E), 25.03.2011
15. De-notification if any, with date	Not Applicable
16. Recommended Region/ Areas	Zone II (Delhi, Haryana, Jammu & Kashmir, Punjab, Rajasthan, Western Uttar Pradesh)
17. Areas of Adoption (Regions where the cultivar was/ is widely grown)	Not Available
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 160-195 cm Maturity : 115-137 days Oil content : 30.1-41.3 % Seed size : 2.7-4.2 g
19. Special Attributes, if any	Moderately tolerant to high temperature at seedling and maturity stage
20. Potential Yield	2353 kg/ha
21. Average Yield	1481-1895 kg/ha
22. Additional Information, if any	Suitable for late sown irrigated conditions

Pusa Mustard 25 Photo

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	Pusa Mustard 27 (EJ 17)
3. Nature of Cultivar (Variety/ Hybrid/ Composite/Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross [{(Divya X Pusa Bold) X PR-666 EPS} X (PR-704 EPS-2 X B-85)]
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated/ Cross pollinated/Vegetative/ Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source/ Institute	Indian Agricultural Research Institute, Pusa, New Delhi
9. Name of the persons associated in the development of cultivar	J.N. Singh, Rajendra Singh, D.K. Yadava, Sujata, S.K. Yadav, B. Dass, S.C. Giri, Raj Kumar and K.K. Singh
10. Year of Identification with entry number allotted in All India Trial	2010, EJ 17
11. Year of Release (If any)	2010
12. Year of Notification (If any)	2011
13. State whether Release was at Central or State level: Central/ State	Central
14. If by CVRC mention S.O. No. and date	632 (E), 25.03.2011
15. De-notification if any, with date	Not Applicable
16. Recommended Region/ Areas	Zone III (Madhya Pradesh, Uttar Pradesh, Uttarakhand and Eastern Rajasthan)
17. Areas of Adoption (Regions where the cultivar was/ is widely grown)	Not Available
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 175 -210 cm Maturity : 108-135 days Oil content : 39.6-45.4 % Seed size : 2.5-4.3 g
19. Special Attributes, if any	Tolerant to high temperature at seedling and maturity stage
20. Potential yield	2238 kg/ha
21. Average Yield	1437-1659 kg/ha
22. Additional Information, if any	Suitable for early sown (September sowing) irrigated conditions in <i>rabi</i> season. Suitable for multiple cropping system

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	Pusa Mustard 28 (NPJ 124)
3. Nature of Cultivar (Variety/Hybrid/Composite/ Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	SEJ 8 X Pusa Jagannath
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated/ Cross pollinated/Vegetative/Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source/Institute	Indian Agricultural Research Institute, Pusa, New Delhi
9. Name of the persons associated in the	D.K.Yadava, Sujata, Naveen Singh, K.V. Prabhu, T. Mohapatra, S.R.Bhat, S.C.Giri, B. Dass, Rajendra Singh, S.K. Yadav, M.S. Yadav, Raj Kumar and Maharaj Singh
10. Year of Identification with entry number allotted in All India Trial	2011, NPJ 124
11. Year of Release (If any)	2011
12. Year of Notification (If any)	2012
13. State whether Release was at Central or State level: Central/ State	Central
14. If by CVRC mention S.O. No. and date	456 (E), 16.03.2012
15. De-notification if any, with date	Not Applicable
16. Recommended Region/Areas	Zone II (Delhi, , Haryana , Jammu & Kashmir, Punjab, Rajasthan, Western Uttar Pradesh)
17. Areas of Adoption (Regions where the cultivar was/ is widely grown)	Not Available
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 162 -195 cm Maturity : 97-131 days Oil content : 40.0-42.8 % Seed size : 4.2-5.1 g
19. Special Attributes, if any	Suitable for early sowing
20. Potential yield	3003 kg/ha
21. Average Yield	1912 – 2098 kg/ha
22. Additional Information, if any	Nil

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	Pusa Tarak (EJ 9912-13)
3. Nature of Cultivar (Variety/Hybrid/Composite/Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross Agra local x Poorbi Raya
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated/ Cross pollinated/Vegetative/Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source/Institute	Indian Agricultural Research Institute, Pusa, New Delhi
9. Name of the persons associated in the development of cultivar	J.N.Singh and Rajendra Singh
10. Year of Identification with entry number allotted in All India Trial	— — — —, EJ 9912-13
11. Year of Release (If any)	2006
12. Year of Notification (If any)	2009
13. State whether Release was at Central or State level: Central/ State	State
14. If by CVRC mention S.O. No. and date	449(E), 11.02.2009
15. De-notification if any, with date	Not Applicable
16. Recommended Region/ Areas	Delhi
17. Areas of Adoption (Regions where the cultivar was/ is widely grown)	Delhi
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 160-180 cm Maturity : 100-120 days Oil content : 38.0-42.0 % Seed size : 5.8-6.2 g
19. Special Attributes, if any	High temperature tolerance,bold seeds
20. Potential yield	2900 kg/ha
21. Average Yield	1852-1996 kg/ha
22. Additional Information, if any	Early maturity to replace toria in Delhi state

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	Pusa Vijay (NPJ 93)
3. Nature of Cultivar (Variety/Hybrid/Composite/Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross Synthetic <i>Brassica juncea</i> X VSL 5
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated/ Cross pollinated/ Vegetative/ Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source/Institute	Indian Agricultural Research Institute, Pusa, New Delhi
9. Name of the persons associated in the development of cultivar	D.K.Yadava, T. Mohapatra, R.C. Prasad, Sujata, B. Dass and S.C.Giri
10. Year of Identification with entry number allotted in All India Trial	—, NPJ 93
11. Year of Release (If any)	2006
12. Year of Notification (If any)	2008
13. State whether Release was at Central or State level: Central/ State	State
14. If by CVRC mention S.O. No. and date	2458 (E), 16.08.2008
15. De-notification if any, with date	NA
16. Recommended Region/ Areas	Delhi
17. Areas of Adoption (Regions where the cultivar was/ is widely grown)	Delhi
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 176-198 cm Maturity : 135-154 days Oil content : 35.0-41.0 % Seed size : 4.1-6.5 g
19. Special Attributes, if any	High temperature tolerance at seedling stage and salinity up to 12 dS/m
20. Potential yield	3222 kg/ha
21. Average Yield	1870-2715 kg/ha
22. Additional Information, if any	Timely sown irrigated conditions of Delhi state

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	Rajendra Sufalam (RAURDL 02-01)
3. Nature of Cultivar (Variety/ Hybrid/ Composite/Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Pureline selection from local germplasm
5. Method of Breeding/Selection	Pureline selection
6. Method of Propagation- Self Pollinated/ Cross pollinated/Vegetative/Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source/ Institute	Rajendra Agricultural University, Pusa (Samastipur) – 848 125, Bihar
9. Name of the persons associated in the development of cultivar	Anil Pandey
10. Year of Identification with entry number allotted in All India Trial	—, RAURDL 02-01
11. Year of Release (If any)	2012
12. Year of Notification (If any)	2012
13. State whether Release was at Central or State level: Central/ State	State
14. If by CVRC mention S.O. No. and date	
15. De-notification if any, with date	Not Applicable
16. Recommended Region/ Areas	Bihar
17. Areas of Adoption (Regions where the cultivar was/ is widely grown)	Bihar
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 145 cm Maturity : 104-119 days Oil content : 36.9 – 43.1 % Seed size : 5.8 – 6.6 g
19. Special Attributes, if any	Suitable for late sown (rice – fallow) agroecosystem
20. Potential yield	1310 kg/ha
21. Average Yield	636 – 1002 kg/ha
22. Additional Information, if any	Nil

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	RB 50
3. Nature of Cultivar (Variety/Hybrid/ Composite/ Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross Laxmi X RH 9617
5. Method of Breeding/Selection	Pedigree Method
6. Method of Propagation- Self Pollinated/ Cross pollinated/ Vegetative/ Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source/ Institute	CCS Haryana Agricultural University, Regional Research Station , Bawal, Haryana
9. Name of the persons associated in the development of cultivar	Yash Pal Yadav, Dhiraj Singh, N. K. Thakral, I.S. Yadav and J.S. Yadava
10. Year of Identification with entry number allotted in All India Trial	2008, RB-50
11. Year of Release (If any)	2008
12. Year of Notification (If any)	2009
13. State whether Release was at Central or State level: Central/ State	Central
14. If by CVRC mention S.O. No. and date	2187 (E), 27.08.2009
15. De-notification if any, with date	Not Applicable
16. Recommended Region/ Areas	Zone II (Delhi ,Haryana,Punjab, Jammu & Kashmir and Rajasthan)
17. Areas of Adoption (Regions where the cultivar was/ is widely grown)	Rajasthan
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 194-207 cm Maturity : 141-152 days Oil content : 39-40 % Seed size : 5.5-5.9 g
19. Special Attributes, if any	Long siliquae, bold seeds
20. Potential yield	2817 kg/ha
21. Average Yield	846-2425 kg/ha
22. Additional Information, if any	Suitable for rainfed conditions.

RB 50 Photo

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	RGN 48
3. Nature of Cultivar (Variety/ Hybrid/ Composite/ Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross RSM 204 X B 75
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated/ Cross pollinated/ Vegetative/ Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source/ Institute	Agricultural Research Station, Rajasthan Agricultural University, Sri Ganganagar, Rajasthan.
9. Name of the persons associated in the development of cultivar	D.K.Yadava, U.S.Shekhawat, B.S. Sidhu, R.B. Gaur, (Mrs) Beena Shrivastava, S.R. Mehta
10. Year of Identification with entry number allotted in All India Trial	2004, RGN 48
11. Year of Release (If any)	2004
12. Year of Notification (If any)	2006
13. State whether Release was at Central or State level: Central/ State	Central
14. If by CVRC mention S.O. No. and date	599 (E), 25.04.2006
15. De-notification if any, with date	Not Applicable
16. Recommended Region/ Areas	Zone II (Delhi ,Haryana,Punjab, Jammu & Kashmir and Rajasthan)
17. Areas of Adoption (Regions where the cultivar was/ is widely grown)	Rajasthan
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 160-175 cm Maturity : 138-157 days Oil content : 39.5- 41.4% Seed size : 2.3 – 5.2 g
19. Special Attributes, if any	Resistant to frost
20. Potential yield	2639 kg/ha
21. Average Yield	1505-2158 kg/ha
22. Additional Information, if any	Suitable for rainfed conditions.

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	RGN 73
3. Nature of Cultivar (Variety/ Hybrid/ Composite/ Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross RGN-8 X Pusa Bold
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated/ Cross pollinated/ Vegetative/ Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source/ Institute	Agricultural Research Station, Rajasthan Agricultural University, Sri Ganganagar, Rajasthan.
9. Name of the persons associated in the development of cultivar	D.K.Yadava, U.S. Shekhawat, B.S. Sidhu, R.B. Gaur, (Mrs) Beena Shrivastava, S.R. Mehta
10. Year of Identification with entry number allotted in All India Trial	2006, RGN-73
11. Year of Release (If any)	2006
12. Year of Notification (If any)	2007
13. State whether Release was at Central or State level: Central/ State	Central
14. If by CVRC mention S.O. No. and date	122 (E), 06.02.2007
15. De-notification if any, with date	Not Applicable
16. Recommended Region/ Areas	Zone III (Madhya Pradesh, Uttar Pradesh, Parts of Rajasthan)
17. Areas of Adoption (Regions where the cultivar was/ is widely grown)	Rajasthan
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 161-200 cm Maturity : 127-136 days Oil content : 38.9-42.1 % Seed size : 3.9-4.3 g
19. Special Attributes, if any	Suitable for irrigated conditions.
20. Potential yield	2963 kg/ha
21. Average Yield	1771-2226 kg/ha
22. Additional Information, if any	Tolerant to lodging and shattering

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	RGN 145
3. Nature of Cultivar (Variety/ Hybrid/ Composite/ Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross Varuna X Tobin
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated/ Cross pollinated/Vegetative/Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source/ Institute	Agricultural Research Station, Rajasthan Agricultural University, Sri Ganganagar, Rajasthan.
9. Name of the persons associated in the development of cultivar	U.S.Shekhawat and D.K.Yadava
10. Year of Identification with entry number allotted in All India Trial	2008, RGN-145
11. Year of Release (If any)	2008
12. Year of Notification (If any)	2009
13. State whether Release was at Central or State level: Central/ State	Central
14. If by CVRC mention S.O. No. and date	449(E), 11.02.2009
15. De-notification if any, with date	Not Applicable
16. Recommended Region/ Areas	Zone II (Delhi ,Haryana,Punjab, Jammu & Kashmir, Rajasthan)
17. Areas of Adoption (Regions where the cultivar was/ is widely grown)	Rajasthan
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 173-221 cm Maturity : 121-141 days Oil content : 35.0 - 39.1 % Seed size : 2.6 – 4.6 g
19. Special Attributes, if any	Low aphid infestation
20. Potential yield	2066 kg/ha
21. Average Yield	1448-1640 kg/ha
22. Additional Information, if any	Suitable for late sown irrigated conditions.

RGN 145 Photo

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	RH 0119
3. Nature of Cultivar (Variety/ Hybrid/Composite/Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Pusa Bold X Rajat (PCR 7)
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated/ Cross pollinated/Vegetative/Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source/ Institute	Oliseeds Section, Department of Plant Breeding, CCS HAU, Hisar
9. Name of the persons associated in the development of cultivar	Dhiraj Singh, N.K.Thakral,Yash Pal Yadav, Naveen Chandra and Amit Singh
10. Year of Identification with entry number allotted in All India Trial	—, DHR 9701
11. Year of Release (If any)	2009
12. Year of Notification (If any)	2010
13. State whether Release was at Central or State level: Central/ State	State
14. If by CVRC mention S.O. No. and date	2137 (E), 31.08.2010
15. De-notification if any, with date	Not Applicable
16. Recommended Region/ Areas	Haryana
17. Areas of Adoption (Regions where the cultivar was/ is widely grown	Haryana
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 150-165 cm Maturity : 145-150 days Oil content : 38.5 - 39.8 % Seed size : 5.0 – 5.5 g
19. Special Attributes, if any	Thermo-tolerant
20. Potential yield	3389 kg/ha
21. Average Yield	1047-2156 kg/ha
22. Additional Information, if any	Nil

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	RLC 1 (ELM 079)
3. Nature of Cultivar (Variety/Hybrid/Composite/Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross QM-4 x Pusa Bold
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated/ Cross pollinated/Vegetative/Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source/ Institute	Punjab Agricultural University, Ludhiana
9. Name of the persons associated in the development of cultivar	Shashi Banga, S.S. Banga, Gurpreet Kaur and M.L. Gupta
10. Year of Identification with entry number allotted in All India Trial	—, ELM-079
11. Year of Release (If any)	2007
12. Year of Notification (If any)	2007
13. State whether Release was at Central or State level: Central/ State	State
14. If by CVRC mention S.O. No. and date	1108 (E), 08.05.2008
15. De-notification if any, with date	Not Applicable
16. Recommended Region/ Areas	South Western districts of Punjab
17. Areas of Adoption (Regions where the cultivar was/is widely grown)	South Western districts of Punjab
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 193.2 cm Maturity : 152- days Oil content : 38-% Seed size : 4.3 g
19. Special Attributes, if any	Low reucic acid (< 2%) variety
20. Potential yield	2048 kg/ha
21. Average Yield	1600-2000 kg/ha
22. Additional Information, if any	Superior oil quality

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	RLC 2 (ELM 123)
3. Nature of Cultivar (Variety/Hybrid/Composite/Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	QM 4 X Pusa Bold
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated/ Cross pollinated/Vegetative/Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source/ Institute	Punjab Agricultural University, Ludhiana
9. Name of the persons associated in the development of cultivar	S.S. Banga, Gurpreet Kaur, Shashi Banga and K.S. Brar
10. Year of Identification with entry number allotted in All India Trial	2011, ELM 123
11. Year of Release (If any)	2011
12. Year of Notification (If any)	2012
13. State whether Release was at Central or State level: Central/ State	Central
14. If by CVRC mention S.O. No. and date	
15. De-notification if any, with date	Not Applicable
16. Recommended Region/ Areas	Zone II (Delhi, Haryana, Punjab, Jammu & Kashmir and Rajasthan)
17. Areas of Adoption (Regions where the cultivar was/ is widely grown)	Not Available
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 144 - 228 cm Maturity : 142-150 days Oil content : 36.3 – 38.9% Seed size : 4.1- 4.2 g
19. Special Attributes, if any	Low erucic acid (< 2%) variety
20. Potential yield	2877 kg/ha
21. Average Yield	2039-2342 kg/ha
22. Additional Information, if any	Superior oil quality

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	RRN 505 (RN 505)
3. Nature of Cultivar (Variety/Hybrid/Composite/Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross Pusa Bhusan x ABRNT-1
5. Method of Breeding/Selection	Pedigree Method
6. Method of Propagation- Self Pollinated/ Cross pollinated/Vegetative/Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source/Institute	Agricultural Research Station , Rajasthan Agricultural University, Navgaon, Rajasthan.
9. Name of the persons associated in the	Chakresh Kumar, S. Muralia and B.D.Gothwal development of cultivar
10. Year of Identification with entry number allotted in All India Trial	—, RN 505
11. Year of Release (If any)	2005
12. Year of Notification (If any)	2006
13. State whether Release was at Central or State level: Central/State	State
14. If by CVRC mention S.O. No. and date	599 (E), 25.04.2006
15. De-notification if any, with date	Not Applicable
16. Recommended Region/Areas	Rajasthan
17. Areas of Adoption (Regions where the cultivar was/is widely grown)	Not available
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 135 cm Maturity : 121-127 days Oil content : 40.0 % Seed size : 4.1 g
19. Special Attributes, if any	Suitable for late sown conditions and areas where Sclerotinia stem rot is prevalent
20. Potential yield	2921 kg/ha
21. Average Yield	1208-1506 kg/ha
22. Additional Information, if any	-

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	Shatabdi (ACN 9)
3. Nature of Cultivar (Variety/Hybrid/Composite/Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross Seeta X RW 351
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated/ Cross pollinated/Vegetative/Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source/Institute	Botany section, Agriculture College, Nagpur (PDKV, Akola, Maharashtra)
9. Name of the persons associated in the development of cultivar	V.B.Dawande, Mrs.Beena Nair, C.N.Hatmode, J.D.Malkhandale
10. Year of Identification with entry number allotted in All India Trial	—, ACN-9
11. Year of Release (If any)	2005
12. Year of Notification (If any)	2007
13. State whether Release was at Central or State level: Central/State	State
14. If by CVRC mention S.O. No. and date	122 (E), 06.02.2007
15. De-notification if any, with date	Not Applicable
16. Recommended Region/Areas	Maharashtra
17. Areas of Adoption (Regions where the cultivar was/is widely grown)	Vidharbha region, Maharashtra
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 103-160 cm Maturity : 90-105 days Oil content : 32-40 % Seed size : 2.9-4.0 g
19. Special Attributes, if any	Suitable for timely and late sown conditions
20. Potential yield	1753 kg/ha
21. Average Yield	468-1291 kg/ha
22. Additional Information, if any	Nil

1. Name of the Crop	Indian Mustard
2. Name of the Cultivar	TPM-1
3. Nature of Cultivar (Variety/Hybrid/Composite/Synthetic)	Variety
4. Pedigree (Plant-wise for Hybrids)	Direct mutant of Rai-5 (³² P isotope)
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation- Self Pollinated/ Cross pollinated/Vegetative/Tissue Culture	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (specify in %)	Not Applicable
8. Address of Originating Source/Institute	Bhabha Atomic Research Centre(BARC), Trombay, Mumbai and Oilseeds Research Station, Mahatama Phule Krishi Vidyapeeth (MPKV), Jalgaon (Maharashtra)
9. Name of the persons associated in the development of cultivar	G.G.Nair, S J Jambulkar, A S Shitre, N.P.Goswami,V. Abraham (BARC) M.P. Deshmukh, T.R. Patil, D.A. Shambharkr, P.K.Dharne, R. B. Patil, D.P. Bhayya, R.T. Surawanshi (MPKV)
10. Year of Identification with entry number allotted in All India Trial	—, TPM 1
11. Year of Release (If any)	2005
12. Year of Notification (If any)	2007
13. State whether Release was at Central or State level: Central/State	State
14. If by CVRC mention S.O. No. and date	1703 (E), 05.10.2007
15. De-notification if any, with date	Not Applicable
16. Recommended Region/Areas	Western Maharashtra
17. Areas of Adoption (Regions where the cultivar was/is widely grown)	Not Available
18. Cultivar descriptor (follow the descriptor followed by NBPGR for registration)	Plant height : 115-154 cm Maturity : 89-98 days Oil content : 34-39 % Seed size : 2.8-4.4 g
19. Special Attributes, if any	Yellow seeded
20. Potential yield	1644 kg/ha
21. Average Yield	893 - 900 kg/ha
22. Additional Information, if any	High oil yield, tolerant to powdery mildew

MUSTARD

Karan rai (*Brassica carinata*)

1. Name of the Crop	Karan rai
2. Name of the Cultivar	Pusa Aditya (NPC 9)
3. Nature of Cultivar	Variety
4. Pedigree (Plant-wise for Hybrids)	Derived from the cross Carinata early mutant X HC 2
5. Method of Breeding/Selection	Pedigree selection
6. Method of Propagation	Self Pollinated
7. If cross-pollinated, extent of natural out crossing (in %)	Not Applicable
8. Address of Originating Source/Institute	Indian Agricultural Research Institute, Pusa, New Delhi
9. Name and address of Originating Breeder(s)	R.C.Prasad, D.K.Yadava, Bhagwan Dass, S.C. Giri
10. Year of Identification and name under which tested in All India Trial	—, NPC 9
11. Year of Release	2006
12. Year of Notification	2006
13. Whether Release was at Central or State level	State
14. If by CVRC mention S.O. No. and date	1572 (E), 20.09.2006
15. De-notification if any, with date	Not Applicable
16. Recommended Region/Areas	Delhi, Haryana, Himachal Pradesh and Punjab
17. Areas of Adoption (Regions where the cultivar was/is widely grown	Not Available
18. Cultivar descriptor	Plant height : 220-225 cm Maturity : 160-173 days Oil content : 38.2-41.2% Seed size : 2.7-3.3 g
19. Special Attributes, if any	Suitable for rainfed conditions
20. Potential yield	2412 kg/ha
21. Average Yield	998-1639 kg/ha (rainfed)
22. Additional Information, if any	Nil

Breeder Seed Production Scenario

Breeder seed is the source for production of foundation and certified seed hence quantity and quality of breeder seed of a variety determines its availability and popularity among farmers. In absence of availability of crop-variety wise statistics of area and production, indents received for breeder seed production indirectly reflects the demand and popularity of a variety. Considering these two aspects analysis of breeder seed indents and production has been made and described to highlight the production scenario as well as to find out popularity of varieties among farmers.

Looking the high multiplication ratio of these crops (1:200), only 8.75 q breeder seed will be sufficient to saturate the 7 m ha acreage by certified seed of high yielding varieties, however it is apparent from both indents as well as production (Fig 3.1), which were extremely higher than the desired quantity indicating there by that the entire quantity of breeder seed produced had not been converted into certified seed. During 2000-01 to 2011-12, 1622.49 q breeder seed was produced against 691q indents received for different crop-varieties, which was much higher than the desired amount. The trend was similar in almost all years. Number of varieties indented was variable starting from 25 during 2000-01 to 79 during 2009-10 (Fig 3.1). Crop-wise analysis of 25 years (1987-88 to 2011-12) revealed predominance of Indian mustard, which occupied 69 percent of the total indents followed by toria (22%) and yellow sarson (7%). Remaining crops *viz.* gobhi sarson, taramira, karan rai and brown sarson had very marginal share in total breeder seed indents (Fig 3.2.). A gradual increase in breeder seed indents was observed over the 25 years (1987-88 to 2011-12) for Indian mustard as a whole which was accompanied with gradual decline in indents for toria (Fig 3.3). Critical analysis on the basis of five years duration further confirmed the gradual increase in Indian mustard indents with simultaneous decline in toria indents reflecting the fact in reduction of acreage under toria and increase under Indian mustard. Toria had about 35 percent share to total breeder seed indent during 1986-87 to 1990-91 which came down to 15 percent during 2006-07 to 2011-12 (Fig 4, a-e). On the other side, indents for Indian mustard raised from 56

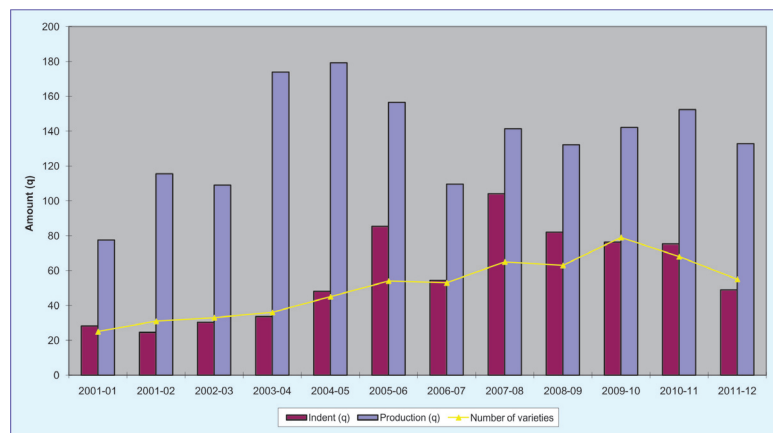


Fig. 3.1: Breeder seed indent, production and number of varieties indented during 2000-01 to 2011-13

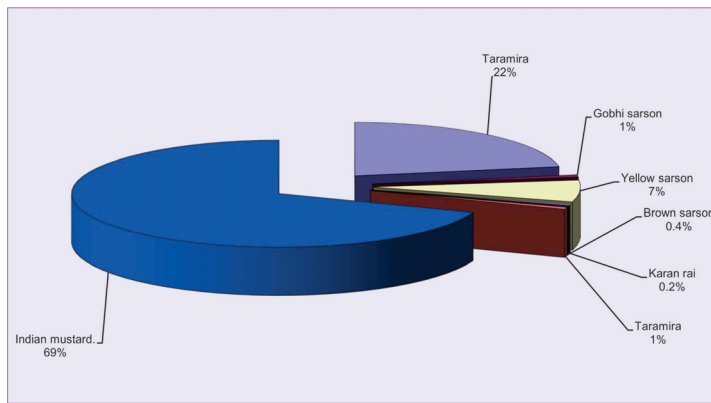


Fig. 3.2: Crop-wise proportion to total breeder seed indent during 1987-88 to 2011-12

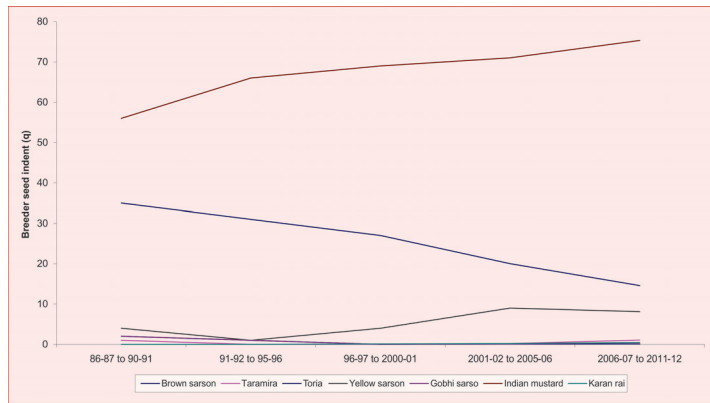


Fig. 3.3: Trend of breeder seed indents on five year basis during 1986-87 to 2011-12

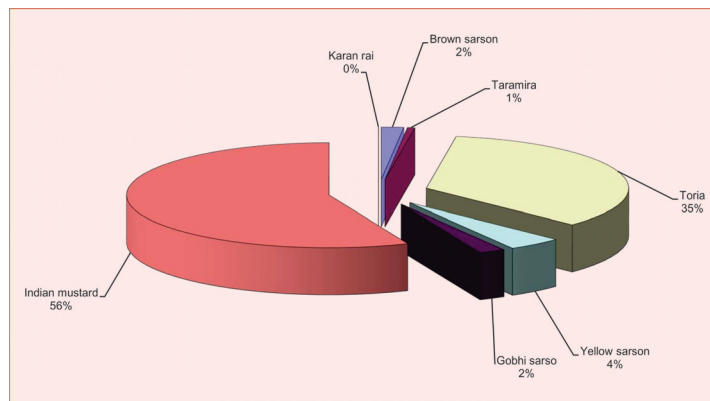


Fig. 3.4a: Crop-wise proportion to total breeder seed indents during 86-87 to 90-91

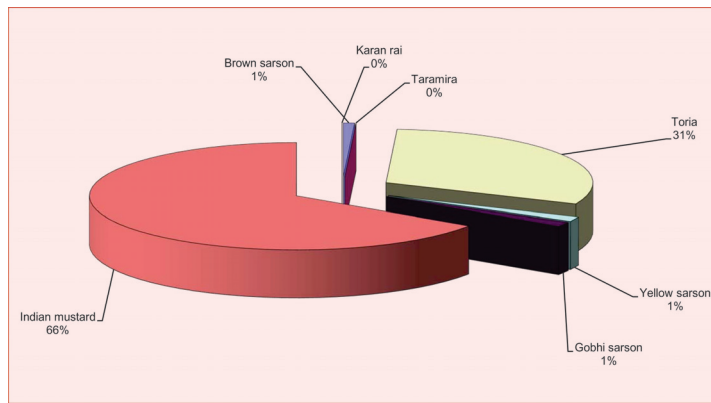


Fig. 3.4b: Crop-wise proportion to total breeder seed indents 91-92 to 95-96

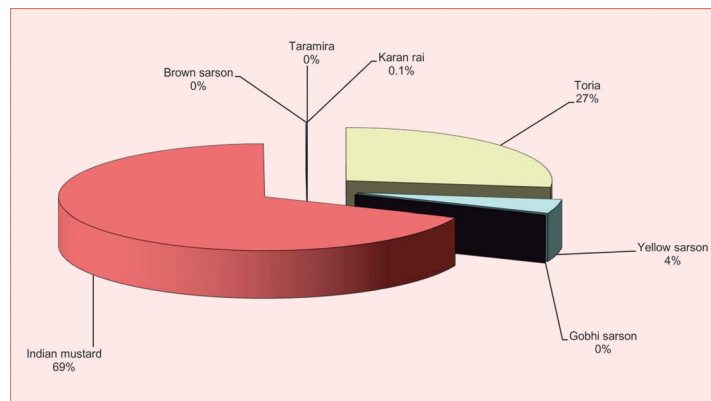


Fig. 3.4c: Crop-wise proportion to total breeder seed indents 1996-97 to 2000-01

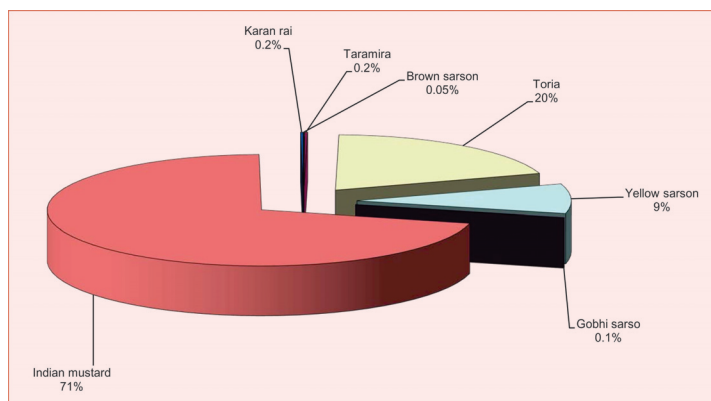


Fig. 3.4d: Crop-wise proportion to total breeder seed indents 2001-02 to 2005-06

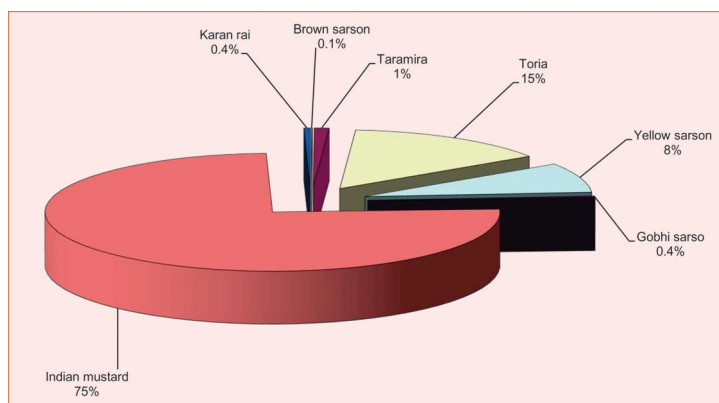


Fig. 3.4e: Crop-wise proportion to total breeder seed indents 2006-07 to 2010-11

to 76 percent during this period. Yellow sarson which had a share of 4 percent during 1986-1990, declined during 91-95 to 1 percent however, regained its importance and was at 8 percent during 2006-07 to 2011-12.

Variety-wise analysis of 25 years breeder seed indents indicated the predominance of 20 varieties. On the basis of total indents received and number of times a variety indented, Pusa Bold ranked first with 159.47 q indents (15 percent) followed by Varuna (111.76 q, 11 percent) and Pusa Jaikisan (64.86 q, 6 percent). M-27 was the highest indenting variety of toria with 8 percent share to total indents. Benoy (YSB 9) was highest indenting variety of yellow sarson with 5% share (Fig 3.5). Pusa Bold, Varuna of Indian mustard, M-27 and PT 303 of toria were indented every year during these 25 years. Other frequently indenting varieties were RH 30, Rohini, RLM 619, Kranti of Indian mustard, T-9, Bhawani, TL 15, JT 1 and Agrani (B 54) of toria and Benoy of yellow sarson. Demand of new vs old varieties was also analysed on the basis of period of release of indented varieties during 2011-12. It was quite interesting that out of 53 varieties, 6 (11%) were recently released (2010-11). Thirty varieties (54%) were of 2000-10 duration, eight (14%) were of 1990-2000 and seven (13%) of 1980-90 period. There were four varieties released before 1980s including M 27 of toria released during 1956 (Fig 6, a). On the basis of quantity of the indents, 33 percent quantity belongs to the varieties released during 1980-90; 30 percent was of those released during 2000-10; 19 percent of

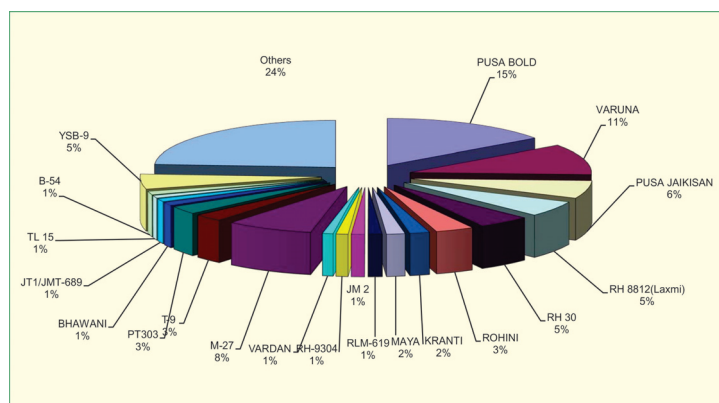


Fig. 3.5: Proportion of different rapeseed varieties in total breeder seed indents during 1987-88 to 2011-12

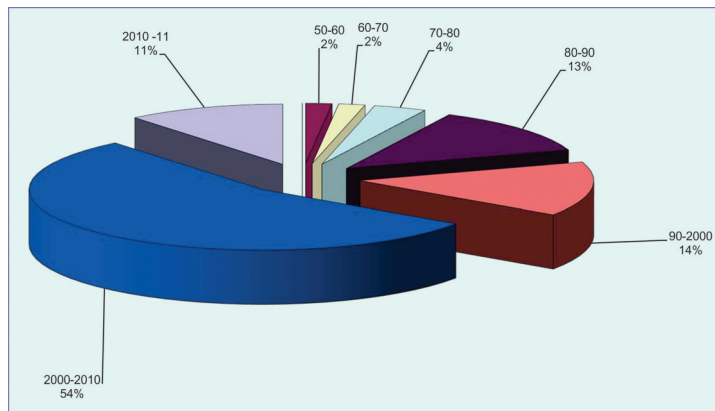


Fig. 3.6a: Proportion of varieties on the basis of their release duration in terms of number

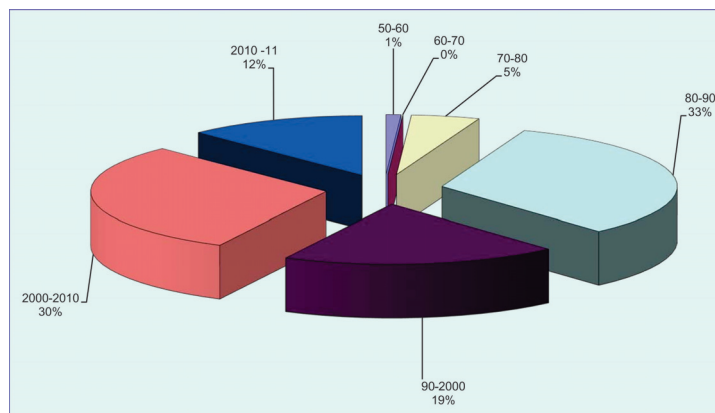


Fig. 3.6b: Proportion of varieties on the basis of their release duration in terms of quantity

1990-2000 period. Twelve percent amount of breeder seed was of varieties released during 2010-11 (Fig 6, b).

Table 1 Varieties recommended for specific conditions/ possessing particular trait

Agro – climatic situation/ trait	Name of variety/ varieties
<i>Indian mustard</i>	
White rust resistant	'Basanti', 'JM 1', 'JM 2'
Earliness	'Kanti', 'Narendera Ageti Rai 4', 'Pusa Agrani', 'Pusa Mahak', 'Pusa Vijay', 'Pusa mustard 25' ('NPJ 112'), 'Pusa mustard 27' ('EJ 17'), Pusa mustard 28 (NPJ 124), Pusa Tarak (EJ 9912-13)
High oil content	'Narendra Swarna Rai 8', 'NRCDR 02', 'Rohini'
High temperature tolerant 2	'Kanti', 'Pusa Agrani', 'RGN 13', 'Urvashi', 'NRCDR 02', 'Pusa mustard 25' ('NPJ 112'), 'Pusa mustard 7' ('EJ 17'), RH 0119
Intercropping	'RH 30', 'RH 781', 'Vardan'
Late sown 5	'Ashirwad', 'RLM 619', 'Swarnjyoti', 'Vardan', 'Navgold' ('YRN 6'), 'RGN 145', 'NRCHB 101', 'CS 6' ('CS 234-2'), 'Pusa mustard 26' ('NPJ 113'), Rajendra sufalam, RGN 145, RRN 505
Non-traditional areas	'Pusa Agrani', 'Pusa Jaikisan', 'Rajat', 'Gujarat Mustard 2', 'TPM 1', 'Shatabdi' ('ACN 9')
Rainfed ' P	'Aravali', 'Geeta', 'GM 1', 'PBR 97', 'Pusa Bahar', 'u s a Bold', 'RH 781', 'RH 819', 'RGN 48', 'Shivani', 'TM 2', 'TM 4', 'Vaibhav', 'RB 50'
Salinity tolerant	'CS 52', 'CS 54', 'Narendra Rai' ('NDR 8501')
Frost tolerant	'RGN 13', 'RH 819', 'Swaranjyoti', 'RH 781', 'RGN 48'
Quality trait (low erucic acid) 1	'Pusa Karishma', 'Pusa Mustard 21', 'Pusa Mustard 22', 'Pusa Mustard 24', 'ELM 079' ('RLC 1'), ELM 2 3 (RLC 2)
Hybrid 437"	'NRCHB 506', 'DMH 1', 'Coral PAC 432', "Coral PAC 437"
<i>Gobhi sarson</i>	
Quality traits Low erucic acid and 6 glucosinolate	'GSC 5', 'Hyola 401', 'NUDB 26-11', 'OCN 3' ('GSC) 'TERI Uttam Jawahar',

Appendix II

Alphabetic list of rapeseed-mustard varieties released and/or notified in India (1936-2012) till 63rd meeting of Central Sub-committee on Crop Standards, Notification and Release of Varieties for Agricultural Crops on June 29, 2012

S. No.	Variety	Year of release	Year of notification
<i>Brown sarson</i>			
1	B 65	-	-
2	BS 2	1966	-
3	BS 70	1966	-
4	BSH 1	1966	1975
5	Gluechin	1994	1996
6	KBS 3	1996	2001
7	KOS 1	1978	-
8	Pusa Kalyani	1973	1974
9	Shalimar Sarson	2010	-
10	Suphala	1971	-
<i>Gobhi sarson</i>			
1	DGS 1	2007	-
2	GSC 5	2003	2005
3	GSC 6 (OCN 3)	2006	2007
4	GSL 1	1985	1987
5	GSL 2	1994	1996
6	Hyola 401	1996/2000	1997/2001
7	Neelam	1998	2001
8	NUDB 26-11	2007	2008
9	Him Sarson 1 (ONK1)	2007/2008	2007
10	PGSH 51	1994	1996
11	Sheetal 1	1994	1995
12	TERI Unnat	2001	-
13	TERI Uttam Jawahar	2004	2007

S. No.	Variety	Year of release	Year of notification
<i>Taramira</i>			
1	ITSA	1961	1978
2	Karan Tara	1995	2001
3	Narendra Tara	2006	2007
4	T 27	1974	1976
5	TMC 1	1980	-
6	TMLC 2	1990	-
7	Vallabh Taramira 1 (PUT 93-11)	2009	2010
8	Vallabh Taramira 2 (PUT 93-1)	2009	2010
<i>Toria</i>			
1	Abohar	1959	-
2	Agrani	1980	1982
3	Anuradha	2002	2002
4	Bhawani	1985	1986
5	BR 23	Prior to 1951	1993
6	DK 1	1970	-
7	ITSA	1961	1973
8	Jawahar Toria 1	1996	1997
9	M 2	Prior to 1952	-
10	M 3	Prior to 1952	-
11	M 18	Prior to 1956	-
12	M 27	1956	1978
13	Panchali	1986	1988
14	Parbati	2000	2001
15	PBT 37	1993	1996
16	PT 30	1985	1987
17	PT 303	1985	1985
18	PT 507	1990	1990
19	RAUTS 17	1986	1990
20	RSPT 1	2004	-
21	RSPT 2	2007	-

S. No.	Variety	Year of release	Year of notification
22	Sangam	1974	1976
23	Suman	1985	-
24	T 9	1961	1975
25	T 36	1963	-
26	TH 68	1990	1991
27	TL 15	1978	1982
28	TLC 1	1983	-
29	TS 29	1980	-
30	TS 36	2000	-
31	TS 38	2000	-
32	TS 46	2000	-
33	TWC 2	1986	-
34	Uttara (PT 2002-25)	2008	2010
35	VL Toria 3 (VLT 3)	2006	2007
<i>Yellow sarson</i>			
1	66-197-3	1980	-
2	Benoy	1980	1982
3	Gujarat Sarson 1	1952	1994
4	Indira	1984	-
5	Jhumka	1992	1998
6	K 88*	1973	1978
7	Narendra Sarson 2	1996	1997
8	NRCYS 05-02	2008	2009
9	Patan Sarson	1966	1984
10	Pusa 74-1	-	-
11	Pitambari (RYSK 05-02)	2009	-
12	Pusa Gold	1997	-
13	Pant Pili Sarson 1 (PYS 2005)	2004	2010
14	Ragini	2000	2001
15	Rajendra Sarson 1	1996	-
16	Subinoy	1986	1991

S. No.	Variety	Year of release	Year of notification
17	Swarna	1998	-
18	T 10	1957	-
19	T 42*	1960	1978
20	T 151	1957	1978
21	YSPb 24	1966	1978
22	YSH 0401	2008	2009
23	YST 1	1957	-
<i>Black mustard</i>			
1	Surya	2002	2002
<i>Indian mustard</i>			
1	Aravali	1998	2001
2	Ashirwad	2005	2005
3	Basanti	2000	2001
4	Bhagirathi	1984	1987
5	BR 13	1965	-
6	BR 40	1960	-
7	Chhatisgarh Sarson-1	2009	-
8	Coral (PAC 432) Hybrid	2009	2010
9	Coral 437 (PAC 437) Hybrid	2011	2012
10	CS 52	1997	1998
11	CS 54	2003	2005
12	CS 56 (CS 234-2)	2007	2008
13	Dhara Mustard Hybrid 1 (DMH-1)	2008	2009
14	Durgamani	1968	1974
15	Geeta	2002	2003
16	Gujarat Mustard 1	1989	1990
17	Gujarat Mustard 2	1996	1997
18	Gujarat Mustard 3	2004	2006
19	Gujarat Mustard 4	2011	2012
20	Jagannath	1998	1999
21	Jawahar Mustard 1	1999	1999

S. No.	Variety	Year of release	Year of notification
22	Jawahar Mustard 2	2004	2005
23	Jawahar Mustard 3	2004	2005
24	Kanti	2002	2003
25	Kranti	1982	1984
26	Krishna	1983	1998
27	KRV 74	1984	-
28	Laha 101*	1947	1978
29	Laxmi	1996	1997
30	Maya	2002	2003
31	Mustard Karishma	1995	-
32	Narendra Ageti Rai 4	1999	2001
33	Narendra Rai	1990	1990
34	Narendra Swarna Rai 8	2004	2005
35	Navgold (YRN 6)	2005	2006
36	NRCDR 2	2006	2007
37	NRCDR 601	2009	2010
38	NRCHB 101	2008	2009
39	NRC HB 506 (Hybrid)	2008	2009
40	Patan Mustard 67*	1967	1984
41	PBR 91	1994	1996
42	PBR 97	1996	1997
43	PBR 210	2003	2007
44	PBR 357	2011	-
45	PR 2006-1	2011	2012
46	Prakash*	1974	1976
47	Pusa Agrani	1997/2002	1998
48	Pusa Bahar	1989	1991
49	Pusa Basant	1989	-
50	Pusa Bold	1984	1985
51	Pusa Jaikisan	1993	1994
52	Pusa Karishma	2004	2005

S. No.	Variety	Year of release	Year of notification
53	Pusa Kisan	1972	-
54	Pusa Kranti	-	-
55	Pusa Mahak	2004	2005
56	Pusa Mustard-21 (LES-1-27)	2006/2008	2007
57	Pusa Mustard-22 (LET-17)	2006	2008
58	Pusa Mustard-24(LET-18)	2007	2009
59	Pusa mustard-25 (NPJ- 112)	2009	2010
60	Pusa mustard-26 (NPJ -113)	2010	2010
61	Pusa mustard 27 (EJ- 17)	2010	2010
62	Pusa Mustard 28 (NPJ 124)	2011	2012
63	Pusa Vijay (NPJ- 93)	2007	2008
64	Pusa EJ 9912-13 (Tarak)	2008	2009
65	Rajat	1993	1997
66	RB-50	2008	2009
67	Rajendra Anukool	2004	-
68	Rajendra Rai Pichheti	2003	-
69	Rajendra Sufalam	2007	2012
70	RCC 4	1996	2001
71	RGN 13	2002	2003
72	RGN 48	2004	2006
73	RGN 73	2006	2007
74	RGN 145	2008	2009
75	RGN 229	2011	-
76	RGN 236	2011	-
77	RH 30	1983	1985
78	RH 0119	2009	2010
79	RH 406	2011	-
80	RH 781	1990	1991
81	RH 785	1983	-
82	RH 819	1990	1991
83	RH 7361	1984	-

S. No.	Variety	Year of release	Year of notification
84	RK 9	1985	-
85	RK 14	1984	-
86	RL 18	1937	1974
87	RL 99 - 27	2004	-
88	RL 1359	1987	1988
89	RLC 1 (ELM 079)	2007	2007
90	RLC 2 (ELM 123)	2011	2012
91	RLM 185	1983	-
92	RLM 198	1975	1977
93	RLM 514	1980	1984
94	RLM 619	1983	1985
95	Rohini	1985	1986
96	RRN 505 (RN 505)	2005	2006
97	RSPR 03	2007	-
98	Sanjukta Asech	1989	-
99	Sarma	1986	-
100	Saurabh	1985	1987
101	Seeta	1980	1982
102	Shatabdi (ACN 9)	2005	2007
103	Shekhar	1978	-
104	Shivalik	2002	-
105	Shivani	2003	2005
106	Swaran Jyoti	2002	2003
107	T 11	1936	-
108	T 16	1956	-
109	TM 2	1987	1993
110	TM 4	1987	1993
111	TPM 1	2006	2007
112	Urvashi	1999	2001
113	Vaibhav	1985	1985
114	Vardan	1985	1985

S. No.	Variety	Year of release	Year of notification
115	Varuna	1975	1976
116	Vasundhra	2002	2003
<i>Karan rai</i>			
1	JTC-1 (Jayanti)	2001	-
2	Kiran	1997	1998
3	PC 5	1994	1996
4	PC 5-17	2001	-
5	Pusa Aditya (NPC 9)	2006	2006
6	Pusa Gaurav	1995	-
7	Pusa Swarnim	2002	2003

* Denotified

Alphabetic list of rapeseed mustard varieties notified in India since 2006 till June 2012

S. No.	Variety	Page No.	S. No.	Variety	Page No.
	Gobhi Sarson		10	NRCDR 601	
1	GSC 6 (OCN 3)		11	NRCHB 101	
2	Him Sarson 1 (ONK1)		12	NRCHB 506 (Hybrid)	
3	NUDB 26-11		13	PBR 210	
4	TERI Uttam Jawahar		14	PR 2006-01	
	Taramira		15	Pusa Mustard-21 (LES-1-27)	
1	Narendra Tara		16	Pusa Mustard-22 (LET-17)	
2	Vallabh Taramira 1 (PUT 93-11)		17	Pusa Mustard-24 (LET-18)	
3	Vallabh Taramira 2 (PUT 93-1)		18	Pusa Mustard-25 (NPJ- 112)	
	Toria		19	Pusa Mustard-26 (NPJ -113)	
1	Uttara (PT 2002-25)		20	Pusa Mustard-27 (EJ- 17)	
2	VL Toria 3 (VLT 3)		21	Pusa Mustard-28 (NPJ 124)	
	Yellow Sarson		22	Pusa Tarak (EJ 9912-13)	
1	NRCYS 05-02		23	Pusa Vijay (NPJ- 93)	
2	Pant Pili Sarson		24	Rajendra Sufalam	
3	Pitambari		25	RB 50	
4	YSH 0401		26	RGN 48	
	Indian Mustard		27	RGN 73	
1	Chhattisgarh Sarson		28	RGN 145	
2	Coral 432 (PAC 432) Hybrid		29	RH 0119	
3	Coral 437 (PAC 437) Hybrid		30	RLC 1 (ELM 079)	
4	CS 56 (CS 234-2)		31	RLC 2 (ELM 123)	
5	Dhara Mustard Hybrid 1 (DMH-1)		32	RRN 505 (RN 505)	
6	Gujarat Mustard 3		33	Shatabdi (ACN 9)	
7	Gujarat Mustard 4		34	TPM 1	
8	Navgold (YRN 6)			Karan Rai	
9	NRCDR 2		1	Pusa Aditya (NPC 9)	

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