Technologies Commercialized

Contents

1. Commercialized

Endogram: Endosulphan -tolerant strain of egg parasitoid, *Trichogramma chilonis*

Salient features

- Endosulphan-tolerant strain, endogram, can parasitize >90% eggs and its mean survival is 3.6 days, compared to <20% parasitization by the susceptible laboratory strain with mean survival of 1.6 days.
- Parasitism enhances significantly with dosage of 100-500 thousand parasitoids per hectare.
- The strain was released in a total of 11,880 hectares of vegetable crops and cotton.
- The product is exempted from the biosafety clearance of the Central Insecticides Board and Registration Committee.
- This product is being utilized for biocontrol of vegetable crops, cotton and rice since 2010.

Manufacturer

- Excel Crop Care, 184/87, S.V. Road, Jogeshwari West, Mumbai (Maharashtra) 400 102; Telephone: 022-66464200

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Multiple insecticides tolerant strain of egg parasitoid, *Trichogramma chilonis*

Salient features

- *Trichogramma chilonis* is resistant to multiple insecticides with a high resistance factor.
- In Saharanpur (Uttar Pradesh), according to farmer Shri Madan, fields of brinjal and chilli were freed of pests after the use of this strain.
- According to another farmer Shri Sanjay Kumar, its use in the pest-management programme resulted in saving of thousands of rupees; being spent on insecticides for crop protection.

- The product is exempted from the biosafety clearance of the Central Insecticides Board and Registration Committee.
- Its license is non-exclusive.

Performance results

- Rangel village in Saharanpur became aware of the use of this beneficial parasitoid, *Trichogramma chilonis*.
- Large-scale validation trials were conducted on rice, sugarcane, tomato and brinjal during 2011-12 and *rabi* 2012.

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High temperature- tolerant strain of egg parasitoid, *Trichogramma chilonis*

Salient features

- This strain of *Trichogramma chilonis* is tolerant to temperature, up to 40°C; pest-infested fields in hot climatic regions can be effectively managed.
- In high-temperature-affected fields, mainly of vegetable-paddy-based ecosystems, farmers can use this strain to control wide range of lepidopteran and other pests effectively.
- The product is exempted from the biosafety clearance of the Central Insecticides Board and Registration Committee.
- Its license is non-exclusive.

Performance results

- Large- scale validation trials were conducted on rice, sugarcane, tomato and brinjal during 2011-12 and *rabi* 2012.

Manufacturer

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Pesticide-tolerant strain of aphid lion, *Chrysoperla zastrowi sillemi*

Salient features

- PTS 8,a strain of *Chrysoperla zastrowi sillemi*, is tolerant to different groups of pesticides —organophosphate, organochlorine and synthetic pyrethroid.
- This strain recorded high resistance factor for acephate, fenvalerate and endosulphan as compared to susceptible population (CZS 10).
- Biochemical assays revealed higher detoxifying enzymes in PTS 8 as compared to the susceptible population.
- Validation of this strain under vegetable ecosystem for suppression of insect- pests was found effective in Saharanpur (Uttar Pradesh).

- The strain can be used by farmers in insecticide- stressed farm conditions of cotton- based and vegetable-based ecosystems to control pests efficiently.
- *C. zastrowi sillemi* can feed on sucking pests and eggs and early instar larvae under pesticide- stressed farm conditions.
- Its license is non-exclusive.
- The product is exempted from the biosafety clearance of the Central Insecticides Board and Registration Committee.

Performance results

- Large- scale validation trials were conducted on tomato and brinjal during 2011-12 and r*abi* 2012.

Manufacturer

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Wettable powder formulation of entomopathogenic nematode, *Heterorhabditis indica* strain NBAII Hi1

Salient features

- Wettable powder formulation contains active entomopathogenic nematode strain NBAII Hil of *Heterorhabditis indica*.
- This WP formulation has a shelf-life of 8-10 months.
- This nematode usually enters insects through their breathing hole, mouth or anus and kill them in 48-96 hours. It is also capable of penetrating through insect cuticle. Insect cadavers are utilized as food by nematodes for their multiplication and recycling.
- *In- vivo* production is in *Galleria mellonella* partitioned protocols, which clearly demarcate insect-nematode production stages, facilitating scale-up of production, mechanization, down-stream processing and developing formulations.
- Physical parameters of formulation have been identified and defined for better shelf-life with better biological activity.
- The formulation is easy- to- apply with conventional equipment, and does not require special application gear.
- The infective juveniles are tolerant to most agrochemicals, including herbicides, fungicides and insecticides.
- The product is exempted from the biosafety clearance of the Central Insecticides Board and Registration Committee.

Impact and benefits

- Entomopathogenic nematodes have been commercialized for the management of pests, as an alternative to the use of chemicals; being safe biological control agent.
- This biologically active and beneficial product is a broad spectrum biological insecticide; effective against several cryptic pests, including scaraeibid, curculionid, cerambicid grubs, cutworms, other soil insect pests etc., associated with arecanut, sugarcane, banana, cardamom, groundnut, potato, corn, turf-grass, tuber crops etc.

- The nematodes are specific to insects and are not a threat to environment, unlike chemical insecticides.
- Its license is non-exclusive.

Manufacturers

- Multiplex Bio-Tech Pvt Ltd #180, 1st Main Road, Mahalakshmi Layout, Bengaluru (Karnataka) 560 086; Telephone: 080-23490647; E-mail: multiplex@multiplexgroup.com
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Wettable powder formulation of *Pochonia chlamydosporia* var. *chlamydosporia* (MTCC No. 5583, NAIMCC Acc. No. F-02519)

Salient features

- Nematodes have become the major constraint in the intensive cultivation systems, polyhouses, monocropped cereals and perennials; especially, root-knot nematodes in rice-wheat, citrus, pomegranate, vegetables, etc.; and cyst nematodes in pulses, etc.
- The technology developed encompasses novel and economically viable scale-up processes for production, down-stream processing and development of formulation of beneficial fungus, *Pochonia chlamydosporia (*MTCC No. 5583; NAIMCC Acc. No. F-02519), for biological control of root-knot, cyst and reniform nematodes in polyhouse crops— vegetables, gherkins, potatoes, oilseeds and pulses.
- It comprises validated maximized productivity of $10^{9\text{-}10}$spores/g, and shortened production cycle (14-16 day); Easy down-stream processing and automation.
- Formulation shelf-life is 18 months.
- Biosafety data: Biosafety (Toxicology data) and field efficacy data have been generated and are available for 9 (3b) and 9 (3) Central Insecticides Board and Registration Committee.
- Its license is non-exclusive.

Impact and benefits

- Among various beneficial fungi, *Pochonia chlamydosporia* var. *chlamydosporia* is unique in its ability to parasitize eggs, females and cysts of nematodes and in tolerance to abiotic stresses(temperature, desiccation, fungicide tolerance, long persistence in the treated soils), and is biologically safe to humans, non-target organisms etc., thus is most prospective candidate for biological control of root-knot, reniform and cyst nematodes.

Manufacturer

- Mr Ramji Mangukia, Agriland Biotech Ltd, Prience Industrial Estate, Mota Moti Pura, Kareli Baug, Kareli Baug, Vadodara(Gujarat) 390 018; Telephone: 0265-2541193

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Liquid formulation of *Bacillus thuringiensis* (NBAII-BT1)

Salient features

- *Bacillus thuringiensis* (NBAII-BT1) is a strain that infects caterpillar-pests of pulses and vegetables.
- **Biosafety:** Toxicology data are to be generated.
- **Label claims:** Against lepidopteran insects of pulses and vegetables. Multi-location trials have been completed.
- **Host range:** Lepidopteran pests of pulses and vegetables
- Its license is non-exclusive.

Impact and benefits

- Lab and field evaluations of liquid formulation of *Bt* against *Helicoverpa armigera* in pulses and *Plutella xylostella* in vegetables under the AICRP trials were very effective against these pests.

Manufacturer

- Agro Bio-tech Research Centre Limited, Registered Office: Industrial Area, Poovanthuruthu, Kottayam (Kerala) 686 012; Mobile: 09447047719

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Light trap safer for beneficial insects

Salient features

- Light trap is to monitor and mass-trap, as the case may be, based on the biology of the pest stage in crops.
- Use of light traps for such purposes has been well-catalogued in the last century's pest management manuals and recommendations.
- The perceived constraint of trapping also beneficial insects / other non-target organisms was the limitation of the old designs. However, the new design developed by the National Centre for Integrated Pest Management has made it safe for beneficial insects (parasitoids) and non-targeted insects having small body size.

- Design has been patented for light trap with durability of 4-5 years.

Manufacturer

- M/s Fine Traps (India), 6 Sawarkar Market Datta Chowk, Yavatmal (Maharashtra) 445 001; Telephone: 07232-244282; Mobile: 09422166867; Website: www.lighttrap.in

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Moth-egg cleaning device

Salient features

- It is a mechanically operated gadget for cleaning *Corcyra cephalonica* eggs from insect scales in the insect biocontrol labs.
- It is environment friendly and is cost- effective.
- Design is patented with durability of 5-6 years.

Manufacturer

M/s Rescholar Equipment 85, HSIDC, Industrial Estate, Ambala Cantt, Haryana

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Aerial Insect Trap

Salient features

- Aerial Insect Trap has been designed, fabricated and standardized for Indian conditions.
- The trap is effective in sampling air and trapping air-borne insects.
- It is a zero- energy based trap; natural wind energy rotates it.
- Durability of the trap is 6-7 years.
- Since it is a zero-energy based device, it is cost-effective and is important IPM tool for sustainable insect control.

Manufacturer

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VL White Grub Beetle Trap 1

Salient features

- The trap works on the principle of attraction of scarabeid beetles towards light.
- Its fins make light more reflective and also act as a hitting plane for attracted beetles, which are then directed to a collection pot through a funnel.
- Efficiency of VL Beetle Trap1 has increased multifold from earlier models, and it is specific to scarabeid beetles.
- It is an efficient, cost-effective, light weight, user friendly handy light trap.
- The trap is found effective and suitable for management of adult beetles of white grubs.

Performance results

- Among the five models tested, this trap is found efficient in trapping scarabeid beetles; it has potential of trapping beetles from >200m distance.

Cost

- Approximate cost of a VL White Grub Beetle Trap is ₹ 650.

Impact and benefits

- As the white grub is a major and polyphagous insect- pest devastating almost all crops grown in *kharif*, this trap would prove beneficial in increasing farm yield.
- It is specific to trap scarabeid beetles, and thus very negligible number of beneficial insects are trapped.
- It uses CFL, which consumes less power.

Manufacturer

- M/s Mr Md Saleem, Doon Trunk house, Jakan Devi, Almora Uttarakhand

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UV chamber for sterilization of *Corcyra* eggs

Salient features

- Grain-moth eggs are used as a laboratory host for mass-rearing of many natural enemies of crop-pests. This principle is used in this device.
- The present UV Chamber has following features.
  - A total of 75 cards can be exposed to UV at a time in each drawer.
  - Since the source of the light is at the centre of the curve, exposure by UV rays is uniform on the surface of the cards.
  - As there are two drawers, the time required to arrange cards in one drawer is sufficient to sterilize cards in the other. Thus 75 cards can be sterilized per 10 minutes by alternatively using these drawers.
- Timer prevents over exposure or under exposure of cards.
- Since the cards are exposed to UV radiations in a closed box, the undesired exposure of the worker to UV radiations is ruled out in the structure.

Manufacturer

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Device for on-farm / *in-situ* multiplication of parasitoids of crop-pests

Salient features

- This device is an important tool for IPM and is environment-friendly, which provides sustainable pest control without harming beneficial insects.
- It is for the on-farm conservation and multiplication of beneficial insects, particularly larval parasitoids such as larval parasitoid, *Bracon* spp. *in-situ*. *Bracon hebetor* is a well- known parasitoid of caterpillars.
- As *Corcyra cephalonica* is a stored -grain insect-pest, disposal of the kit- spent materials of this gadget needs proper guidance, handing and precautions.

Manufacturer

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Burrow fumigator

Salient features

- The unit consists of a hollow cylinder of 10" diameter and 8" height, made of 14 gauze MS sheet.
- There is an inlet on the top made of 1.5"GI pipe of 4" length.
- The outlet at the bottom is made of 3.8" GI pipe of 5"length.
- A handle is provided at the side to carry the unit from place to place.
- Cylindrical portion of the unit is stuffed with paddy straw through outlet and ignited.
- As straw catches fire, air is blown slowly into the burrow by rotating hand-blower inserted into the top inlet.
- The device can be operated by two persons; One blows the air and the other blocks the leakage of smoke to kill escaping rats.
- It is an improved device over the traditional method of use of earthen-pitchers and blowing air by mouth.
- It is economical, safe and utilizes farm -waste; and no toxic chemical is used.

Performance results

- Percentage rodent control success (rodent mortality) is higher over other methods like trapping or chemical fumigation (aluminium phosphide).

Cost

- ₹ 1,100 per unit
- **Operating cost:** Needs paddy straw at 50 kg/unit for treating 100 live-rodent burrows.

Manufacturer

- Sri Kalyani Enterprises, Canal Road, Penugonda, West Godavari Distt, Andhra Pradesh; Mobile: 09440286964

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Bacillus thuringiensis (*Bt*) var. *kurstaki* wettable powder formulation

Salient features

- Formulation has been developed through multiplication of DOR *Bt*-1—a local isolate of *Bt*.
- Multiplication is through solid state fermentation, which is economical, as *Bt* has been traditionally multiplied through submerged fermentation, requiring high capital investment.
- The protocol developed is simple and with less inputs; hence in the reach of medium-range entrepreneurs.

Performance results

- The formulation has been found effective against semilooper on castor; leaf folder and stem borer on rice; gram pod borer on pigeonpea.
- It has also been found effective against a lepidopteran pest of lac-insect.

Cost

- At commercial level ₹ 275/kg (based on feedback).

Impact and benefits

- The technology is simple and production cost is low. It has attracted medium-range entrepreneurs involved in biopesticide production in India; since the *Bt* production can be undertaken by them without much additional investment on the infrastructure. *Bt* thus can be made available at a low, affordable cost to farming community.
- It is an eco-friendly technology, safe to natural enemies of crop-pests, is degradable and does not leave residue and so is safe to humans and animals.
- Patent application has been filed for the process (No.732/Del/2002). Formulation has been registered with the Central Insecticides Board and Registration Committee, GOI [Regn No. CIR-511/2005(256)- *Bacillus Thuringiensis* (W.P.)-15]. Data generated for registration with the Central Insecticides Board, GOI, is in accordance with the Insecticide Act.

Manufacturer

- Technology commercialization was initiated in July 2006 and licensed to 40 firms.

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Suspension concentrate formulation of *Beauveria bassiana*

Salient features

- Formulation has been developed through multiplication of a local isolate of *B. bassiana* ITCC-4513 from the IARI Type Culture Collection.
- Multiplication is through solid state fermentation. The formulation is a suspension concentrate based on the mineral oil, and contains 30% concentration of pure conidia.
- Majority of the available commercial formulations are wettable powders with only 6 months shelf-life and lesser infectivity. Oil- based nature of this formulation renders longer field persistence, enables its use under low humidity as well as enables faster spread of the inoculum on the insect surface and into the inter segmental regions where cuticle is thin, thereby resulting in faster germination, infection and kill.
- Formulation has an extended shelf-life of 24 months at room temperature.
- Formulation is suitable for smaller packaging that can cover large areas.

Performance results

- Formulation has been found effective against gram pod borer on pigeonpea and capitulum borer on sunflower.

Cost

- Cost of production per unit output at the commercial level is ₹ 300/kg.

Impact and benefits

- Formulation is a low volume liquid formulation; effective at very low dosages, and is suitable for smaller packaging that can cover large areas.
- Formulation is effective against *Helicoverpa armigera* that is a polyphagous pest, and hence can be used on several crops.
- Production and formulation cost is very less.
- Suitable for medium- range entrepreneurs without any additional investment for infrastructure.
- Eco-friendly technology, safe to natural enemies of crop-pests, is degradable, and does not leave residue, so is safe to humans and animals.
- Non-exclusive Licensing is through "Memorandum of Agreement". Data generated for registration with the Central Insecticides Board and Registration Committee, GOI, in accordance with the Insecticide Act.

Manufacturers

- Shram Sadhana Amaravathi's Sadhana Krishi Vigyan Kendra, Durgapur (Badnera), Distt Amaravati (Maharashtra) 444 701
- Krishi Vigyan Kendra, Marathwada Sheti Mandal, P.B.Mandal, P.B.No.45, Kharpudi Jalna (Maharashtra) 431 203
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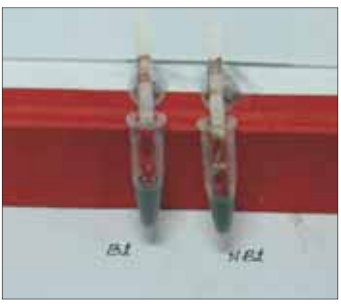
Bt-Express kit for rapid detection of *Bt*-Cry1Ac toxin

Salient features

- It is based on a simple immunological test that can be used directly in the field by farmers.
- The kit is provided with complete material (pestles, plastic vials, buffer, strips etc.) adequate for 50 tests.
- It can be used for seeds, leaves, squares, flowers or any tissue.
- The test takes 5-10 minutes, and gives a clear result in detecting presence/ absence of the *Bt*-toxin in the tested tissue.
- Patents granted in India, China, South Africa, Uzbekistan, Korea and Mexico. 600/DEL/ 2002 (India), PCT/INO3/00199/7128; 2004/10268 (South Africa); PA/A2004/011769 (Mexico); IAP2004-0451 (Uzbekistan); 2004-7019456; (South Korea); ZL 03817641.6 (China).
- Kit is stored at 4°C for active and long-time storage.

Performance results



- Quick strips to detect Cry1Ac *Bt* protein
- 10-minute test strip to detect Cry1Ac in *Bt*-cotton

Cost

- ₹ 1,000 for a kit of 50 strips.

Impact and benefits

- It is a rapid test, takes only 5-10 minutes to check whether the plant contains *Bt* protein or not ;and its cost is five-fold cheaper than other products.
- Easy to use, even a farmer can use it.
- Highly popular among farmers to test whether *Bt* cotton is real or spurious.
- It is user friendly, free from health and environmental hazard.

Manufacturer

- Innovative Biosciences, Nagpur. No special biosafety is required.

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Bt Quant ELISA kit for rapid detection of *Bt*-Cry toxin

Salient features

- Three ELISA (Enzyme Linked Immunosorbent Assay) kits have been developed for quantification of *Cry*1Ac/*Cry*1Ab, *Cry*1F and *Cry*2Ab in *Bt*-cotton transgenic-plants.
- The kits are provided with IgG coated plates, standards, sample extraction buffer, HRP-conjugate, substrate and PBST.
- The complete test takes two hours. ELISA is suitable for qualitative as well as quantitative detection of proteins, and can be used as a high-throughput test for simultaneous handling of a large number of samples in a routine testing.
- Qualitative detection does not require equipment; but quantitative detection needs ELISA reader and plate washer and trained personnel.
- *Bt* Quant Cry1Ac/Cry1Ab kit
  Bt Quant Cry1F kit
  Bt Quant Cry2Ab kit
  IPR No. 600/DEL/2002 dated 31-5-02; patents granted in South Africa: Rapid Detection of *Bt*-Cry Toxin No. IAP 2004-0451; PCT/IN03/00199 filed on 29 May 2007; Patent granted in China: No. FP02228-GB/vcd granted in 2008.

Performance results

- Quantify Cry1Ac protein in *Bt* cotton— One hour test to quantify Cry1Ac protein in *Bt* cotton

Cost

- ₹ 800 for a kit to detect / quantify 96 samples at a time.

Impact and benefits

- It is a 96-well plate rapid test for qualitative and quantification of *Bt* Cry protein, expressed in the *Bt* plants.
- It takes 1.0 hr to check 96 samples at a time.
- Cost is much lesser than other products.
- Bt-Quant is used as a high-through put test for simultaneous handling of a large number of samples in a routine testing.
- This test is popular among seed industry to test *Bt* cotton.
- It is user friendly, free from health and environmental hazard. It is safe to use under the laboratory conditions.

Manufacturer

- Innovative Biosciences, Nagpur. No special biosafety is required.

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BG-II-seed-detection kit: (*Bt* GUS)

Salient features

- The kit has been designed to detect glucuronidase (*GUS*) marker expression in transgenic-plants.
- The *GUS* marker expresses strongly along with *Cry2Ab* in Bollgard-II; its presence indicates *Cry2Ab*.
- The test is inexpensive and takes about 30 minutes to complete.
- Seeds are crushed in 0.5 ml buffer in 1.5 ml plastic vials.
- Addition of 0.1 ml of the reagent to the homogenate results in the development of blue colour if the sample is positive for transgenic marker *Cry2Ab*.

Performance results

- 30-minute test. Reagent-based kit to detect *GUS* reporter gene in the seeds of Bollgard-II is a quick test to detect *GUS* marker

Cost

- ₹ 200 per kit for 100 samples

Impact and benefits

- It is a simple detection method for identification of Bollgard-II transgenic cotton from other events released in India.
- The test is reasonably inexpensive and farmers can test purity of the seed (Bollgard-II or some other event) within 30 minutes.
- It is user-friendly, free from health and environmental hazard.
- Safe to use under field conditions.

Manufacturer

- Innovative Biosciences, Nagpur. No special biosafety is required.

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PCR-based detection assays and protocols for ten genetically modified (GM) crops

Salient features

- The technology is for initial screening to check GM status of the tested material. It constitutes multiplex PCR assays for simultaneous amplification of commonly used marker genes, *nptII*, *aadA, bar, pat, hpt* and *uidA*; 35*S* promoter and *nos* terminator.
- Multiplex assays have also been developed for detection of specific transgenes/ marker genes/promoter sequences/species-specific genes in GM crops of brinjal, cauliflower, cotton, maize, mustard, okra, potato, rice, soybean and tomato (*see* page 25 for details).
- For quality assurance as per the ISO 17025 standard, GM detection laboratory at the NBPGR regularly participates in the proficiency testing organized by the Joint Research Centre (JRC), European Commission (participated in 4 proficiency testing) and by the GIPSA, USDA (participated in one proficiency testing) for qualitative and quantitative PCR and real time PCR assays.

Performance results

- The technology is cost-effective, time-efficient and reproducible for initial screening and also for detection of specific DNA sequences in ten GM crops.

Cost

- The technology will be transferred at a one-time cost of ₹ 2.50 lakh plus tax as applicable, payable at the time of signing the MoU, on the non-exclusive basis, towards the development of the technology.
- The technology is exclusively for testing and further commercialization; and royalty at 10- 15% on sale of the PCR kits would also be charged.
- The NBPGR will provide relevant information/processes/primer sequences to be used for manufacturing and performing PCR tests, and if required training can also be imparted from 3 to 5 days.

Impact and benefits

- The technology provides a cost-effective, time-efficient method to ensure quality of the products, to assist in post-release monitoring and to solve legal disputes, if any. The technology will help in building confidence of consumers in the technology for development of GM crops and for regulatory compliance.

Manufacturer

- Dr Jayant K. Bhanushali, Director, Amar Immuno Diagnostics Pvt. Ltd, Hyderabad (Andhra Pradesh) 500 033

PCR-based diagnostics of specific transgenes/marker genes/endogenous gene

Transgenic crop/ Event	Transgenes/marker genes	Endogenous gene
Cotton		
For insect resistance MON531	*cry1Ac, nptII, aadA*; *35S* promoter; *nos* terminator	*Sad1/ fs-ACP*
For insect resistance MON15985	*cry1Ac, cry2Ab, nptII, aadA, uidA; 35S* promoter; *nos* terminator	-do-
Widestrike	*cry1F, cry1Ac; 35S* promoter; *nos* terminator	-do-
MON88913	*cp4epsps;* 35S promoter; *nos* terminator	-do-
MON1445 (Roundup Ready)	*cp4epsps; 35S* promoter; *nos* terminator	-do-
For insect resistance and herbicide tolerance: *Bt* Roundup Ready Flex	*cry1Ac, cry2Ab, cp4epsps; 35S* promoter; *nos* terminator	-do-
Brinjal		
For insect resistance	*cry1Ac, nptII,* aad*A; 35S* promoter; *nos* terminator	*ß-fructosidase*
For insect resistance	*cry1Ab; 35S* promoter; *nos* terminator	-do-
Soybean		
Roundup ready soybean herbicide tolerance	*cp4epsps; 35S* promoter; *nos* terminator	*lectin*
Maize		
Roundup ready maize	*cp4epsps; 35S* promoter, *nos* terminator	*zein*
MON 810	cry1Ab, *35S* promoter, *nos* terminator	-do-
Tomato		
For drought and salt tolerance	*Osmotin; 35S* promoter	*LAT52*
For drought and salt tolerance	*Avp1, nptII;* 35S promoter; *nos* terminator	*ß-fructosidase*
Cauliflower		
For insect resistance	cry1Ac, *35S* promoter	*SRK*
Mustard		
For male sterility	*barnase, barstar;* 35S promoter	*HMG1/ā*
Rice		
For insect resistance	*cry1Ac, nptII; 35S* promoter*; nos* terminator	*α-tubulin*

(Continued)

(Concluded)

Transgenic crop/ Event	Transgenes/marker genes	Endogenous gene
Okra		
For insect resistance	cry1Ac, *nptII; 35S* promoter; *nos* terminator	Chloroplast tRNA gene
Potato		
For insect resistance	*cry1Ab*, *nptII; 35S* promoter; *nos* terminator	*β-fructosidase*
For better nutritional quality	*Ama1*, *nptII; 35S* promoter; *nos* terminator	-do-
For late blight resistance	*RB*, *nptII; 35S* promoter; *nos* terminator	-do-

Contact
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Preparation of sugarcane juice powder

Salient features

- Sugarcane juice powder is prepared by suitably processing sugarcane juice, followed by spray drying.
- Sugarcane juice powder is hygroscopic; its particle size ranges from 20 to 400 microns, is pale-yellow or greenish or greyish-green, highly soluble in water (low insoluble matter ,< 2%).
- Reconstituted juice (20% w/v) has pH ranging from 4.6 to 5.1.
- One hundred gram of powder contains carbohydrate 92%, protein 2%, ash (mineral) content 1.5% and energy 350 kcal. Powder has negligible bacteria and fungi, yeast and coli forms (pathogens).
- Contains chlorophylls, carotenoids, flavonoids and polyphenols, essential for human health.
- Product can be safely stored for longer periods in moisture-proof packs without deterioration.
- Patents pending 1829/CHE/2006 dated 03.10.2006 and 1309/CHE/2011 dated 15.04.2011.
- Licensing is non-exclusive

Performance results

- Standardized at a laboratory scale.

Impact and benefits

- This product is new to the market. Before full-fledged commercialization, there needs to be a market survey on consumer preference, product pricing etc. to work-out viability.
- Sugarcane juice powder is an attractive option to replace synthetic soft drinks.
- As a regular nutritious sweetener.
- Value added and novel products can be prepared by optionally fortifying sugarcane juice powder with vitamins, minerals and nutraceuticals.

Manufacturer

M/s Navela Foods, Mumbai. Compliances under the FPO and PFA Act are mandatory.

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1.1 State-wise promising and popular varieties and hybrids of cereals, millets, pulses, oilseeds, commercial crops, and forages and grasses

Important Note

- Information regarding promising and popular varieties and hybrids of cereals, millets, pulses, oilseeds, sugarcane, jute and allied fibres, cotton, tobacco and forages released from the ICAR-SAU System have been presented in the tabular form in the following section.
- Promising and popular varieties and hybrids of 57 crops have been covered. Two tables have been prepared for each of 41 crops separately, while 16 crops have been accommodated in two tables.
- The first table presents a list of state-wise recommended varieties/hybrids of crops and the second table presents year of notification, recommended niche, salient features and reaction to biotic and abiotic stresses and quality traits.
- Only varieties /hybrids released during the last 15 years (1997-2012) have been covered with a few exceptions due to their popularity. However, the list is not exhaustive.
- The ICAR-SAU-DAC network produces sufficient quantity of breeder seed of different varieties/hybrids; and related information has been given in Annexure I.
- Contact addresses of Project Coordinators/Directors for any query regarding crop varieties/hybrids and related recommendations, availability of seeds and licensing of seed production protocol has been furnished in Annexure II.

Cereals

Rice

Table 1. Promising and popular rice varieties / hybrids

State	Season	Varieties/Hybrids
Andhra Pradesh	*Kharif, rabi*	**Varieties :** Cotton Dora Sannalu, Improved Samba Mahsuri, Vijetha, Swarna, Early Samba, Indra, Jagtial Mahsuri, Jagtial Samba, Jagtial Sannalu, Krishna, Krishna Hamsa, Maruteru Sannalu, Ramappa, Somasila, Sugandha Samba, Varalu, Dhanrasi, Warangal Samba, Tella Hamsa, Tholakari, Erra Mallelu, Nellore Mahsuri, Warangal Sannalu **Hybrids :** INDAM 200-017, KRH 2, DRRH 3
Andaman and Nicobar Islands	-	**Varieties:** CARI Dhan 1, CARI Dhan 2, CARI Dhan 3, CARI Dhan 4, CARI Dhan 5
Asom	*Kharif, boro*	**Varieties :** Chandrama, Gopinath, Ranjit, Kanaka Lata, Joymati, Luit, Anjali, Bahadur, Lachit **Hybrids :** CR Dhan 701, KRH 2, Rajalaxmi
Bihar	*Kharif, boro*	**Varieties :** Gautam, Rajendra Bhagwati, Rajendra Mahsuri, Anjali, CSR 13, CSR 23, CSR 27, Improved Samba Mahsuri, Pooja, Sampada, Turant Dhan **Hybrids :** CRHR 32, KRH 2
Chhattisgarh	*Kharif, rabi*	**Varieties :** Bamleshwari, Chandrahasini, Danteshwari, Poornima, Samleshwari, Improved Samba Mahsuri, Cotton Dora Sannalu, Vijetha, Swarna, IGKVR 1, Narendra Dhan 8002, Richa, Sampada, Karma Mahsuri **Hybrids:** Indira Sona, KRH 2
Delhi	*Kharif, rabi*	**Varieties :** Pusa Basmati 1121, Improved Pusa Basmati 1, Pusa Sugandh 2, Pusa Sugandh 3, Improved Pusa Basmati 1 **Hybrids :** Pusa RH 10
Gujarat	*Kharif, rabi*	**Varieties :** AAUDR 1, GR 12, GR 7, Gurjari, CSR 13, CSR 23, CSR 27, Pant Dhan 19, Improved Samba Mahsuri **Hybrids :** CRHR 32, KRH 2
Haryana	*Kharif, rabi*	**Varieties :** HKR 47, Taraori Basmati, CSR 13, CSR 23, CSR 27, Pusa Sugandh 2, Pusa Sugandh 3, Pusa Basmati 1121, Pant Dhan 19 **Hybrids :** KRH 1, KRH 2, Pusa RH 10
Himachal Pradesh	*Kharif, rabi*	**Varieties :** HPR 2143, Kasturi, RP 2421, Brighudhan, Varun Dhan, Vivek Dhan 62
Jharkhand	*Kharif*	**Varieties :** Birsa Vikas Dhan 109, Birsa Vikas Dhan 110, Birsamati, Anjali, Improved Samba Mahsuri, Swarna **Hybrids:** KRH 2
Jammu and Kashmir	*Kharif*	**Varieties :** Shalimar Rice-2, Shalimar Rice 3, Improved Pusa Basmati 1, Koshar, Jhelum, Ranbhir Basmati **Hybrids :** KRH 2
Karnataka	*Kharif, rabi*	**Varieties :** BR 2655-9-3-1, Improved Samba Mahsuri, Intan, Jaya, Akshay Dhan, KHP 10, Thanu, Tunga, Dhanrasi, IET 7191, IET 8116, Mugad Sugandha, Hemavathi, Asha, Mugad 101, Sharavathi **Hybrids :** KRH 2

(Continued)

Table 1. *(Concluded)*

State	Season	Varieties/Hybrids
Kerala	*Kharif, rabi*	**Varieties :** Gouri, Remanica, Jyothi, Matta Triveni, Uma, Warangal Samba, Prateeksha, Swetha, Vytilla 8 **Hybrids :** KRH 2
Maharashtra	*Kharif, rabi*	**Varieties :** Karjat 7, Karjat 8, SKL 8, CSR 13, CSR 23, CSR 27, Improved Samba Mahsuri, Pant Dhan 19 , Sampada, Bhogavathi, PKV HMT, Pondaghat 1, PKV Makarand, Parbhani avishkar, Panvel 3, SKL 8, SYE 2001 **Hybrids :** Sahyadri, Sahyadri 2, Sahyadri 3, INDAM 200-017, KRH 2, Sahyadri 4, Sahyadri 5
Manipur, Meghalaya	*Kharif, boro*	**Varieties :** CAUR 1, RC Maniphou 11, Vivekdhan 62, Balum 1, 2, Ginphou, Shah Sarng 1, Lamppah 1 **Hybrids :** KRH 2
Madhya Pradesh	*Kharif, rabi*	**Varieties :** Rashmi, IGKVR 1, Mahamaya, Narendra Dhan 8002, Pooja, Richa, Kranti **Hybrids :** JRH 4, JRH 5, JRH 8, KRH 2
Odisha	*Kharif, rabi*	**Varieties :** Geetanjali, Improved Lalat, Improved Tapaswini, Jaldi Dhan 6, Jogesh, Ketekijoha, Konark, Nua Kalajeera, Ramachandi, Reeta (CR Dhan 401), Sarala, Satyabhama (CR Dhan 100), Sebati, Swarna Sub1, Tejaswini, Vandana, Anjali, Improved Samba Mahsuri, Narendra Usar Dhan 2008, Lunishree, Pooja **Hybrids :** Ajay, Rajalaxmi, CR Dhan 701
Puducherry	*Kharif, rabi*	**Varieties :** Subramanya bharathi, Annalakshmi, White Ponni
Punjab	*Kharif*	**Varieties :** PAU 201, PR 113 , PR 114 , PR 115 , PR 116 , PR 118, Gontra Bidhan 1 , Improved Pusa Basmati 1 , Pant Dhan 19 , Pusa Sugandh 2, Pusa Sugandh 3 **Hybrids :** KRH 2
Rajasthan	*Kharif*	**Varieties :** Mahi Sugandha, Vagad Dhan
Tamil Nadu	*Kharif, rabi*	**Varieties :** ADT 47, ADT 44, TRY 3, Dhanrasi ADT 45, ASD19, Savithri, Co 48, Co 49, PMK 4 **Hybrids :** ADTRH 1, CO(R) H 4, CORH 3, KRH 2
Tripura	*Kharif, boro*	**Varieties :** Khali Khasa, Swathi, Naveen, Krishna Hansa, TRC Boro Dhan 1
Uttar Pradesh	*Kharif, rabi*	**Varieties :** Narendra Jal Pushpa, NDR 2065, Vallabh Basmati, NDR 359, Improved Samba Mahsuri, Swarna, Sarjoo 52, Barani Deep, Kala Namak 3, Swarna Sub1, CSR 13, CSR 23, CSR 27, Pusa Sugandh 2, Pusa Sugandh 3, Varadhan, Vivekdhan 62 **Hybrids** : Narendra Sankar Dhan 2, Narendra Usar Sankar Dhan 3, KRH 2, Pusa RH 10, Sahyadri 4, Sahyadri-5
Uttarakhand	*Kharif*	**Varieties :** Vivek Dhan 154, VL Dhan 209, VL Dhan 85, Improved Pusa Basmati 1, Pusa Sugandh 2, Pusa Sugandh 3, Pant sugandh Dhan 15 **Hybrids :** Pant Sankar Dhan 1, Pusa RH 10, Pant Sankar Dhan 3
West Bengal	*Kharif, boro*	**Varieties :** Giri, Khitish, Shatabdi, Sashi, Gontra Bidhan 1, Jarava, Krishna Hamsa, Lunishree, Narendra Usar Dhan 2008, Pooja, **Hybrids :** CNRH 3, CR Dhan 701, KRH 2, Rajalaxmi

Table 2. Important information on the rice varieties / hybrids

Sl No.	Variety/ hybrid	Year of release	Recommended niche	Salient features		Reaction to biotic and abiotic stresses and quality traits
				Days to 50% flowering	Grain type	
1.	Bhogavati	2012	RSL	110-115	SS	Mod. Res. to BL, BLB, WBPH, GM
2.	CO 4	2012	IRM	100 - 105	MS	Mod. Res. to BL, BS
3.	Kanaka Lata	2012	Boro			Mod. Res. to BLB, ShBl
4.	Karjat 8	2012	RSL	110-115	SS	Mod. Res. to BL, BLB, WBPH, GM
5.	Krishna	2012	IRM	100-105	SS	Res. to BL
6.	Sahyadri 5	2012	RSL	110		Mod. Res. to BL, BLB
7.	CO(R) H 4	2011	IRM	130-135	MS	Res to BL. BS; Mod. Res. to GLH, WBPH
8.	Improved Lalat	2011	IRME	95-100	LS	-
9.	Improved Tapaswini	2011	IRME	95-100	SB	-
10.	Satyabhama (CR Dhan 100)	2011	RUP	75-80	—	-
11.	Shalimar Rice 2	2011	RSL	101	MB	Res. to BL
12.	Shalimar Rice 3	2011	RSL	96	MB	Res. to BL
13.	CR Dhan 701	2010	RSL	112	MS	Res to BL
14.	CRHR 32	2010	RSL	112	MS	Res. to BL
15.	IGKVR 1	2010	IRME	92	LB	Res. to BL, GM
16.	IGKVR 2	2010	IRM	103	LS	Mod Res to BL, BLB, BPH, WBPH
17.	INDAM 200-017	2010	IRME	96	LB	Mod. Res. to BL, SB, LF
18.	Jagtial Mahsuri	2010	IRM	106	MS	Mod. Res. to BL, BLB, BPH, GM
19.	Rajalaxmi	2010	Boro	128	LS	Mod. Res. to BL, BLB, SB, BPH
20.	RC Maniphou 11	2010	HRIR	103	LS	Res. to BL
21.	Reeta (CR Dhan 401)	2010	RSL	117	LB	Res. to BL, WBPH
22.	Sugandha Samba	2010	IRM	103	MS	Res. to BL
23.	Asha	2009	IRE	86	MB	-
24.	DRRH 3	2009	IRM	103	MS	Mod. Res. to BL, RTV
25.	Erra Mallelu	2009	IRE	89	MS	Res. to GM
26.	Jagtial Samba	2009	IRME	98	MS	Res. to GM
27.	Kala Namak 3	2009	SCR	114	SB	-
28.	KHP 10	2009	IRE	86	MB	-
29.	Narendra Usar Dhan	2008	2009	IRSA	100	LB -
30.	Rajendra Bhagwati	2009	RUP	85	LS	Mod. Res. to ShBl, BS, SB, LF
31.	Ramappa	2009	IRME	95	SS	Res. to GM
32.	Swarna Sub1	2009	RSL	120	MS	-
33.	Tejaswini	2009	IRM	105	MB	Res. to BL, RTV; Mod. Res. to BLB, ShBl, SB, GM, LF
34.	AAUDR 1	2008	RUP	72	MS	-
35.	Gontra Bidhan 1	2008	IRE	90	MS	Mod. Res. to BPH
36.	Jaldi Dhan 6	2008	RUP	77	LB	-
37.	JRH 8	2008	IRE	90	LS	-
38.	Karjat 7	2008	RSL	118	LS	Mod. Res. to BL, BLB; LF; Res to BPH,
39.	Nua Kalajeera	2008	RSL	118	MS	Res. to RTV; Mod. Res. to BL , BS, GM
40.	Pusa Basmati 6	2008	SCR	119	LS	Mod. Res. RTV

(Continued)

Table 2. *(Continued)*

Sl No.	Variety/ hybrid	Year of release	Recommended niche	Salient features		Reaction to biotic and abiotic stresses and quality traits
				Days to 50% flowering	Grain type	
41.	Sahyadri 4	2008	IRE	88	LS	Mod. Res. to BL, RTV, BS
42.	Sampada	2008	IRM	105	MS	Res. to BL; Mod. Res. to WBPH
43.	Thanu	2008	IRME	100	MS	Mod. Res. to BL, ShBl
44.	Varadhan	2008	IRME	95	SB	Mod. Res. to BL; Res. to RTV, WBPH
45.	Annalakshmi	2007	IRME	95	MS	Mod. Res. to BL, BS; Res. to RTV
46.	Bahadur	2007	Boro	170	SB	Res. to BL, BLB; Mod. Res. to RTV, ShBl, SB, BPH, WBPH, GM
47.	Chandrama	2007	Boro	170	SB	Res. to BL; Mod. Res. to BLB, RTV,SHBl, SB, BPH, WBPH, GM
48.	Hemavathi	2007	RSL	114	SB	Res. to BL. GM; Mod. Res. to BLB
49.	IET 7191	2007	ARB	81	LS	-
50.	IET 8116	2007	ARB	117	MS	Mod. Res. to BLB
51.	Improved Pusa Basmati 1	2007	SCR	105	LS	Res. to BLB
52.	Improved Samba Mahsuri	2007	RSL	120	MS	Res. to BLB
53.	JRH 4	2007	IRE	87	LB	-
54.	JRH 5	2007	IRE	87	LB	-
55.	Karma Mahsuri	2007	IRME	97	MS	Mod. Res. to BL; Res. to BS, GM
56.	PAU 201	2007	IRM	110	LS	-
57.	Varun Dhan	2007	HRIR	110	SB	Res. to BL
58.	Chandrahasini	2006	RSL	120	LS	Mod. Res. to BL, BPH; Res. to WBPH, GM
59.	CORH 3	2006	IRE	85	MS	Mod. Res. to WBPH , BL, RTV, GLH, BPH
60.	Ginphou	2006	IRM	102	LS	-
61.	GR 12	2006	IRME	95	MS	Res. to WBPH
62.	HKRH 1	2006	IRM	104	LS	Mod. Res. to BL, BS, SB, WBPH, LF
63.	Indira Sona	2006	IRME	98	LS	Mod. Res. to BL; GM
64.	Indra	2006	RSL	118	MS	Res. to BLB, BPH, GM
65.	Lunishree	2006	RUP	90	SB	Res. to BL, GM; Mod. Res. to BS
66.	Samleshwari	2006	RUP	78	LS	Mod. Res. to BL; Res. to GM
67.	Virender	2006	RUP	68	SB	Res. to BL, BS, BPH, WBPH, GM; Mod. Res. to SB,
68.	VL Dhan 209	2006	RUP	125	SB	Res. to BL, BS; Mod. Res. to LF
69.	Ajay	2005	IRME	98	LS	Mod. Res. to BL, BLB, SB, BPH, WBPH, GM
70.	Bhrigu Dhan	2005	HRIR	105	SB	Mod. Res. to BS
71.	DRRH 2	2005	IRE	86	LS	Res. to BL, RTV; Mod. Res. to BS, WBPH
72.	Geetanjali	2005	SCR	100	LS	-
73.	HKR 47	2005	IRME	100	LS	Res. to BL, BS
74.	HPR 2143	2005	HRIR	95	LS	Res. to BL
75.	Jarava	2005	IRSA	113	SB	Res. to BL
76.	Jogesh	2005	RUP	59	MB	Mod. Res. to BL, BLB, ShBl; Res to BS, SB, BPH, GM

(Continued)

Table 2. *(Continued)*

Sl No.	Variety/ hybrid	Year of release	Recommended niche	Salient features		Reaction to biotic and abiotic stresses and quality traits
				Days to 50% flowering	Grain type	
77.	Ketekijoha	2005	RSL	120	MS	Mod. Res. to BLB, ShBl, SB, GM
78.	Narendra Dhan 8002	2005	IRM	112	MS	Res. to BL, BS, WBPH
79.	Narendra Usar Sankar Dhan 3	2005	IRSA	105	SB	Res. to BLB; Mod. Res. to ShBl, GLH, SB, BPH
80.	Naveen	2005	RUP	90	MB	-
81.	Rajalaxmi	2005	IRME	98	LS	Mod. Res. to BL, BLB, SB, BPH, GM
82.	Sahyadri 2	2005	IRE	85	LS	Res. to BL, BLB; Mod. Res. to RTV
83.	Sahyadri 3	2005	IRME	95	LS	Res. to BL, LF; Mod. Res. to RTV, SB, BPH
84.	VL Dhan 85	2005	HRIR	86	LS	Res. to BL, BS
85.	Warangal Samba	2005	IRM	108	MS	Res. to RTV, ShBl
86.	Intan	2004	IRM	105	MS	Mod. Res. to BL, SB
87.	Pant Sankar Dhan 3	2004	IRME	92	LS	Mod. Res. to BL, BLB, RTV, BS, SB, BPH, WBPH
88.	Richa	2004	IRME	98	LS	Res. to BL, BLB, ShBl, BS, WBPH
89.	Sugandhamati	2004	SCR	114	LS	Res. to BL, BS
90.	Birsa Vikas Dhan 109	2003	RUP	88	LS	Mod. Res. to BLB, SB; Res to. GLH
91.	Birsa Vikas Dhan 110	2003	RUP	95	LS	Mod. Res. to BL, BLB
92.	Birsamati	2003	RSL	130	LS	Mod. Res. to BL, BS, SB
93.	CSR 23	2003	IRSA	103	MS	Mod. Res. to BL, BLB, BS, PH, LF
94.	Kali Khasa	2003	SCR	100	SB	Res. to BLB; Mod. Res. to SB, LF
95.	PR 118	2003	IRM	101	MS	Res. to BLB
96.	Pusa Basmati 1121	2003	SCR	105	LS	Res. to BLB, LF
97.	Swati	2003	Boro	103	LB	Mod. Res. to BL
98.	Vivek Dhan 154	2003	RUP	80	—	Res. to BL, BS; Mod. Res. to LF
99.	Bhalum 1	2002	RUP	94	LB	Mod. Res. to SB
100.	Bhalum 2	2002	RUP	94	LB	-
101.	Dhanrasi	2002	RSL	118	SB	Res. to BL, GM; Mod. Res. to BLB, RTV, SB
102.	Giri	2002	RSL	120	LS	-
103.	Gouri	2002	IRME	93	MB	Mod. Res. to ShBl; Res. to BS
104.	Lampnah 1	2002	RSL	113	LB	Mod. Res. to BL, SB
105.	Pant Sugandh Dhan 15	2002	SCR	114	LS	Mod. Res. to BL
106.	CARI Dhan 1	-	RSL	90	LS	Mod. Tol. to ShBl, BB, LS, SB; Tol. to lodging
107.	Shah Sarang 1	2002	RSL	115	SB	Mod. Res. to BL, SB
108.	Tunga	2002	IRM	110	LS	-
109.	Vandana	2002	RUP	65	LB	Mod. Res. to BL, BS
110.	Anjali	2001	RUP	63	SB	Res. to GM
111.	Barani Deep	2001	RUP	70	LS	-
112.	Basmati CSR 30 (Yamini)	2001	SCR	101	LS	Res. to BL

(Continued)

Table 2. *(Continued)*

Sl No.	Variety/ hybrid	Year of release	Recommended niche	Salient features		Reaction to biotic and abiotic stresses and quality traits
				Days to 50% flowering	Grain type	
113.	BR 2655-9-3-1	2001	IRM	110	MB	Mod. Res. to BL
114.	GR 7	2001	IRE	87	LS	Res. to BL, BLB; Mod. Res. to SB, WBPH, LF
115.	Jagtial Sannalu	2001	IRME	93	MS	Res. to GM
116.	Kohsaar	2001	HRIR	95	SB	Mod. Res. to BL
117.	Krishna Hamsa	2001	Boro	90	LS	Res. to BL; Mod. Res. to BS
118.	Narendra Dhan 359	2001	IRM	105	LS	Mod. Res. to BL, RTV, SB, BPH, GM; Res. to WBPH
119.	Pant Dhan 19	2001	IRME	98	LB	Res. to BL; Mod. Res. to BLB, LF
120.	Pusa RH 10	2001	SCR	85	LS	Mod. Res. to RTV, BPH, LF
121.	Pusa Sugandh 2	2001	SCR	105	LS	Res. to BL
122.	Pusa Sugandh 3	2001	SCR	105	LS	Res. to BL
123.	Rashmi	2001	RUP	76	LS	Res. to BL GM; Mod. Res. to SB
124.	SKL 8	2001	RSL	145	LS	Mod. Res. to BL, GM, SB
125.	Varalu	2001	RUP	63	LS	Mod. Res. to GM
126.	Vasumati	2001	SCR	113	LS	Mod. Res. to BL, WBPH, GM
127.	ADT 44	2000	RSL	115	SB	Res. to BL, GLH; Mod. Res. to SB
128.	ASD 19	2000	IRSA	110	SB	Res. to RTV, GLH
129.	Bamleshwari	2000	IRM	105	LB	Res. to BL. BLB, ShBl
130.	Cotton Dora Sannalu	2000	IRE	90	LS	-
131.	Danteshwari	2000	RUP	75	LS	Mod Res. to BL
132.	Early Samba	2000	IRM	105	MS	Mod. Res. to SB
133.	Maruteru Sannalu	2000	RUP	75	LS	-
134.	Panvel 3	2000	IRE	85	SS	-
135.	Parbhani Avishkar	2000	IRME	95	LB	Res. to BL
136.	PR 113	2000	IRME	95	LS	Mod. Res. to BL, BLB
137.	PR 114	2000	IRM	110	LS	Res. to BLB
138.	PR 115	2000	IRME	95	LS	Res. to BLB
139.	PR 116	2000	IRM	110	LS	Res. to BLB
140.	Sarala	2000	RSL	135	MS	-
141.	Sashi	2000	RSL	120	LS	Mod. Res. to BL, BLB, SB, BPH
142.	Somasila	2000	RUP	75	LS	Mod. Res. to BL
143.	Subramanya Bharathi	2000	IRM	110	MS	Mod. Res. to BL, GM
144.	Vivekdhan 62	2000	HRIR	90	SB	Res. to BL; Mod. Res. to SB, LF
145.	ADTRH 1	1999	IRE	90	LS	Mod. Res. to SB; Res. to GM
146.	CAUR-1	1999	RSL	113	MS	Res. to BL, BLB
147.	CORH 2	1999	IRME	99	LS	-
148.	CSR 13	1999	IRSA	95	LS	Res. to BL
149.	CSR 27	1999	IRSA	110	LB	Mod. Res. to BL, BLB, BS, WBPH, LF
150.	Pooja	1999	RSL	115	MS	Res. to BL
151.	ADT 43	1998	IRE	80	MS	Res. to GLH; Mod Res. to SM, GM, LF
152.	Gurjari	1998	IRME	91	LB	Res. to BL

(Continued)

Table 2. *(Continued)*

Sl No.	Variety/ hybrid	Year of release	Recommended niche	Salient features		Reaction to biotic and abiotic stresses and quality traits
				Days to 50% flowering	Grain type	
153.	Jyothi	1998	IRM	105	MB	Res. to BPH
154.	Konark	1998	IRM	101	MS	Mod. Res. to BL, BLB, BPH; Res. to GM
155.	Luit	1998	RUP	65	LB	Mod. Res. to BL, BLB; Res. to GM
156.	Narendra Sankar Dhan 2	1998	IRME	98	LS	Res. to BL, BLB, BS, GLH, BPH
157.	Ramachandi	1998	RSL	125	MB	Mod. Res. to BL, RTV, BPH, WBPH
158.	Remanica	1998	IRME	100	SB	-
159.	Sahyadri	1998	IRME	100	LS	-
160.	Sebati	1998	IRME	95	MS	Res. to BL, GM; Mod. Res. to BLB
161.	Uma	1998	IRME	100	MB	Res. to BPH, GM
162.	Vagad Dhan	1998	RUP	70	LB	Res. to BL; Mod. Res. to ShBl
163.	Gopinath	1997	RSL	115	—	-
164.	Nellore Mahsuri	1997	RSL	130	MS	Res. to BL, GM
165.	Pant Sankar Dhan 1	1997	IRM	105	LS	-
166.	Pusa 677	1997	IRE	84	LB	-
167.	Vasundhara	1997	RSL	130	LS	Mod. Res. to BL, RTV; Res. to GM
168.	CO(R)48	1996	IRE	85	MB	
169.	CORH 1	1996	IRM	105	MS	-
170.	KRH 2	1996	IRM	105	LS	Mod. Res. to BL, BS
171.	Taraori Basmati	1996	SCR	105	LS	Mod. Res. to SB; Res. to WBPH
172.	CNRH 3	1995	IRME	95	LS	-
173.	Gautam	1995	Boro	95	MS	Mod. Res. to BS
174.	Mahamaya	1995	IRM	101	LB	Mod. Res. to BL, BLB, BS, GM
175.	Poornima	1995	IRM	102	LB	-
176.	CARI Dhan 2	-	RSL	90	MS	Tol. to ShBl, LS, BB and waterlogging
177.	Pusa 834	1995	IRE	84	LB	Res. to BL, RTV; Mod. Res. to SB
178.	Vijetha	1995	IRM	110	MS	-
179.	Jayamati	1994	RSL	130	MS	Mod. Res. to BLB
180.	Jhelum	1994	HRIR	88	SB	-
181.	Mahi Sugandha	1994	SCR	100	LS	Mod. Res. to BL
182.	PKV HMT	1994	SCR	85	SB	Res. to BL; Mod. Res. to BLB, BS
183.	PKV Makarand	1994	IRM	110	LB	Res. to BL, GM; Mod. Res. to BLB, BS
184.	Ranbir Basmati	1994	SCR	95	LS	Mod. Res. to BPH; Res. to WBPH, GM
185.	RP 2421	1994	HRIR	95	MS	Res. to BL, BLB
186.	CO(R)49	1993	IRM	105	MS	Mod. Res. to BL GLH, BPH, GM
187.	Matta Triveni	1992	IRE	84	LB	Mod. Res. to BL, ShBl, BPH, GM
188.	TRC Borodhan 1	1991	Boro	110	SB	Res. to BL, BLB
189.	Lachit	1990	RSL	128	MB	Mod. Res. to BLB
190.	Pondaghat 1	1990	SCR	85	SS	Mod. Res. to BL, BLB
191.	Pratheeksha	1990	RSL	115	MS	Res. to BL, BLB, BS, WBPH, LF
192.	Savithri	1988	RUP	45	LB	Res. to BL
193.	Rajendra Mahsuri 1	1987	SDW	120	LS	Mod. Res. to BPH
194.	MGD 101	1986	IRM	105	LB	Res. to BL, GM; Mod. Res. to SB

(Continued)

Table 2. *(Concluded)*

Sl No.	Variety/ hybrid	Year of release	Recommended niche	Salient features		Reaction to biotic and abiotic stresses and quality traits
				Days to 50% flowering	Grain type	
195.	Narendra Jal Pushp	1986	IRE	75	SB	-
196.	Mugad Sugandha	1985	RSL	125	MB	-
197.	Paramakudi (R) 4	1983	IRM	105	LS	Mod. Res. to BL, BLB, SB, GM, LF
198.	NDR 2065	1980	IRM	105	LB	Mod. Res. to BLB
199.	Swetha	1980	RSL	135	LB	Mod. Res. to ShBl, SB, LF; Res. to BPH
200.	Swarna	1979	RSL	125	MS	Mod. Res. to BLB, ShBl
201.	Tholakari	1979	RSL	125	MS	Mod. Res. to BLB, ShBl
202.	Sarjoo 52	1978	RUP	70	SB	Res. to WBPH
203.	SYE 2001	1978	IRE	85	LS	-
204.	Kranthi	1976	IRE	84	SB	-
205.	Sharavathi	1972	IRE	90	MS	Res. to BL, BLB; Mod. Res. to SB
206.	Turant Dhan	1972	RSL	115	MS	-
207.	Vytilla 8	1972	IRE	85	LB	Res. to BL, GM; Mod. Res. to BPH
208.	Tella Hamsa	1971	IRE	84	LS	-
209.	Vallabh Basmati 22	1969	SDW	120	LB	-
210.	Ranjeet	1968	RSL	130	LS	Res. to BL, BPH
211.	Warangal Sannalu	1968	IRME	93	LS	-
212.	Shatabdi	1965	IRME	93	SB	-
213.	CARI Dhan 3	-	RSL	90	LS	Tol. to ShBl, SB, LS, BB and waterlogging
214.	CARI Dhan 4	-	IRSA	110	MB	Res. to ShBl, LS; Tol. to salt
215.	CARI Dhan 5	-	IRSA	120	MB	Tol. to ShBl, SB, LS, BB

Abbreviations: SB: Short Bold, MB: Medium Bold, LB: Long Bold, LS: Long Slender, MS: Medium Slender, SS: Short Slender; IRE: Irrigated Early, IRM: Irrigated Medium, IRME: Irrigated Medium Early, RUP: Rainfed Upland, RSL: Rainfed Shallow Lowland, SDW: Semi Deep Water, HRIR: Irrigated hills, IRSA : Irrigated Saline and Alkaline Soils, SCR: Scented, Res: Resistant; Mod Res.: Moderately Resistant, BL: Blast, BLB: Bacterial Leaf Blight, RTV: Rice Tungro Virus, ShBl: Sheath Blight, BS: Brown spot; GLH: Green Leaf Hopper, SB: Stem Borer, BPH: Brown Plant Hopper, WBPH: White Backed Plant Hopper, GM: Gall Midge, LF: Leaf Folder

Wheat

Table 3. Promising and popular wheat varieties

State	Situation	Varieties
Asom	TS-IR-high fertility	CBW 38, DBW 39, HD 2733, K 0307, HD 2824, Raj 4120
	LS-IR-medium fertility	DBW 14, HD 2985, HI 1563, NW 1014
	TS-RF-low fertility	HD 2888, MACS 6145
Bihar	TS-IR-high fertility	CBW 38, DBW 39, HD 2733, HD 2824, K 0307, Raj 4120
	LS-IR-medium fertility	DBW 14, HD 2985, HI 1563, NW 1014, NW 2036
	TS-RF-low fertility	HD 2888, MACS 6145
	Salinity-alkalinity condition	KRL 19, KRL 210, KRL 213
Chhattisgarh	TS-IR-high fertility	GW 273, GW 322, GW 366, HI 1544, MP 3288
	LS-IR-medium fertility	HD 2864, HD 2932, MP 1203, MP 4010
	TS-RF/RI-low fertility	HI 1500, HI 1531, MP 3288
Delhi	TS-IR-high fertility	DBW 17, DPW 621-50, HD 2967, PBW 550
	LS-IR-medium fertility	DBW 16, PBW 590, WH 1021, HD 3059
	TS-RF/RI-low fertility	HD 3043, PBW 396, PBW 644, WH 1080
	Salinity-alkalinity condition	KRL 19, KRL 210, KRL 213
Gujarat	TS-IR-high fertility	GW 273, GW 322, GW 366, HI 1544, HI 8498(d), MPO 1215(d), MP 3288
	LS-IR-medium fertility	HD 2864, HD 2932, MP 1203, MP 4010
	TS-RF/RI-low fertility	HI 1500, HI 1531, HI 8627(d), MP 3288
Haryana	TS-IR-high fertility	DBW 17, DPW 621-50, HD 2967, PBW 550, PDW 314(d), WHD 943(d), WH 1105
	LS-IR-medium fertility	DBW 16, PBW 590, WH 1021, HD 3059
	TS-RF/RI-low fertility	HD 3043, PBW 396, PBW 644, WH 1080
	Salinity-alkalinity condition	KRL 19, KRL 210, KRL 213
Himachal Pradesh	TS-IR/RF-high fertility	HS 507, VL 804, VL 907, HPW 349
	ES-RF-low fertility	HPW 251, VL 829
	LS-RI-medium fertility	HS 490, VL 892
	High altitude areas	HS 365, VL 832
Jammu and Kashmir	TS-IR/RF-high fertility	HS 507, VL 804, VL 907, HPW 349
	ES-RF-low fertility	HPW 251, VL 829
	LS-RI-medium fertility	HS 420, HS 490, VL 892
	High altitude areas	VL 832
Jharkhand	TS-IR-high fertility	CBW 38, DBW 39, HD 2733, HD 2824, K 0307, Raj 4120
	LS-IR-medium fertility	DBW 14, HD 2985, HI 1563, NW 1014
	TS-RF-low fertility	HD 2888, MACS 6145
Karnataka	TS-IR-high fertility	DDK 1025(dic), GW 322, HI 8663(d), MACS 2971(dic), MACS 6222, Raj 4037, UAS 428 (d)
	LS-IR-medium fertility	AKAW 4627, HD 2833, HD 2932, PBW 533, Raj 4083
	TS-RF/RI-low fertility	AKDW 2997-16(d), HD 2987, K 9644, NIAW 1415
	Salinity-alkalinity condition	KRL 19, KRL 210, KRL 213

(Continued)

Table 3. *(Concluded)*

State	Situation	Varieties
Madhya Pradesh	TS-IR-high fertility	GW 273, GW 322, GW 366, HI 1544, HI 8498(d), MP 3288, MPO 1215 (d), HI 8713(d)
	LS-IR-medium fertility	HD 2864, HD 2932, MP 1203, MP 4010
	TS-RF/RI-low fertility	HI 1500, HI 1531, HI 8627(d), MP 3288
Maharashtra	TS-IR-high fertility	AKAW 3722, DDK 1025(dic), GW 322, HI 8663(d), MACS 2971(dic), MACS 6222, Raj 4037, UAS 428(d)
	LS-IR-medium fertility	AKAW 4627, HD 2833, HD 2932, PBW 533, Raj 4083
	TS-RF/RI-low fertility	AKDW 2997-16(d), HD 2987, K 9644, NIAW 1415
Punjab	TS-IR-high fertility	DBW 17, DPW 621-50, HD 2967, PBW 550, PDW 314(d), WHD 943(d), WH 1105
	LS-IR-medium fertility	DBW 16, PBW 590, WH 1021, HD 3059
	TS-RF/RI-low fertility	HD 3043, PBW 396, PBW 527, PBW 644, WH 1080
	Salinity-alkalinity condition	KRL 19, KRL 210, KRL 213,
Rajasthan	TS-IR-high fertility	DBW 17, DPW 621-50, GW 273, GW 322, GW 366, HD 2967, HI 1544, HI 8498(d), MP 3288, MPO 1215(d), PBW 550, PDW 314(d), Raj 4079, WHD 943(d)
	LS-IR-medium fertility	DBW 16, HD 2864, HD 2932, MP 1203, MP 4010, PBW 590, WH 1021, HD 3059
	TS-RF/RI-low fertility	HD 3043, HI 1500, HI 1531, HI 8627(d), MP 3288, PBW 396, PBW 644, WH 1080
	Salinity-alkalinity condition	KRL 19, KRL 210, KRL 213
Uttar Pradesh	TS-IR-high fertility	CBW 38, DBW 17, DBW 39, DPW 621-50, HD 2733, HD 2824, HD 2967, K 0307, PBW 550, Raj 4120, WH 1105
	LS-IR-medium fertility	DBW 14, DBW 16, HD 2985, HI 1563, K 9423, NW 1014, NW 2036, PBW 590, WH 1021, HD 3059
	TS-RF/RI-low fertility	HD 2888, HD 3043, MACS 6145, PBW 396, PBW 644, WH 1080
	Salinity-alkalinity condition	KRL 19, KRL 210, KRL 213
Uttrakhand	TS-IR-high fertility	HS 507, UP 2628, VL 804, VL 907, WH 1105, DBW 17, DPW 621-50, HD 2967, PBW 550
	TS-RF-low fertility	HS 507, VL 804, VL 907, HPW 349, HD 3043, WH 1021
	ES-RF-low fertility	HPW 251, VL 829
	LS-RI-medium fertility	HS 420, HS 490, VL 892, WH 1021, HD 3059
	High altitude areas	HS 365, VL 832
West Bengal	TS-IR-high fertility	CBW 38, DBW 39, HD 2733, HD 2824, K 0307, Raj 4120
	LS-IR-medium fertility	DBW 14, HD 2985, HI 1563, NW 1014
	TS-RF-low fertility	HD 2888, MACS 6145
Tamil Nadu	TS-RI-medium fertility	HW 1085, HW 2044, HW 5216

Abbreviations: (d)=durum wheat, (dic)= dicoccum wheat, TS=timely sown, LS=late sown, ES=early sown, IR=irrigated, RF=rainfed, RI=restricted irrigation

Table 4. Important information on the wheat varieties

Sl No.	Variety/ hybrid	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
1.	HD 3059	2013	IR, LS	MEM, MBS	Res. to leaf, yellow rust
2.	HI 8713(d)	2013	IR, TS	MLM, SD, BS	Res. to rust
3.	HPW 349	2013	IR/RF, TS	LM	Tol. to drought; Res. to rusts
4.	HW 5216	2013	IR, TS	MEM, SD, MBS	Res. to rust
5.	WH 1105	2013	IR, TS	MLM, SD, MBS	Res. to rust
6.	AKAW 4627	2012	IR, LS	EM, SD, MBS	Tol. to drought
7.	KRL 210	2012	IR, TS	MLM, SD, BS	Tol. to salinity/alkalinity
8.	KRL 213	2012	IR, TS	MLM, SD, BS	Tol. to salinity/alkalinity
9.	PBW 644	2012	RF & RI, TS	MLM, SD, BS	Res. to stem rust, leaf rust
10.	UAS 428	2012	IR, TS	MLM, SD, BS	Res. to Karnal bunt
11.	DPW 621-50	2011	IR, TS	MLM, SD, MBS	Res. to leaf, yellow rust
12.	HD 2985	2011	IR, LS	MEM	Tol. to heat
13.	HD 2987	2011	RF & RI, TS	MLM	Tol. to drought
14.	HI 1544	2011	RF, LS	MLM, SD, BS	Tol. to drought
15.	HS 507	2011	RI, LS	MLM, SD	Res. to leaf blight, Karnal bunt, rust;
16.	MP 3288	2011	RI, TS	MLM	Good chapatti and bread quality
17.	NIAW 1415	2011	IR, TS	MLM, SD, MBS	Chapatti quality with >13% protein
18.	WH 1080	2011	RF & RI, TS	MLM, SD, MBS	Res. to rust; Tol. to drought
19.	WHD 943 (d)	2011	IR, TS	MLM, SD, BS	Good pasta quality
20.	DBW 39	2010	IR, TS	MLM, SD, BS	Res. to leaf rust, foot rot, flag smut
21.	HD 2967	2010	IR, TS	MLM, BS	Res. to rust
22.	MACS 6222	2010	IR, TS	MEM, SD, BS	Res. to leaf and yellow rust
23.	MPO 1215(d)	2010	IR, TS	MLM, SD,	Tol. to terminal heat; pasta quality
24.	PDW 314(d)	2010	IR, TS	MLM, SD,	Res. to Karnal bunt
25.	VL 907	2010	IR, TS	MLM,, SD, MBS	Rich in Fe, Cu, Zn element
26.	CBW 38	2009	IR, TS	MLM, MBS	Res. to rust
27.	HS 490	2009	RI, LS	MLM	Good biscuit quality
28.	MACS 2971(dic)	2009	IR, TS	MEM, SD, BS	Good chapatti quality, pasta, semolina
29.	MP 1203	2009	IR, LS	MEM, SD,	Tol. to terminal heat
30.	PBW 590	2009	IR,, LS	MEM, SD,	Res. to flag smut
31.	PBW 596	2009	IR, TS	MEM, SD	Res. to leaf rust
32.	Raj 4120	2009	IR, TS	MLM, BS	Heat tolerance; Res. to stem rust
33.	AKAW 3722	2008	RF, TS	MLM, SD, MBS	Res. to leaf, stem rust
34.	HD 2932	2008	IR, TS	MEM, SD, BS	Res. to leaf, stem rust; good chapatti and bread quality
35.	HI 1531	2008	RF, TS	MLM, SD, BS	Res. to stem, leaf rust; Tol. to drought
36.	HI 8627(d)	2008	IR, TS	MLM, SD, BS	Thermo-insensitive; pasta quality
37.	HPW 251	2008	RF, ES	LM, SD, BS	Good chapatti quality
38.	PBW 550	2008	IR, LS	MEM, SD, MBS	Good chapatti, bread quality
39.	VL 892	2008	RI, LS	MM, SD, MBS	Res. to leaf rust, yellow rust, loose smut, hill bunt
40.	WH 1021	2008	IR, LS	MEM, SD, MBS	Res. to leaf and yellow rust
41.	DBW 17	2007	IR, TS	MLM, SD, BS	Res. to rust
42.	GW 366	2007	IR, TS	MLM, SD, BS	Res. to leaf rust, stem rust
43.	HI 8498(d)	2007	IR, TS	MLM, SD, BS	Res. to leaf and stem rust; pasta quality

(Continued)

Table 4. *(Concluded)*

Sl No.	Variety/ hybrid	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
44.	K 0307	2007	IR, TS	MLM, SD, BS	Tol. to heat
45.	PBW 527	2007	RF, TS	MLM, SD, MBS	Res. to Karnal bunt; Tol. to drought
46.	Raj 4083	2007	IR, LS	MEM, SD, MBS	Tol. to terminal heat
47.	AKDW 2997-16(d)	2006	RF, TS	MLM, SD, MBS	Good pasta quality
48.	DBW 16	2006	IR, LS	MEM, SD, MBS	Tol. to terminal heat
49.	DDK 1025(dic)	2006	IR, TS	MLM, SD, MBS	CHO digestibility and more total dietary fibre
50.	HD 2833	2006	IR, TS	MLM, SD, BS	Tol. to terminal heat
51.	HD 2888	2006	RF, TS	MLM, SD, MBS	Res. to leaf and stem rust, leaf blight
52.	HI 1500	2006	IR, TS	MLM, SD, BS	Tol. to terminal heat
53.	HI 8663(d)	2006	IR, TS	MLM, SD, BS	Good pasta quality
54.	PBW 533	2006	IR, LS	MEM, SD, BS	Res. to leaf and stem rust
55.	HD 2864	2005	IR, LS	MEM, MT, MBS	Tol. to heat
56.	K 9423	2005	RF, TS	MLM, SD, MBS	Tol. to drought
57.	MACS 6145	2005	RF, TS	MLM, Tall, BS	Res. to loose smut; Tol. to drought
58.	HD 2824	2004	RF, TS	MLM, SD, BS	Res. to three rusts, loose smut
59.	Raj 4037	2004	IR, TS	MEM, SD, MBS	High protein
60.	VL 832	2004	IR, TS	LM, SD, BS	Res. to rust
61.	DBW 14	2003	IR, LS	MLM, SD, MBS	Res. to leaf blight, aphid; Tol. to terminal heat
62.	HS 420	2003	SS	LM, SD, MBS	Tol. to drought; Res. to rusts
63.	MP 4010	2003	IR, LS	MEM, SD, BS	Tol. to terminal heat
64.	NW 2036	2003	IR, LS	MEM, SD, MBS	Res. to Karnal bunt, loose smut, leaf blight
65.	VL 829	2003	ES, LF	LM, SD, MBS	Res. to leaf rust, yellow rust
66.	GW 322	2002	IR, TS	MLM, SD, BS	Tol. to heat; Res. to leaf and stem rust
67.	VL 804	2002	RF & RI, TS	LM, SD, MBS	Res. to leaf rust, yellow rust
68.	HD 2733	2001	IR, TS	MLM, SD, BS	Res. to leaf rust, leaf blight
69.	HD 3043	2000	RF & RI, TS	MLM, SD, BS	Tol. to drought; Res. to leaf and yellow rust
70.	HHW 2044	2000	IR, TS	MLM, Tall	Res. to rust
71.	K 9644	2000	IR, LS	MEM, SD, MBS	Res. to Karnal bunt
72.	KRL 19	2000	IR, TS	MLM, SD	Tol. to salinity/alkalinity
73.	PBW 396	2000	RF, TS	MLM, SD, MBS	Tol. to drought
74.	HI 1563	1999	IR, TS	MLM, SD, BS	Res. to leaf and stem rust
75.	GW 273	1998	IR, TS	MEM, SD, BS	Res. to multiple diseases
76.	HS 365	1998	RF, TS	MEM, SD, BS	Tol. to drought
77.	HW 1085	1998	IR, TS	MEM, SD, MBS	Res. to leaf, stem and yellow rust
78.	NW 1014	1998	IR, LS	MEM, SD, MBS	Res. to rust

Abbreviations: EM: Early Maturing; MM: Medium Maturing; LM: Late Maturing; MLM: Medium Late Maturing; MEM: Medium Early Maturing; SD: Semi Dwarf; BS: Bold Seed; MBS: Medium Bold Seed; MT: Medium Tall; (d):durum wheat, (dic): dicoccum wheat, TS:timely sown, LS:Late sown, ES:early sown, IR: irrigated, RF: rainfed, RI:restricted irrigation; LF: low fertility; SS: Summer sowing; Res.: Resistant, Tol. :Tolerant

Barley

Table 5. Promising and popular barley varieties

State	Agroclimatic conditions	Varieties
Punjab	Timely sown, irrigated	RD 2552, RD 2035, BH 902, BH 393
	Late sown, irrigated	RD 2508
	Timely sown, rainfed	RD 2508, RD 2624, RD 2660
	Salt affected soils	RD 2552, NDB 1173, RD 2794 (I)
	Malt Barley (Timely sown, irrigated)	DWRUB 52, RD 2668
	Malt Barley (Late sown, irrigated)	DWRB 73, DWRUB 64, DWRB 91
	Dual Purpose Barley (Feed, Forage)	RD 2035, RD 2552
Haryana	Timely sown, irrigated	RD 2552, RD 2035, BH 902, BH 393
	Late sown, irrigated	RD 2508
	Timely sown, rainfed	RD 2508, RD 2624, RD 2660
	Salt affected soils	RD 2552, NDB 1173, RD 2794 (I)
	Malt Barley (Timely sown, irrigated)	DWRUB 52, RD 2668
	Malt Barley (Late sown, irrigated)	DWRB 73, DWRUB 64, DWRB 91
	Dual Purpose Barley (Feed, Forage)	RD 2035, RD 2552
Rajasthan	Timely sown, irrigated	RD 2552, RD 2035, RD 2592, BH 902
	Late sown, irrigated	RD 2508
	Timely sown, rainfed	RD 2508, RD 2624, RD 2660
	Salt affected soils	RD 2552, NDB 1173, RD 2794 (I)
	Nematode (Molya) affected soils	RD 2035, RD 2052
	Malt Barley (Timely sown, irrigated)	DWRUB 52, RD 2668
	Malt Barley (Late sown, irrigated)	DWRB 73, DWRUB 64, DWRB 91
	Dual Purpose Barley (Feed, Forage)	RD 2035, RD 2552, RD 2715
Himachal Pradesh	Timely sown, rainfed	HBL 276, BHS 352, BHS 380, UPB 1008, VLB 118 (I)
	Dual Purpose Barley (Feed, Forage)	BHS 380
Jammu and Kashmir	Timely sown, rainfed	HBL 276, BHS 352, BHS 380, UPB 1008, VLB 118 (I)
	Dual Purpose Barley (Feed, Forage)	BHS 380
Uttar Pradesh (Western UP)	Timely sown, irrigated	RD 2552, RD 2035, BH 902, RD 2508
	Timely sown, rainfed	RD 2508, RD 2624, RD 2660
	Salt affected soils	RD 2552, NDB 1173, RD 2794 (I)
	Dual Purpose Barley (Feed, Forage)	RD 2035, RD 2552
Uttar Pradesh (Eastern UP)	Timely sown, irrigated	RD 2552, K 508, K 551
	Late sown, irrigated	RD 2508
	Timely sown, rainfed	RD 2508, K 560, K 603
	Salt affected soils	RD 2552, NDB 1173, NB 3, RD 2794 (I)
Uttarakhand (Tarai and Bhabhar plains)	Timely sown, irrigated	RD 2552, RD 2035, RD 2508, BH 902
	Timely sown, rainfed	RD 2508, RD 2624, RD 2660
Uttarakhand (Hilly areas)	Timely sown, rainfed	VLB 56, VLB 85, HBL 276, BHS 352, BHS 380, UPB 1008
	Dual Purpose Barley (Feed, Forage)	BHS 380
Madhya Pradesh	Timely sown, irrigated	JB 1, RD 2715, PL 751, RD 2786
	Timely sown, rainfed	JB 58
	Dual Purpose Barley (Feed, Forage)	RD 2715

Table 6. Important information on the barley varieties

Sl No.	Variety	Year of release	Recommended niche	Special features		Reaction to biotic and abiotic stresses and quality traits
				Maturity (days)	Others	
1	DWRB 91	2013	Irrigated, late sown	115	Malt barley, Two-row	Resistant to yellow rust
2	RD 2786	2013	Irrigated, timely sown	111	Feed barley, Six-row	-
3	DWRUB 64	2012	Irrigated, late sown	116	Malt barley, Six-row	Resistant to yellow rust
4	DWRB 73	2011	Irrigated, late sown	113	Malt barley, Two-row	Resistant to brown rust
5	UPB 1008	2011	Rainfed, timely sown	161	Feed barley, Two-row	-
6	BH 902	2010	Irrigated, timely sown	113	Feed barley, Six-row	Resistant to diseases
7	PUSA LOSAR	2010	Timely sown, rainfed	182	Dual Purpose, Six-row	-
8	JB 1	2008	Irrigated, timely sown	112	Feed barley, Six-row	-
9	RD 2715	2008	Irrigated, timely sown	118	Dual Purpose, Six-row	-
10	DWRUB 52	2007	Irrigated, timely sown	127	Malt barley, Two-row	Resistant to yellow rust
11	HBL 391	2007	Rainfed, timely sown	174	Feed barley, Two-row	-
12	PL 751	2007	Irrigated, timely sown	107	Feed barley, Six-row	-
13	RD 2668	2007	Irrigated, timely sown	124	Malt barley, Two-row	-
14	VLB 85	2007	Rainfed, timely sown	163	Organic cultivation	-
15	RD 2660	2006	Rainfed, timely sown	128	Feed barley, Six-row	-
16	JB 58	2005	Rainfed	111	Feed barley, Six-row	-
17	NDB 1173	2005	Irrigated, timely sown	120	Hulled barley	Tolerant to saline-alkaline soils; resistant to leaf blight
18	VLB 56	2005	Rainfed, timely sown	153	Organic cultivation	-
19	RD 2592	2004	Irrigated, timely sown	119	Feed barley, Six-row	-
20	RD 2624	2004	Rainfed, timely sown	126	Feed barley, Six-row	-
21	BHS 352 (Himadri)	2003	Timely sown, rainfed	173	Husk-less, Amber grain, Erect growth habit, Six-row	-
22	BH 393	2002	Irrigated, timely sown	120	Feed barley, Six-row	Tolerant to diseases
23	NB 3	2002	Irrigated timely /late sown	124	Feed barley, Six-row	-
24	K 603	2001	Rainfed, timely sown	123	Feed barley, Six-row	Resistant to rusts and blights
25	RD 2552	2000	Irrigated, timely sown	116	Feed barley	-
26	HBL 276	1999	Rainfed, timely sown	170	Husk-less barley for northern hills, amber grains, Six-row	
27	K 508	1998	Irrigated, timely sown	128	Feed barley, Six-row	
28	K 551	1998	Irrigated, timely sown	126	Malt barley, Six-row	Resistant to rusts and blights
29	K 560	1998	Rainfed, timely sown	119	Feed barley, Six-row	Resistant to rusts and blights
30	RD 2508	1997	Rainfed, timely sown	115	Feed barley and good bold grain, Six-row	Resistant to yellow rust but susceptible to leaf blights
31	RD 2035	1995	Irrigated, timely sown	130	Feed barley, Six-row	
32	HBL 113	1994	Rainfed, timely sown	175	Feed barley, Two-row	

Maize

Table 7. Promising and popular maize hybrids of different maturity groups

State	Extra- early maturity	Early maturity	Medium maturity	Late maturity
Andhra Pradesh	***Kharif:*** Vivek Maize Hybrid 9, Vivek Maize Hybrid 15, Vivek Maize Hybrid 17, Vivek Maize Hybrid 27, Pusa Extra Early Hybrid Makka 5, Vivek QPM 9	-	***Kharif:*** HM 8, HM10, DHM 119, DHM 111, DHM117, HM 4	***Kharif:*** DHM113, HQPM1, HQPM4, HQPM7, HQPM5 **Rabi:** HM10, HM11
Asom	-	-	***Kharif:*** HM 4	***Kharif:*** HQPM1, HQPM5
Bihar	***Kharif:*** Vivek Maize Hybrid 27	-	***Kharif:*** HM 9, HM 12, Malviya Hybrid Makka 2, HM 4,	***Kharif:*** HQPM1, HQPM4, HQPM5, Shaktiman 4, Shaktiman 3, Shaktiman 2 ***Rabi:*** HM 11
Chhattisgarh	***Kharif:*** Vivek Maize Hybrid 27	***Kharif:*** PMH 5	***Kharif:*** HM 4	***Kharif:*** HQPM1,HQPM4, HQPM5, Co6 ***Rabi:*** HM11
Delhi	***Kharif:*** Vivek Maize Hybrid17 , Vivek Maize Hybrid 21	***Kharif:*** PAU 352, Pusa Early Hybrid Makka 3, PMH 2	***Kharif:*** HM 4, HM 8, HM10, PMH 4	***Kharif:*** PMH 3, Buland, HQPM1, HQPM4, HQPM5 ***Rabi:*** PMH 3,HM 10, HM11, HM 8
Gujarat	***Kharif:*** Vivek Hybrid 4, Vivek Maize Hybrid 17	***Kharif:*** PMH5	***Kharif:*** HM 10, HM 4	***Kharif:*** HQPM1, HQPM4, HQPM5, Co6 ***Rabi:*** HM10,HM 11
Haryana	***Kharif:*** Vivek Maize Hybrid 17, Vivek Maize Hybrid 21, PMH 2, Pusa Extra Early Hybrid Makka 5	***Kharif:*** HHM 1,PAU 352, Pusa Early Hybrid Makka 3, JH 3459, PMH 2	***Kharif:*** HHM 2, HM 4, HM 5, HM 8, HM10, PMH4	***Kharif:*** PMH 3, Buland, HQPM1, HQPM4, HQPM5 ***Rabi:*** PMH 3, Buland, HM10, HM11, HHM2, HM8
Himachal Pradesh	***Kharif:*** Vivek Maize Hybrid 15, Vivek Maize Hybrid 21 Vivek 25, Pusa Extra Early Hybrid Makka 5, Vivek Maize Hybrid 39, Vivek Maize Hybrid 45, Vivek QPM 9	***Kharif:*** Vivek Maize Hybrid 39	***Kharif:*** HSC1, HM 4	***Kharif:*** HQPM1, HQPM5

(Continued)

Table 7. *(Continued)*

State	Extra- early maturity	Early maturity	Medium maturity	Late maturity
Jammu and Kashmir	***Kharif:*** Vivek Maize Hybrid 15, Vivek Maize Hybrid 21, Vivek Maize Hybrid 25 Vivek Maize Hybrid 33, Pusa Extra Early Hybrid Makka 5, Vivek Maize Hybrid 45, Vivek QPM 9	***Kharif:*** Vivek Maize Hybrid 33	***Kharif:*** HM 10, HM 4	***Kharif:*** HQPM1, HQPM5
Jharkhand	***Kharif:*** Vivek Maize Hybrid 27	-	***Kharif:*** HM 9, HM12, Malviya Hybrid Makka 2, HM4,	***Kharif:*** HQPM1, HQPM4, HQPM5 ***Rabi:*** HM 11
Karnataka	***Kharif:*** Vivek Maize Hybrid 9, Vivek Maize Hybrid 15, Vivek Maize Hybrid 21, Vivek Maize Hybrid 27, Pusa Extra Early Hybrid Makka 5, Vivek QPM 9	-	***Kharif:*** HM 8,HM 10, HM4, DHM119	***Kharif:*** NAH2049, DMH 2, HQPM1, HQPM4, HQPM7, HQPM5; ***Rabi:*** HM10, HM11 Late maturity
Madhya Pradesh	***Kharif:*** Vivek Hybrid 4, Vivek Maize Hybrid17	***Kharif:*** PMH 5	***Kharif:*** HM 10, HM 4	***Kharif:*** HQPM1,HQPM4, HQPM5, Co6 ***Rabi:*** HM 10, HM 11
Maharashtra	***Kharif:*** Vivek Mazie Hybrid 9, Vivek Maize Hybrid15, Vivek Maize Hybrid 17, Vivek Maize Hybrid 21, Vivek Maize Hybrid 27, Pusa Extra Early Hybrid Makka 5	-	***Kharif:*** HM 8, HM 10 HM4, DHM119	***Kharif:*** HQPM1,HQPM4, HQPM7, HQPM5, KMH 22168 ***Rabi:*** HM10, HM11
NEH Region	***Kharif:*** Vivek Maize Hybrid 21, Vivek Hybrid 5, Pusa Extra Early Hybrid Makka 5	-	***Kharif:*** HM 4	***Kharif:*** HQPM1, HQPM5
Odisha	***Kharif:*** Vivek Maize Hybrid 27	-	***Kharif:*** HM 9, Malviya Hybrid Makka 2, HM 4, HM 12	***Kharif:*** HQPM1, HQPM4, HQPM5 ***Rabi:*** HM 11
Punjab	***Kharif:*** Vivek Maize Hybrid 17,Vivek Maize Hybrid 21, Pusa Extra Early Hybrid Makka 5	***Kharif:*** PAU 352, Pusa Early Hybrid Makka 3, JH 3459, PMH 2	***Kharif:*** HM 4, HM 8, HM 10, PMH 4	***Kharif:*** PMH 3, PMH-1, Buland, HQPM1, HQPM4, HQPM5 ***Rabi:*** PMH 3, PMH-1, HM10, Buland, HM 11, HM 8, Sheetal

(Continued)

Table 7. *(Concluded)*

State	Extra- early maturity	Early maturity	Medium maturity	Late maturity
Rajasthan	***Kharif:*** Pratap Hybrid Makka 1, Vivek Hybrid 4, Vivek Maize Hybrid 17	***Kharif:*** PMH5	***Kharif:*** HM 10, HM 4	***Kharif:*** HQPM1, HQPM4, HQPM5,Co6 ***Rabi:*** HM 8, HM 10, HM 11
Tamil Nadu	***Kharif:*** Vivek Maize Hybrid 9, Vivek Maize Hybrid 15, Vivek Maize Hybrid 17, Vivek Maize Hybrid 21 Vivek Maize Hybrid 27, Pusa Extra Early Hybrid Makka 5, Vivek QPM 9	-	***Kharif:*** HM 8, HM 10, HM 4, DHM 119	***Kharif:*** COHM 5, HQPM1,HQPM4, HQPM7, HQPM5, Co6 ***Rabi:*** HM 10, HM 11
Uttar Pradesh	***Kharif:*** Vivek Hybrid 5, Vivek Maize Hybrid 15, Vivek Maize Hybrid 17, Vivek Maize Hybrid 21 , Vivek Maize Hybrid 27 PMH 2	***Kharif:*** JH 3459, Vivek Maize Hybrid 39, Vivek Maize Hybrid 43	***Kharif:*** HM 4, HM 8, HM 9,HM 10, PMH 4, Malviya Hybrid Makka 2, HM 12	***Kharif:*** PMH 3, Buland, HQPM1,HQPM4, HQPM5 ***Rabi:*** PMH 3, Buland, HM 8, HM 10, HM 11
Uttarakhand	***Kharif:*** Vivek Hybrid 5, Vivek Maize Hybrid 9, Vivek Maize Hyrid 21, Vivek Maize Hybrid 25 Pusa Extra Early Hybrid Makka 5, Vivek Maize Hybrid 39, Vivek Maize Hybrid 45, Vivek QPM 9	***Kharif:*** Vivek Maize Hybrid 33, Vivek Maize Hybrid 23, Vivek Maize Hybrid 43	***Kharif:*** HM 10,HSC1, HM 4	***Kharif:*** HQPM1, HQPM5
West Bengal	***Kharif:*** Vivek Maize Hybrid 27	-	***Kharif:*** Malviya Hybrid Makka 2, HM 4	***Kharif:*** HQPM1, HQPM5

Table 8. Important information on the maize hybrids

Sl No.	Hybrid	Year of release	Recommended niche	Salient features			Reaction to biotic and abiotic stresses and quality traits
				Maturity	Yield (q/ha)	Others	
1.	Vivek Maize Hybrid 45	2013	*Kharif*	Extra-early	54	Yellow, semi-flint	-
2.	HM 12	2012	*Kharif*	Medium	58	White, semi-dent	-
3.	Co 6	2012	*Kharif*	Late	60	Orange-yellow, semi-dent	-
4.	Vivek Maize Hybrid 39	2012	*Kharif*	Extra-early	71	Yellow, semi-flint	-
5.	Vivek Maize Hybrid 43	2012	*Kharif*	Extra-early	48	Yellow, semi-flint	-
6.	DHM 119	2011	*Kharif*	Medium	70	Yellow, flint, nutrient responsive	Res. to lodging
7.	PMH 4	2011	*Kharif*	Medium	83	Yellow-orange, flint, nutrient responsive	Res. to lodging
8.	PMH 5	2011	*Kharif*	Early	60	Orange, flint	-
9.	KMH 22168	2010	*Kharif*	Late	65	Yellow, flint	-
10.	DHM 111	2010	*Kharif*	Medium	65	Yellow, semi-dent, nutrient responsive, and stay green	Tol. to lodging
11.	DHM113	2010	*Kharif*	Late	66	Orange, semi-dent, nutrient responsive	Tol. to lodging
12.	DHM 117	2010	*Kharif*	Medium	75	Orange-yellow, flint, nutrient responsive, stay green	Tol. to lodging
13.	HQPM 4 (QPM)	2010	All seasons	Late	60	Yellow, semi-flint, nutrient responsive,	Res. to MLB, PSR
14.	HSC1 (sweet corn)	2010	*Kharif*	Medium	120	Light yellow, semi-dent, nutrient responsive	Res. to MLB
15.	HM 11	2009	*Rabi*	Late	55	Orange, flint, responsive to higher doses of fertilizers	-
16.	NAH 2049	2009	*Rabi*	Late	80	Yellow-orange, semi-dent,	Res. to lodging
17.	HM I0	2008	*Rabi*	Medium	72	Yellow, semi-flint, highly responsive to inputs	Res. to MLB
18.	PMH 3	2008	*Kharif*	Late	75	Orange, flint, highly responsive to inputs	-
19.	Vivek Maize Hybrid 33	2008	*Kharif*	Early	60	Yellow, dent	-
20.	HQPM 7 (QPM)	2008	All seasons	Late	72	Yellow, semi-flint,	Res. to MLB
21.	Vivek QPM 9 (QPM)	2008	*Kharif*	Extra-early	52-58	Yellow, dent, performed better at low N_2	-
22.	Vivek Maize Hybrid 23	2007	*Kharif*	Early	50	Yellow, flint, bold, tall	Mod. Tol. to TLB
23.	PAU 352	2007	*Kharif*	Early	60	Yellow, semi-flint	Res. to MLB, BSDM, ESR
24.	HM 8	2007	*Kharifl Rabi*	Medium	68	Orange, flint	

(Continued)

Table 8. *(Continued)*

Sl No.	Hybrid	Year of release	Recommended niche	Salient features			Reaction to biotic and abiotic stresses and quality traits
				Maturity	Yield (q/ha)	Others	
25.	HM 9	2007	*Kharif*	Medium	60	Orange, flint	
26.	Malviya Hybrid Makka 2	2007	*Kharif*	Medium	54	Yellow, semi-flint, responsive to higher doses of fertilizers	Res. to MLB
27.	COH(M) 5	2007	*Kharif*	Late	50	Yellow, semi-flint, responsive to high inputs, resistance to downy mildew	Mod. Res. to SB
28.	PMH I	2007	*Kharif*	Late	52	Yellow-orange, flint, stem is zig- zag	Res. to MLB, SR
29.	Vivek Maize Hybrid 21	2007	*Kharif*	Extra -early	50	Yellow, semi-flint, bold	Tol. to TLB
30.	Vivek Maize Hybrid 25	2007	*Kharif*		55	Yellow, semi-dent, bold	Tol.to TLB
31.	Vivek Maize Hybrid 27	2007	*Kharif*		55	Yellow, semi- dent	
32.	HQPM 5 (QPM)	2007	All seasons	Late	58	Orange, flint, responsive to higher doses of fertilizers	Res. to MLB, SB
33.	HQPM 1 (QPM)	2007	*Kharif*	Late	62	Yellow, dent, responsive to higher doses of fertilizers	Tol. to frost/ cold, Res. to MLB, CR
34.	PMH 2	2006	*Kharif*	Early	60	Yellow-orange, flint, short duration	Res. to MLB, BSDM, PSR
35.	Shaktiman 3 (QPM)	2006	All seasons	Late	60	Orange-yellow, semi-flint, tall	Tol. to MLB, LSM; 0.73% tryptophan in protein
36.	Shaktiman 4 (QPM)	2006	All seasons	Late	60	Yellow-orange, semi -flint	Res.to MLB, 0.93% tryptophan in protein
37.	Buland	2005	*Rabi*	Late	85	Yellow, flint	Res. to TLB, CR
38.	HM 5	2005	*Kharif*	Medium	72	White, dent, medium tall	Tol. to frost
39.	Vivek Maize Hybrid 15	2005	*Kharif*	Extra -early	50	Yellow, flint	Mod. Tol. to TLB
40.	Vivek Maize Hybrid 17	2005	*Kharif*	Extra- early	50	-	Mod. Tol. to TLB, MLB
41.	HM4 (baby corn)	2005	All seasons	Medium	30-40	Regular ovule arrangement, light yellow to cream colour	-
42.	Pusa Extra Early Hybrid 5	2004	*Kharif*	Extra -early	50	Yellow-orange, flint	Tol. to TLB, MLB, ESR
43.	Pratap Hybrid 1	2004	*Kharif*	Extra early	38	White, semi-flint	Mod.Res. to SB
44.	Sheetal	2004	*Rabi*	Late	-	Yellow-orange, flint	
45.	Shaktiman 2 (QPM)	2004	All seasons	Late	60	White, semi-flint, tall	Res.to MLB; 1.04% tryptophan in protein
46.	DMH 2	2002	*Kharif*	Late	50	Yellow, semi flint, tall	Res. to SDM;
47.	Vivek Maize Hybrid 9	2001	*Kharif*	Extra -early	50	Yellow, flint	Tol.to TLB, MLB

(Continued)

Table 8. *(Concluded)*

Sl No.	Hybrid	Year of release	Recommended niche	Salient features			Reaction to biotic and abiotic stresses and quality traits
				Maturity	Yield (q/ha)	Others	
48.	Vivek Hybrid 5	2001	*Kharif*	Extra -early	50	Yellow, semi flint	Tol. to leaf blight and SB
49.	Pusa Early Hybrid Makka 3	2001	*Kharif*	Early	55	Yellow, flint, bold	Tol. to high temperature
50.	JH 3459	2001	All seasons	Early	35-40	Orange, flint	-
51.	HHM I	2000	All seasons	Medium	60	Orange, flint	Res. to MLB, CR; Tol. to major insect pests, frost, cold
52.	HHM 2	2000	All seasons	Late	60	White, dent, responsive to fertilizers, tall	Resistance to MLB, CR; Tol. to major insect-pests

Abbreviations: Res.: Resistant; Tol.: Tolerant; Mod.: Moderately; MLB: Maydis Leaf Blight, BSDM: Brown Stripe Downy Mildew, PSR: *Pythium* Stalk Rots; SR: Stalk Rots; TLB: *Turcicum* Leaf Blight; CR: Common Rust; SDM: Sorghum Downy Mildew, SB: Stem Borer; ESR: *Erwinia* Stalk Rots

Sorghum

Table 9. Promising and popular sorghum varieties/hybrids

State	Season	Hybrid / Variety (Grain)
Andhra Pradesh	*Kharif*	**Hybrid :** CSH 23, CSH 16, CSH 25, CSH 27 **Variety :**CSV 15, CSV 17, CSV 20, CSV 27, PSV1, PSV2 **Sweet Sorghum:** CSV 19 SS, CSV 24SS, CSH 22SS
	Rabi	**Hybrid :** CSH 15, CSH 19 **Variety :**CSV 216 R, CSV 18 , *CSV 22,* CSV 26, CSV 29
Karnataka	*Kharif*	**Hybrid :** CSH 14, CSH 16, CSH 23, CSH 25 **Variety :**CSV 15, CSV 20, *DSV 3, DSV 1* **Sweet Sorghum:** CSV 19 SS, CSV 24SS, CSH 22SS
	Rabi	**Hybrid :** CSH 19, DSH 4R **Variety :**CSV 216 R, CSV 18 , CSV 22, CSV 26, CSV 29
Maharashtra	*Kharif*	**Hybrid :** CSH 14, CSH 16, CSH 23, CSH 25, Mahabeej 7 **Variety:** CSV 15, CSV 17, CSV 20, PKV 801, PKV 809 **Sweet Sorghum :** CSV 19 SS, CSV 24SS, CSH 22SS
	Rabi	**Hybrid :** CSH 19, CSH 15 **Variety :**CSV 22, CSV 18, CSV 14, CSV 26, CSV 29, Phule Anuradha, Phule Maulee, Phule Chitra, Phule Suchitra, Phule Vasudha, Phule Revati CSV 216 R -Phule Yashoda, PKV Kranti, Parbhani Moti
Tamil Nadu	*Kharif*	**Hybrid :** CSH 16, CSH 25, CSH 14, CSH 27 **Variety :** CSV 15, CSV 20, CSV 17, CSV 27, CO 28, CO 26
	Kharif	**Variety :** K 11
Madhya Pradesh	*Rabi*	**Hybrid :** CSH 16, CSH 23, CSH 25 **Variety :** CSV 15, CSV 20, JJ 938, JJ 1041 **Sweet Sorghum:** CSV 19 SS, CSV 24SS, CSH 22SS
Gujarat	*Kharif*	**Hybrid :** CSH 16, CSH 23, CSH 25, CSH 18 **Variety :** CSV 15, CSV 20, CSV 17, GJ 40, GJ 41
Rajasthan	*Kharif*	**Variety :** CSV 15, CSV 20, CSV 17, CSV 23, Pratap Jowar 1430
Uttar Pradesh	*Kharif*	**Hybrid :** CSH 16, CSH 23, CSH 25 **Variety :** CSV 15, CSV 20, CSV 17, Bundela **Sweet Sorghum:** CSV 19 SS, CSV 24SS, CSH 22SS

Table 10. Important information on the sorghum cultivars

Sl No.	Hybrid / variety	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
1.	CSH 27	2013	*Kharif*, medium maturity	Tan, cylindrical, semi-compact ear-head, white bold elliptical seed	Tol. to GM; Res. to lodging
2.	CSV 29	2013	*Rabi*	Tall, semi-compact, cylindrical ear-head, pearly white, lustrous seed	
3.	CSV 26	2012	Shallow soils, *Rabi*, medium maturity	Medium tall (183 cm), semi-compact ear-head, pearly white, lustrous seed	Tol. to CR, rust, DM, SF, SB, shoot Bug, SA, terminal drought
4.	Phule Suchitra	2012	*Rabi*, medium maturity	Grain yield: 2.4-2.8 tonnes/ha; fodder yield: 6.0-6.5 tonnes/ha	
5.	CSV 27	2011	*Kharif*	Dual purpose, yellow green colour midrib, Well exerted semi-compact panicle, grey-yellow seed	Res. to GM, non-lodging, non-shattering
6.	CSV 24 SS	2011	*Kharif*, medium maturity	Tall, yellow green midrib, very long and broad leaves, well exerted loose panicle; panicle broader in lower part, characterized by higher juice yield	-
7.	Phule Revati	2010	*Rabi*, irrigated, medium maturity	Grain yield: 4.0-4.5 tonnes/ha; fodder yield: 9.0-10.0 tonnes/ha	-
8.	CSH 25	2008	*Kharif*	Hybrid, tan, tall, white midrib, semi-compact ear- head, pearly white seed, medium almond shape	Tol. to GM, SF
9.	Phule Anuradha	2008	Shallow soils, early maturing	Plant height 160-170 cm. green mid-rib and semi-drooping leaf, thin juicy stem, oval shaped semi-compact panicle, round pearly white medium bold grain	Tol. to terminal moisture stress, SF, CR
10.	CSV 23	2007	*Kharif*, normal rainfall, medium maturity	Dual-purpose, tall (220) cm; grain yield: 2.2 tonnes/ha; dry fodder yield: 15.0 tonnes/ha	Tol. to SF, SB
11.	CSV 22	2007	*Rabi*	Drooping, green colour leaves with white midrib, semi-compact, cylindrical panicle	Tol. to CR
12.	Phule Vasudha	2007	*Rabi*, medium maturity	Grain yield: 3.0-3.5 tonnes/ha fodder yield: 7-7.5 tonnes/ha	-
13.	CSV 20	2006	*Kharif*	Dual purpose, tall, semi-compact panicle with dense clustering of grain in panicle branches, panicle shape oblong and pearly white bold seed	-

(Continued)

Table 10. *(Continued)*

Sl No	Hybrid / variety	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
14.	Phule Chitra	2006	*Rabi*, medium maturity	Grain yield: 2.0-2.5 tonnes/ha; fodder yield: 5.5-6.0 tonnes/ha	-
15.	PKV Kranti	2006	*Rabi*, medium maturity	Grain yield: 3.5 tonnes/ha; fodder yield: 8.5-9.0; tonnes/ha	-
16.	CSH 23 (Hybrid)	2005	*Kharif*, early maturity	Tan, tall (180 cm), dull green midrib, medium bold, white seed	Avoid terminal drought.
17.	Bundela	2005	*Kharif*	Medium maturity; Grain yield: 3.0-3.2 tonnes/ha	-
18.	CSV 18	2005	*Rabi*	Tall (227 cm), thin stem with non-senescence habit, dull midrib	Non lodging; Tol. to aphid
19.	CSV 19SS	2005	*Kharif*	Tan, purple coleoptiles, dull green midrib, pearly white medium seed, high green cane yield and juice yield	Tol. to SF
20.	CSH 22SS (Hybrid)	2005	*Kharif*	Yellowish green stem, has one visible long notch at bud initiation site. Good cane and juice yield	Mod. Tol. to SF.
21.	PVK 809	2004	*Kharif*	Tan, tall with thin and juicy stem. Semi loose oblong panicle with pearly white, medium almond shaped seed	Tol. to lodging and GM
22.	Parbhani Moti	2004	*Rabi*, medium maturity	Grain yield: 3.2 tonnes/ha; fodder yield: 6.1 tonnes/ha.	-
23.	K 11	2004	*Rabi*	Juicy and sweet stem, dull white midrib, ear-head erect, loose and semi open, pearly white seed	Res. to lodging, non-shattering; Tol. to DM, drought
24.	CSV 17	2002	*Kharif*, early maturing	Tan plant type with dark green leaves, white dull midrib, well exerted, cylindrical, semi compact panicle, creamy seed	Mod. Res. to SF, SB; Res. to rust, anthracnose, LSD, sugary disease, CR
25.	PSV 2	2002	*Kharif*	Tan, tall, awn-less, semi-compact panicle, lustrous, yellow white seed	-
26.	Pratap Jowar 1430	2002	*Kharif*	Tan, tall, dark green drooping leaves, long, cylindrical with flattened tip, semi-compact panicle, medium sub lenticular creamy seed	-
27.	CO 28	2001	*Kharif*	Tan, tall with long broad leaves with dull white midrib, semi-compact elliptical panicle, loose at top, white medium seed	Mod.Res. to GM

(Continued)

Table 10. *(Continued)*

Sl No	Hybrid / variety	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
28.	Mahabeej 7	2000	*Kharif*	Tan, tall, Leaf green, broad and drooping, long, semi-compact panicle with pointed apex, pearly, round, bold, lustrous seed	-
29.	CSH 19	2000	*Rabi*, medium maturity	Tall, non-tan, short peduncle, semi-compact ear-head, and pearly white medium bold seed	-
30.	DSH 4R	2000	*Rabi*	Non-tan, tall, cylindrical, semi-compact panicle with tapering tip. Grain cream coloured, round and bold	-
31.	CSV 216 R	2000	*Rabi*	Tall (240-270 cm), non-tan type with purple coleoptile pigmentation. Cylindrical semi-compact panicle, white mid-rib leaf. Pearly white medium bold grains	Tol. to SF, CR
32.	CSH 18	1999	*Kharif*	Tan, tall, broad green leaves and drooping with dull green midrib. Ear-head long, elliptical, semi-compact. Grain pearly white, medium bold and lustrous	-
33.	PVK 801	1999	*Kharif*	Tan, tall with dark green broad leaves with white midrib, semi-compact spindle shaped ear-head, whitish pearly bold almond shape seed	Tol. to GM, lodging
34.	GJ 41	1999	*Kharif*	Tan, grain medium, pearly white	Mod. Res. to GM, SF, SB
35.	Phule Maulee	1999	Shallow to medium soils	Plant height 160-180 cm, yellowish leaf midrib colour, semi-drooping leaf orientation, medium thick juicy stem, elliptical oval semi-compact panicle. Medium bold creamy colour grain	Tol. to terminal drought, SF, CR
36.	CSH 16	1997	*Kharif*	Medium tall, long loose panicle with open apex, medium bold seed	Highly Tol. to GM; Res. to LSD
37.	JJ 1041	1997	*Kharif*	Tan, tall, leaves green with dull green midrib, medium semi-compact panicle, initially fusiform in shape but open at the tip at maturity. Pearly white, medium bold and round lustrous seed	Mod. Res. to SF, SB

(Continued)

Table 10. *(Concluded)*

Sl No	Hybrid / variety	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
38.	CSV 15	1996	*Kharif*	Tall, dual purpose, sweet stalk, medium bold round seed, large ear-head, oblong shape, compact up to middle and open toward apex	Res. to LSD; Tol. to SF, SB
39.	PSV 1	1996	*Kharif*, medium maturity,	Tan, tall, semi compact and elliptic panicle, medium bold, round and pearly white seed	Mod. Res. to LSD, GM
40.	JJ 938	1996	*Kharif*, light and medium soils	bold pearly white grain	-
41.	CSH 15	1996	*Rabi*, medium maturity	Non tan, tall, large semi compact panicle, bold seed, thick peduncle, free threshing.	Tol. to SF, CR
42.	GJ 40	1995	*Kharif*	Tan, tall, spindle shaped, semi lax ear-head, pearly white round seed	Res. to LSD, SF, SB and GM
43.	DSV 3	1993	Midge endemic areas, medium maturing	Medium tall	Tol. to LSD, DM
44.	CSH 14	1992	*Kharif*, early maturing	Medium tall, semi loose panicle, bold seed	Tol. to GM, LSD
45.	CSV 14	1992	*Rabi*	Non-tan, tall with broad leaves, elliptical semi lax panicle, white pearly, round bold seed, panicle shape slightly elongated.	Res. to SF, CR
46.	DSV 1	1990	*Kharif*	Tan, medium tall, semi erect leaves, awn less with round, medium grain	Tol. to GM, SF, SB
47.	CO 26	1986	*Kharif*, medium maturity	Tan, tall, , semi compact and elliptic panicle, medium bold, round and pearly white seed	-

Abbreviations: Mod.: Moderately; Res.: Resistant; Tol.: Tolerant; SF: Shoot Fly; CR: Charcoal Rot; DM: Downy Mildew; LSD: Leaf Spot Disease, GM: Grain Mould, SB: Stem Borer

Millets

Pearl millet

Table 11. Promising and popular pearl millet hybrids/varieties

State	Hybrids and varieties
	HYBRIDS
Rajasthan	***Kharif:*** **Early:** RHB 177, GHB 538, HHB 67 Improved, HHB 226, HHB 216; **Medium:** RHB 173, RHB 121, GHB 558, GHB 744, Pusa 605, Pusa 415, Pusa 322, ICMH 356 ; **Late:** GHB 732 **Summer:** GHB 558
Haryana	***Kharif:*** **Early:** HHB 67 Improved, HHB 226, HHB 216; **Medium:** HHB 197, HHB 223, HHB 94 **Late:** HHB 146
Gujarat	***Kharif:*** **Early:** GHB 538, GHB 719; **Medium:** GHB 744, GHB 558, Pusa 605, Pusa 415, Pusa 322 **Late:** GHB 732 **Summer:** GHB 558,GHB 538
Madhya Pradesh	***Kharif:*** **Medium:** RHB 121, RHB 173, GHB 558, GHB 744, ICMH 356; **Late:** GHB 732
Uttar Pradesh	***Kharif:*** **Medium:** RHB 121, RHB 173, GHB 558, GHB 744, ICMH 356; **Late:** GHB 732 **Summer:** GHB 558
Delhi	***Kharif:*** Pusa 605, Pusa 415, Pusa 322, Pusa 23
Maharashtra	***Kharif:*** **Medium:** Shradha, RHRBH 9808, PKV-Raj(BBH 3); **Late:** Saburi **Summer:** GHB 558
Andhra Pradesh	***Kharif:*** **Medium:** GHB 558, ICMH 356 **Summer:** GHB 558
Tamil Nadu	***Kharif:*** **Medium:** Co 9 **Summer:** GHB 558
Karnataka	***Kharif:*** **Medium:** GHB 558; **Late:** Saburi
	VARIETIES
Rajasthan	***Kharif:*** Raj 171, JBV 2, ICMV 221, Pusa Composite 383, Pusa Composite 334, Pusa Composite 443, CZP 9802, MBC 2
Haryana	***Kharif:*** HC 20, HC 10
Gujarat	***Kharif:*** Raj 171, JBV 2, Pusa Composite 383, Pusa Composite 334, ICMV 221
Madhya Pradesh	***Kharif:*** JBV 2, JBV 3, Pusa Composite 334, JBV 4
Uttar Pradesh	***Kharif:*** JBV 2, Raj 171, Pusa Composite 383, Pusa Composite 334, ICMV 221
Punjab	***Kharif:*** PCB 164
Delhi	***Kharif:*** Pusa Composite 383, Pusa Composite 334, JBV 2, Raj 171, ICMV 221
Maharashtra	***Kharif:*** ICTP 8203, ICMV 221, AIMP 92901, ICMV 155, Raj 171, ABPC 4-3, Pusa Composite 612, PPC 6
Andhra Pradesh	***Kharif:*** ICTP 8203, ICMV 221, ICMV 155, Raj 171, Pusa Composite 612, AIMP 92901
Tamil Nadu	***Kharif:*** CoCu 9, ICMV 221, ICMV 155, Pusa Composite 612
Karnataka	***Kharif:*** ICTP 8203, ICMV 221, Pusa Composite 612

Table 12. Important information on the pearl millet hybrids/varieties

Sl No.	Varieties/ hybrids	Year of release	Recommended niche	Salient features				Reaction to biotic and abiotic stresses and quality traits
				Maturity (days)	Yield (q/ha)		Other features	
					Grain	Fodder		
1.	PKV-Raj (BBH 3)	2012	*Kharif*	84	28.1	50	Medium height, conical, compact, bristled ear-heads, grey coloured seed	-
2.	CO 9	2012	*Kharif*	78	27.0	98	Medium height, candle, compact ear-heads, greyish yellow seed colour	-
3.	ABPC 4-3 (MP 484)	2012	*Kharif*	85	27.0	56	Medium height, lanceolate ear-heads, globular, grey seeds	
4.	HHB 226 (MH 1479)	2011	*Kharif*	75	20.8	45	Medium height, dark green leaves, candle shaped, bristled ear-heads	Res. to DM
5.	RHB 177 (MH 1486)	2011	*Kharif*	74	20.5	43	Medium height, cylindrical bristled ear-heads	Res.to DM
6.	RHB 173 (MH 1446)	2011	*Kharif*	79	30.7	78	Medium to tall height, compact cylindrical ear-heads, light yellow anthers	Res. to DM
7.	Mandor Bajra Composite 2	2011	*Kharif*	77	14.8	42	Medium height, medium long, semi-compact cylindrical ear-heads, obvate grey coloured seed	
8.	Pusa Composite 612	2011	*Kharif*	84	26.0	51	Medium to tall height, compact cylindrical ear-heads	
9.	RHRBH 9808	2010	*Kharif*	80	30.1	52	Medium plant height, dark green leaves, cylindrical ear-heads, yellow anthers	
10.	HHB 223 (MH 1468)	2010	*Kharif*	77	26.9	75	Conical ear-heads with long purple bristles	Res. to DM; Tol. to drought
11.	HHB 216 (MH 1421)	2010	*Kharif*	76	23.0	53	Candle shaped medium long ear-heads with brownish long bristles	Res. to DM
12.	Pusa Composite 443	2009	*Kharif*	76	16.9	45	Medium height, rod-shaped ear-heads with bold grain	
13.	HHB 197	2008	*Kharif*	76	29.6	70	Medium height, dark green leaves, cylindrical medium ear-heads with long bristles	Highly Res. to DM
14.	GHB 732	2008	*Kharif*	81	30.0	77	Medium height, compact lanceolate ear-heads, purple anthers, globular grey brown bold grains	-

(Continued)

Table 12. *(Continued)*

Sl No.	Varieties/ hybrids	Year of release	Recommended niche	Salient features				Reaction to biotic and abiotic stresses and quality traits
				Maturity (days)	Yield (q/ha)		Other features	
					Grain	Fodder		
15.	GHB 744	2008	*Kharif*	80	28.0	71	Medium height, medium thick stem with basal pigmentation, compact, cylindrical shaped ear-heads with yellow anthers, globular grey brown grains	-
16.	GHB 719	2007	*Kharif*	75	24.0	54	Fully exerted conical shaped, compact and bristled ear-heads, globular, medium in size, grey coloured grains	Tol. to drought.
17.	PCB 164	2007	*Kharif*	78	24.4	74	Dual purpose variety with broad leaves, thick stalks, cylindrical ear-heads	-
18.	JBV 4 (MP 403)	2007	*Kharif*	76	24.3	69	Medium height, thick stemmed, many leaved, slate grey seeds	-
19.	PPC 6 (Parbhani Sampada)	2005	*Kharif*	77	25.2	58	Medium height, light pink nodes, bold grains, bred from 8 inbred lines	-
20.	CoCu 9	2005	*Kharif*	83	23.5	60	Tall, semi-compact to compact, candle/ cylindrical shaped ear-heads, grey grains with yellow base	-
21.	GHB 538	2005	*Kharif*, summer	76	24.5	42	-	Tol. to moisture stresses; Res. to DM, lodging
22.	HHB 67 Improved	2005	*Kharif*	70	20.2	45	The first commercial cultivar developed using marker-assisted selection in India	Tol. to moisture stresses; Res. to DM
23.	HHB 146	2003	*Kharif*	79	28.9	74	Tall, violet nodes, hairy leaf sheath, long well- filled compact ear-heads, obovate grey grains, slow senescence	-
24.	GHB 558	2003	*Kharif*, Summer	81	30.1	81	Medium height, broad leaves, long, thick, compact, candle shaped ear-heads, yellow anthers, obovate dark grey bold grains	-
25.	CZP 9802	2003	*Kharif*	76	13.0	33	Medium height, good tillering, thin stem, narrow leaves, thin candle-shaped ear-heads, yellowish grains of medium size, drought tolerant, very high good quality stover	-

(Continued)

Table 12. *(Continued)*

Sl No.	Varieties/ hybrids	Year of release	Recommended niche	Salient features				Reaction to biotic and abiotic stresses and quality traits
				Maturity (days)	Yield (q/ha)		Other features	
					Grain	Fodder		
26.	HC 20	2002	*Kharif*	80	22.4	61	Tall, compact, thick cylindrical ear-heads, yellow anthers, obovate grey grains	-
27.	RHB 121	2001	*Kharif*	75	27.3	68	Medium height, compact, thick conical ear-heads, yellow anthers, long purple bristles, globular grey brown grains	-
28.	JBV 3 (GICKV 96752)	2001	*Kharif*	80	23.6	72	Tall, long, compact, cylindrical ear-heads, yellow anthers, obovate grey grains	-
29.	Pusa Composite 383	2001	*Kharif*	77	21.7	57	Tall, thick stems and panicles	Res. to lodging, DM
30.	AIMP 92901 (Samrudhi)	2001	*Kharif*	84	18.6	37	Medium height, cylindrical compact ear-heads, slightly tapering towards tip, bold deep grey grains	-
31.	HHB 94	2000	*Kharif*	73	32.5	61	Medium height, synchronous tillering, semi- compact cylindrical ear-heads, yellow anthers, obovate grey grains	-
32.	HC 10	2000	*Kharif*	79	22.3	79	Tall, medium thick semi-compact ear-heads, purple anthers, obovate grey brown grains	-
33.	Pusa 605	1999	*Kharif*	77	22.5	49	Medium height, compact cylindrical ear-heads, yellow anthers, obovate grey grains	-
34.	Pusa 415	1999	*Kharif*	78	22.7	55	Medium height, compact, thick lanceolate ear-heads, yellow anthers, obovate yellow brown grains	-
35.	JBV-2	1999	*Kharif*	80	18.4	48	Tall, compact, cylindrical ear-heads, yellow anthers, obovate brown grains	-
36.	Pusa Composite 334	1999	*Kharif*	78	21.7	53	Tall, thick semi-compact cylindrical ear-heads, obovate grey brown grains	-
37.	RHRBH 8924 (Saburi)	1997	*Kharif*	77	30.0	42	Medium height, thick, semi-compact lanceolate ear-heads, yellow anthers, brown bristles, obovate deep grey grains	-

(Continued)

Table 12. *(Concluded)*

Sl No.	Varieties/ hybrids	Year of release	Recommended niche	Salient features				Reaction to biotic and abiotic stresses and quality traits
				Maturity (days)	Yield (q/ha)		Other features	
					Grain	Fodder		
38.	RHRBH 8609 (Shardha)	1994	*Kharif*	82	26.9	53	Medium height, semi-compact, candle ear-heads, yellow anthers, purple bristles, globular deep grey grains	-
39.	Pusa 322 (MH 322)	1993	*Kharif*	82	24.5	57	Medium height, thick, cylindrical semi-compact ear-heads with sterile tip, globular grey brown grains	
40.	ICMH 356	1993	*Kharif*	78	24.5	43	Medium height, semi-compact, thick conical ear-heads, yellow anthers, obovate bold yellow brown grains	-
41.	ICMV 221	1993	*Kharif*	75	20.8	41	Medium height, thick lanceolate, semi-compact ear-heads, purple anthers, globular dark grey grains	-
42.	Raj 171	1992	*Kharif*	83	19.3	64	Tall, medium thick stem, long cylindrical semi-compact to compact ear-heads, obovate grey brown grains,	Res. to DM
43.	ICMV 155	1991	*Kharif*	84	20.9	68	Tall, thick semi-compact to compact cylindrical ear-heads, yellow anthers, obovate, grey grains	-
44.	ICTP 8203	1988	*Kharif*	83	16.1	46	Medium height, semi-compact to compact lanceolate ear-heads, variable glume and anther colour, bold globular shiny grey grains	-
45.	Pusa 23	1987	*Kharif*	82	23.1	50	Medium height, glabrous leaves, yellow anthers, compact cylindrical ear-heads, light grey, obovate grains	-

Abbreviations: Res.: Resistant; DM: Downy Mildew

Fingermillet

Table 13. Promising and popular fingermillet varieties

State	Varieties
Andhra Pradesh	VR 847 (Srichaitanya), PR 202 (Godavari), VR 708, Hima (VRW 936), Bharathi (VR 762)
Bihar	RAU 8, RAU 3, A 404, VL 149
Chhattisgarh	GPU 28, PR 202, VR 708 ,VL 149, Indira Ragi 1, GPU-67, BM 9-1
Gujarat	GN 4, GN 5, GPU 45, OEB 10,
Jharkhand	A 404, Birsa Marua 2, GPU 67
Karnataka	GPU 28, GPU 48,GPU 67 ,ML 365,GPU 45,GPU 66, MR 1, MR 6, Indaf 7, Indaf 9
Maharashtra	Dapoli 1, Phule Nachani, GPU 67, Sapthagiri (PR 2614), GPU 45, VL 149
Madhya Pradesh	VL 149, PR 202, RAU 8, GPU 45, OEB 10, GPU 45
Odisha	Chilika (OEB 10), Bhairabhi, Shubra (OUAT 2), Sapthagiri (PR 2614), VR 708, VL 149
Tamil Nadu	GPU 28, CO 13 and TNAU 946 (CO 14), CO 9, CO 12, Paiyur 1, Try 1
Uttarakhand	PRM 1, VL 315, VL 324, VL 149, VL 347, GPU-67
Uttar Pradesh	PES 400, VL 124, VR 708, VL 146

Table 14. Important information on the fingermillet varieties

Sl No.	Variety	Year of release	Salient features			Reaction to biotic and abiotic stresses and quality traits
			Days to maturity	Yield (q/ha)	Other features	
1.	VRW 936 (Hima)	2012	105-110	25-30	-	Mod. Res to blast
2.	Pule nachani	2011	115-120	24-26	Sub montane	Mod. Res to blast
3.	VR 847 (Srichaitanya)	2009	110-115	26-28	Purple pigmentation at nodes	Mod. Res to blast
4.	GPU 66	2009	110-115	30-35	Good fodder	Mod. Res to blast
5.	GPU 67	2009	115-120	30-35	Dwarf, purple, suitable for mechanical harvesting	Non-lodging
6.	VR 762 (Bharathi)	2006	110-115	26-30	-	Mod. Res. to blast
7.	PRM 1	2006	110-115	20-25	Hills	Res. to blast
8.	GPU 48	2005	100-105	28-30	Early variety	Res. to blast
9.	CO 14	2004	105-110	27-29	-	Res. to NB, FB
10.	MR 6	2004	120-125	35-40	Early	Mod. Res. to blast
11.	VL 315	2004	110-115	25-27	-	Res. to NB
12.	Chilaka (OEB 10)	2001	120-125	26-27	-	Mod. Res. to blast, SB
13.	GPU 45	2001	90-100	27-29	Good fodder quality, early	Res. to NB, FB
14.	BM 9 -1 (Bhairabi)	1999	110-115	25-30	-	Mod. Res. to blast
15.	OUAT 2 (Subra)	1999	110-115	25-30	White grained variety	Mod. Res. to blast
16.	VR 708	1998	95-100	20-25	Early	Mod. Res. to terminal drought
17.	GPU 28	1996	110-115	35-40	-	Res. to NB, FB, lodging
18.	Dapoli	1994	100-110	15-20	White grained	
19.	A 404	1993	110-115	22-25	Ear-head with top incurved	Tol. to drought; non-lodging
20.	VL 149	1991	90-100	20-25	Purple plant with open fingers, early	
21.	MR 1	1990	120-125	35-40	Early	Mod. Res. to blast
22.	Sapthagiri (PR 2614)	1990	105-110	20-25	-	Res. to blast and drought
23.	Trg 1	1989	110-115	30-35	-	Tol. to sodic soils (> 8.5 pH)
24.	CO 13	1989	110-115	25-30	Purple plant	Mod. Res. to blast
25.	RAU 8	1989	105-110	22-25		Tol. to drought
26.	PES 400	1989	98-102	18-20	Early maturity	
27.	VL 122	1989	95-100	20-25	Early maturity	
28.	Indaf 9	1985	95-105	25-30	-	Mod. Res. to blast
29.	CO 12	1985	115-120	30-35	-	Mod. Res. to blast
30.	Paiyur 1	1985	100-105	20-25	Good grain quality with medium tall plant, stay green	-
31.	Indaf 7	1981	120-125	35-40	coxcomb	Res. to blast
32.	PR 202 (Godavari)	1976	110-115	25-30	Early, stay green	-
33.	CO 9	1970	100-105	25-30	Dwarf variety (75-80 cm) incurved fingers, white seeded	Mod. Res. to blast

Abbreviations: Mod.: Moderately; Res.: Resistant; FB: Finger Blast; NB: Neck Blast, SB: Stem Borer

Foxtail millet

Table 15. Promising and popular foxtail millet varieties

State	Varieties
Andhra Pradesh	SiA 326 (Prasad), SiA 2644 (Srilakshmi), SiA 2622 (Narasimharaya), SiA 2593 (Krishnadevaraya)
Bihar	SiA 326, PS 4
Chhattisgarh	SiA 326, PS 4
Jharkhand	SiA 326, PS 4
Karnataka	SiA 326, PS 4
Maharashtra	SiA 326, PS 4
Madhya Pradesh	SiA 326, PS 4
Rajasthan	Prathap Kangani (SR 1), SR 51, SR 11, SR 16
Tamil Nadu	TNAU 196, TNAU 43, TNAU 186
Uttarakhand	PS 4, PRK 1
Uttar Pradesh	PRK 1, PS 4

Table 16. Important information on the foxtail millet varieties

Sl No.	Variety	Year of release	Salient features			Reaction to biotic and abiotic stresses and quality traits
			Days to maturity	Yield (q/ha)	Other features	
1.	SiA 3088 (Suryanandi)	2012	76-82	20-25	Cylindrical shaped panicle with pigments	Res. to blast, DM and drought
2.	TNAU 196	2005	80-90	18-20	Bold green with 13.62% protein	-
3.	Pratap Kangni	2003	65-70	18-20	Early maturity	Res. to DM
4.	SR 51	2003	75-80	18-20	Bold seeded variety	-
5.	SiA 2644 (Srilakshmi)	2002	75-80	20-22	High seed yield	-
6.	SR 16	2001	75-80	15-17	Stay green	Res. to DM
7.	PRK 1	2000	75-80	19-20	Purple plant with compact panicle, high seed yield	-
8.	PS 4	1998	80-85	18-20	Wider adoptability, tillering	-
9.	TNAU 43	1996	80-85	15-16	-	Res. to LB; Tol. to drought
10.	SR 11	1995	75-80	15-16	Dual purpose	-
11.	SiA 2622 (Narasimharaya)	1994	85-90	20-22	High seed yield	-
12.	SiA 2593 (Krishnadevaraya)	1993	85-96	20-22	High seed yield	-
13.	SiA 326 (Prasad)	1985	75-80	18-20	Green plant with dense filling	Mod. Res. to DM

Abbreviations: Mod.: Moderately; Res.: Resistant; DM: Downy Mildew; LB: Leaf Blast

Kodo millet

Table 17. Promising and popular kodo millet varieties

State	Varieties
Chhattisgarh	RBK 155, JK 439, Indira Kodo 1, JK 41
Gujarat	GK-2, DPS 48
Karnataka	GPUK 3, RBK 155
Maharashtra	GPUK 3
Madhya Pradesh	JK 439, RBK 155, JK 13, JK 65
Tamil Nadu	KMV 20 (Vamban), GPUK 3, APK 1

Table 18. Important information on the kodo millet varieties

Sl No.	Variety	Year of release	Salient features			Reaction to biotic and abiotic stresses and quality traits
			Days to maturity	Yield (q/ha)	Other features	
1.	Indira Kodo 1	2012	103-110	20-25	Late sowing	Tol. to drought, non-lodging
2.	JK 65	2009	105-110	23-30	Dwarf with decumbent growth habit	Res. to HS and SF
3.	JK 13	2007	95-100	22-30	-	Res. to HS and SF
4.	JK 439	2004	100-110	22-23	Shallow soils	
5.	JK 48	2001	98-100	20-24	-	Res. to HS and SF; Tol. to drought
6.	RBK 155	2000	100-115	18-20		Res. to HS and SF
7.	KMV 20	1995	90-100	17-20	Dwarf	Res. to HS; Tol. to drought
8.	APK 1	1993	100-110	18-20	-	Res. to DM, ergot, SB
9.	GPUK 3	1991	100-105	18-20	Wide adoptability	Res. to HS
10.	JK 41	1986	105-108	20-22	High tillering with two regular rows of spikelets	Res. to HS and SF

Abbreviations: Tol.: Tolerant; Res.: Resistant; SB: Stem Borer; HS: Head Smut; SF: Shoot Fly

Little millet

Table 19. Promising and popular little millet varieties

State	Varieties
Andhra Pradesh	OLM 36, TNAU 63
Bihar	BG 1, PRC 3, OLM 203
Chhattisgarh	JK 8
Gujarat	GV 2
Jharkhand	PRC 3, BG 1, OLM 203, TNAU 63
Karnataka	OLM 203, JK 8
Maharashtra	PRC 3
Madhya Pradesh	JK 8 and JK 36; OLM 203
Odisha	OLM 203 (Tarini), BG 1, OLM 36, OLM 20, TANU 63
Tamil Nadu	Paiyur 2, TNAU 63, CO 3, CO 4

Table 20. Important information on the little millet varieties

Sl No.	Variety	Year of release	Salient features			Reaction to biotic and abiotic stresses and quality traits
			Days to maturity	Yield (q/ha)	Other features	
1.	JK 36	2009	75-80	10-12	-	Res. to SF
2.	CO 4	2005	75-80	16-20	-	Non-lodging
3.	OLM 20	2003	75-80	11-12	-	Tol. to drought
4.	OLM 203	2001	105-110	18-20	-	Res. to GS
5.	Paiyur 2	2000	75-80	9-10	Early	-
6.	TNAU 63	1997	75-80	10-12	Bold grain	-
7.	CO 3	1996	80-85	10-12		Tol. to drought
8.	BG 1	1993	55-60	7-8	Early	-
9.	JK 8	1987	80-85	10-12	-	Mod. Res. to SF
10.	PRC 3	1985	80-95	7-8	-	Res. to SF
11.	GV 2	1980	90-100	15-16	Panicle typically blunted at tip	-

Abbreviations: Mod.: Moderately; Res.: Resistant; Tol.: Tolerant; GS: Grain Smut; SF: Shoot Fly

Proso millet

Table 21. Promising and popular proso millet varieties

State	Varieties
Bihar	BR 7
Jharkhand	BR 7
Karnataka	GPUP 8 , GPUP 21
Tamil Nadu	TNAU 151, TNAU 145, CO (PV) 5, GPUP 21, K2
Uttarakhand	PRC 1, K 1

Table 22. Important information on the proso millet varieties

Sl No.	Variety	Year of release	Salient features			Reaction to biotic and abiotic stresses and quality traits
			Days to maturity	Yield (q/ha)	Other features	
1.	TNAU 151	2008	70-75	18-20	Profuse tillering	Mod. Res. to SF
2.	PRC 1	2008	70-75	18-23	-	Res. to HLB
3.	TNAU 145	2007	70-75	18-20	Dwarf	Non-lodging
4.	CO 5 (143)	2007	70-75	18-23	Profuse tillering	Mod. Res. to SF
5.	GPUP 21	2003	65-75	15-16	-	Mod. Res. to SF
6.	GPU 8	1999	85-90	25-26	-	Mod. Res. to SF
7.	BR 7	1982	-	20-25	-	Mod. Res. to SF
8.	K 1	1982	75-85	9-10	Dwarf, open and loose panicle	-
9.	K 2	1982	-	10-11	Dwarf, open and loose panicle, cooking quality	-

Abbreviations: Mod.: Moderately; Res.: Resistant, HLB: *Heliminthosporium* Leaf Blight

Barnyard millet

Table 23. Promising and popular barnyard millet varieties

State	Varieties
Bihar	RAU 2, RAU 3, RAU 9 VL 29, VL 181
Jharkhand	RAU 2, RAU 3, BL 29
Madhya Pradesh	VL 29, VL 172, VL 181
Tamil Nadu	CO 1, CO 2, K2, VL 181
Uttarakhand	VL 172, VL 207 PRJ 1, VL 21
Uttar Pradesh	VL 172, VL 207

Table 24. Important information on the barnyard millet varieties

Sl No.	Variety	Year of release	Salient features			Reaction to biotic and abiotic stresses and quality traits
			Days to maturity	Yield (q/ha)	Other features	
1.	VL 207	2008	85-90	16-17	-	Non-lodging
2.	PRJ 1	2003	118-120	23-25	-	Res. to GS
3.	VL 181	2001	90-95	16-17	Panicle tip is pigmented	-
4.	VL 172	2000	75-80	22-23		Res. to GS
5.	RAU 11	2000	90-95	20-22	-	-
6.	VL 29	1988	85-90	20-25	Pigmentation at nodes, dwarf plant with erect growth habit	-
7.	RAU 3	1985	80-85	18-22	Ear-head curved at maturity; pigmented panicle	-
8.	CO 1	1982	85-90	16-17	Profuse tillering, stay green	-
9.	K 2	1978	85-90	20-22	Tall plant with purple pigmentation at nodes	-

Abbreviations: Res.: Resistant; GS: Grain Smut

Pulses

Chickpea

Table 25. Promising and popular chickpea varieties

State	Varieties
Andhra Pradesh	***Desi :*** JG 11, JAKI 9218, ICCV 37 **Kabuli** : KAK 2, MNK 1
Bihar	***Desi :*** Gujarat Gram 4, Pant G 186 **Kabuli :** HK 05-169 **Late sown rice fallow** : Pusa 372
Chhattisgarh	***Desi :*** Digvijay, JG 6, JAKI 9218, JG 63, Vaibhav **Kabuli :** IPCK 2002-29 **Late sown rice fallow :** JG 14
Gujarat	**Desi:** JG 16. Gujarat Gram 1, Gujarat Junagadh Gram 3 **Late sown rice fallow :** JSC 55 (Raj Vijay Gram 202), JSC 56 (Raj Vijay Gram 203)
Haryana	***Desi :*** Haryana Chana 3, Haryana Chana 5 **Kabuli :** HK 1
Jharkhand	***Desi :*** KPG 59, BG 1003, Pant G 114, KWR 108 **Kabuli :** HK 05-169 **Late sown rice fallow :** Pusa 372
Karnataka	***Desi :*** ICCV 37, JAKI 9218, JG 11 **Kabuli :** MNK 1, Phule G 0517
Madhya Pradesh	***Desi :*** JG 130, JG 322, JG 63, JG 16, JAKI 9218, JG 315, Vijay, Raj Vijay 201 **Kabuli :** JGK 2, JGK 1, Phule G 0517, PKV Kabuli 4, Raj Vijay Kabuli 101 **Late sown rice fallow :** JG 14, JSC 55 (Raj Vijay Gram 202), JSC 56 (Raj Vijay Gram 203)
Maharashtra	***Desi :*** Vijay, Digvijay, JAKI 9218, Vishal, Virat **Kabuli :** KAK 2, Phule G 0517, PKV Kabuli 4 **Late sown rice fallow :** JSC 55 (Raj Vijay Gram 202), JSC 56 (Raj Vijay Gram 203)
Punjab	**Desi :** GPF 2 **Kabuli :** L 551
Rajasthan	***Desi :*** GNG 1581, RSG 888, Pratap Chana 1, GNG 1488, GNG 663, GNG 469, RSG 973, RSG 963, CSJD 884 **Kabuli :** GNG 1499
Tamil Nadu	***Desi :*** JG 11, Co4
Uttar Pradesh	***Desi :*** KGD 1168, KWR 108 **Kabuli :** HK 05-169 **Late sown rice fallow :** KPG 59, Pusa 372
Uttarakhand	***Desi :*** Pant G 186, Pant G 114, DCP 92-3 **Kabuli :** Pant Kabuli 1
West Bengal	***Desi :*** Anuradha, Mahamaya 1, Mahamaya 2

Table 26. Important information on the chickpea varieties

Sl No.	Varieties	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
				DESI	
1.	Raj Vijay Gram 201	2011	Timely sown, rainfed	Early maturing	Mod. Res. to wilt
2.	Gujarat Junagadh Gram 3	2010	Timely sown, rainfed	Medium height, semi erect, yellow large seeded, early maturing	Res.to wilt and stunt
3.	JG 6	2008	Rainfed	Medium tall, medium seed and medium maturity	Res. to wilt
4.	GNG 1581	2007	Normal sown, irrigated	Semi erect, medium plant height, late maturing	Tol. to AB, stunt, RR
5.	JAKI 9218	2007	Timely sown, rainfed	Medium tall, bushy, medium large seed, medium maturity	Res. to wilt
6.	Digvijay	2007	Timely sown, rainfed	Semi spreading, large yellowish brown seed, medium maturity	Res. to wilt
7.	GNG 1488	2007	Late sown, irrigated	Semi erect with medium tall, seed small and brown, late maturing	Tol. to wilt
8.	JG 63	2006	Timely sown, rainfed/irrigated	Semi spreading with profuse branching, seeds medium yellowish brown, medium maturity	Res. to wilt
9.	RSG 973	2006	Timely sown, rainfed	Medium seed, medium maturity	Res. to DRR
10.	Pratap Chana 1	2005	Timely sown, paddy-gram cropping system	Early maturity	Mod. Res. to wilt
11.	Anuradha	2004	Timely sown, rainfed	Semi erect plant, seed dark brown, wrinkled, medium maturity	Tol. to wilt
12.	Haryana Chana 5	2004	Timely/ late sown-rainfed / irrigated	Erect and deep rooted, medium seed, late maturing	Res. to wilt, RR
13.	RSG 963 (Adhar)	2003	Timely sown, rainfed	Semi erect plant, medium seed, late maturing	Tol. to wilt
14.	CSJD 884	2003	Timely sown, rainfed	Semi erect double podded, medium seed, late maturing	Mod. Res. to RR, CR; Tol. to drought
15.	RSG 888	2002	Timely sown, rainfed	Semi spreading, double podded, small seed, medium maturity	Res. to wilt; Tol. to DRR and drought
16.	JG 130	2002	Timely sown, rainfed/irrigated	Semi spreading with profuse branching, medium tall, brown, large, smooth seed, medium maturity	Tol. to wilt; Mod. Res. to RR
17.	Virat	2002	Timely sown, rainfed	Semi erect profuse branching, large creamy seed, early maturing	Res. to wilt

(Continued)

Table 26. *(Continued)*

Sl No.	Varieties	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
18.	ICCV 37 (Kranti)	2001	Rainfed, timely sown	Semi erect, dwarf bushy, early maturing, medium seed	Tol. to wilt
19.	Gujarat Gram 4	2000	Rainfed/irrigated, timely sown	Medium tall, semi erect, medium maturity, medium large seeds	Mod. Res. to wilt
20.	JG 16 (SAKI 9516)	2000	Normal sown, rainfed/irrigated	Semi spreading profuse branching, medium maturity, medium seed, lodging and shattering resistant	Res. to wilt; Tol. to CR, BGM, stunt
21.	Vaibhav	2000	Timely sown, rainfed	Semi erect tall, seed small, wrinkled and medium maturity	Mod. Res. to wilt
22.	Haryana Chana 3	2000	Timely sown, irrigated	Semi erect, large, light brown seed, late maturing	Tol. to AB, wilt, stunt
23.	JG 11	1999	Rainfed/irrigated, timely sown	Semi spreading, early maturing, large seeded	Res. to wilt; Mod. Res. to DRR
24.	Gujarat Gram 1	1999	Rainfed, timely sown	Semi erect, medium tall, medium maturity, large dark brown seed	Res. to wilt
25.	DCP 92-3	1998	Timely sown, irrigated	Semi erect, medium tall, semi spreading, yellowish brown large seed, late maturing	Res. to wilt; Tol. to lodging and responsive high input
26.	Co4	1998	Timely sown, rainfed	Early maturing, medium seeded	Tol.to root rot
27.	JG 322	1997	Rainfed	Medium tall, medium seeded, medium maturity	Res. to wilt
28.	GNG 469	1997	Timely sown, rainfed	Erect, tall with large brown seed, late maturing	Res. to AB; Tol. to wilt
29.	Pant G 186	1997	Rainfed/ irrigated	Small seeded, medium maturity	Res. to wilt and BGM
30.	Vishal	1997	Timely sown, rainfed	Semi erect, medium seeded, medium maturity	Res. to wilt
31.	KGD 1168 (Alok)	1997	Timely sown, rainfed/irrigated	Semi erect, medium seeded, late maturing	Res. to wilt, RR
32.	KWR 108	1996	Rainfed, timely sown	Medium tall, semi erect, medium maturity, medium seed size	Res. to wilt, RR
33.	GPF 2	1995	Timely sown, irrigated	Semi erect and medium tall, medium seeded, late maturing	Res. to wilt; Tol. to AB
34.	GNG 663	1995	Timely sown, rainfed	Semi spreading, medium dark brown seeds, late maturing	Res. to wilt, AB, RR
35.	Vijay	1993	Rainfed, timely sown, drought	Spreading, early maturing, small seeds	Res. to wilt; Tol. to terminal moisture stress

(Continued)

Table 26. *(Continued)*

Sl No.	Varieties	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
36.	JG 315	1984	Timely sown, rainfed	Erect, medium tall, seeds are angular, medium large, medium maturity	Res. to wilt
37.	Mahamaya 2	1984	Timely late sown, rainfed	Semi spreading, seed wrinkled large, medium maturity	Mod. Res. to wilt
38.	Mahamaya 1	1982	Timely sown, rainfed	Tall, semi erect, seeds, small medium maturity	Tol. to wilt
39.	Pant G 114	1981	Timely sown, rainfed	Semi erect, small seed, late maturing	Mod. Res. to wilt
				KABULI	
40.	MNK 1	2011	Irrigated, timely sown	Semi spreading, early maturing, extra-large seeds (52g/100 seeds)	Mod. Res. to wilt
41.	HK 05-169	2011	Irrigated, timely sown	Broad leaved genotypes with profuse branching, medium maturity, large seeded	Mod. Res. to wilt
42.	Raj Vijay Kabuli Gram 101	2011	Timely sown, semi irrigated area of Madhya Pradesh	Large seeded, early maturing	Mod. Res. to wilt
43.	Pant Kabuli 1	2010	Timely sown, irrigated/rainfed areas of Uttarakhand	Semi spreading, medium height, large seeded with prominent beak, late maturing	Tol. to BGM
44.	IPCK 2002-29	2009	Timely sown, irrigated areas of central India	Erect, early maturing, large white seeded	Tol. to wilt
45.	PKV Kabuli 4	2009	Timely sown, irrigated	Semi spreading, broad leaved, white extra-large seeded, maturing early	Tol. to wilt, BGM, RR
46.	Phule G 0517	2009	Timely sown, irrigated	Semi spreading, creamy white extra-large seeded, medium maturity	Tol. to wilt
47.	GNG 1499	2007	Timely sown, irrigated	Semi erect, medium height, large seed, white and owl's head type seed	Tol. to wilt
48.	JGK 2	2006	Timely sown, irrigated	Semi spreading, large seeded, early maturing	Res. to wilt
49.	JGK 1	2002	Normal sown, irrigated	Semi spreading, early maturing, extra-large seeded kabuli	Tol. to wilt
50.	Haryana Kabuli Chana 1	2002	Timely sown, irrigated	Semi erect, medium tall, large seed, late maturing	Tol. to wilt

(Continued)

Table 26. *(Concluded)*

Sl No.	Varieties	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
51.	KAK 2	1999	Normal sown, irrigated	Semi spreading, medium tall, early maturity, extra-large seeded	Tol. to wilt
52.	L 551	1999	Timely sown, irrigated	Medium tall and bushy, medium seed, late maturing	Tol. to wilt
53.	BG 1003	1999	Timely sown, irrigated	Medium tall, large seeded late maturing	Tol. to wilt
			LATE SOWN RICE FALLOWS		
54.	JSC 55 (Raj Vijay Gram 202)	2011	Late sown under paddy/cotton/ soybean-chickpea system	Semi-spreading, medium height, early maturing	Res. to wilt ; Mod. Res, to DR
55.	JSC 56 (Raj Vijay Gram 203)	2011	Late sown, irrigated	Dwarf, spreading, medium smooth seed, early maturing	Mod. Res, to wilt, DRR
56.	JG 14	2008	Late sown, irrigated	Semi erect, medium height, early medium maturity, medium seeded	Res. to wilt
57.	Pusa 372	1993	Late sown, rainfed areas	Semi spreading, small seeds, late maturing	Mod. Res. to wilt, AB, DRR; Tol. to PB
58.	KPG 59 (Udai)	1992	Rainfed, late sown	Semi erect, tall, medium maturity, medium seeded	Tol. to wilt, stunt, RR

Abbreviations: Mod.: Moderately; Res.: Resistant; Tol. Tolerant; RR: Root Rot; DRR: Dry Root Rot; AB: *Ascochyta* Blight; BGM: *Botrytis* Grey Mould; PB: Pod Borer

Pigeonpea

Table 27. Promising and popular pigeonpea varieties

State	Varieties recommended
Andhra Pradesh	**Early maturity:** Laxmi
	Medium maturity: LRG 41, LRG 38 ,WRG 27, WRG 53, WRG 65
Bihar	**Late maturity:** Bahar, Pusa 9 ,NDA1
Chhattisgarh	**Medium maturity:** Rajeev Lochan, MA 3
Gujarat	**Early maturity:** GT 100, GT 101, Banas
	Medium maturity: BDN 2, BSMR 853
Haryana	**Early maturity:** Paras, Pusa 992, Manak, UPAS 120
Karnataka	**Early maturity:** TS 3 R
	Medium maturity: BRG 1, BRG 2, WRP 1, Asha (ICPL 87119), Maruti (ICP 8863)
Madhya Pradesh	**Early maturity:** TT 401
	Medium maturity: JKM 189, TJT 501, JA 4, JKM 7
Maharashtra	**Medium maturity:** BDN 711, BSMR 736, BSMR 853, BDN 708, BDN 2, Vipula, PKV TARA
	Early maturity: AKT 8811
Nagaland	**Early maturity:** UPAS 120, Pusa 992, AL 201, ICPL 87
Punjab	**Early maturity:** AL 201, PAU 881,Pusa 992,UPAS 120
Rajasthan	**Early maturity:** UPAS 120, Pusa 992, VLA1, PA 291
Uttar Pradesh	**Early maturity:** UPAS 120
	Late maturity: Bahar, NDA 1, NDA 2, Amar, MA 6, MAL13,
Uttarakhand	**Early maturity:** VLA 1, PA 291
Jharkhand	**Late maturity:** Bahar
	Medium: Asha (ICPL 87119), MA 3
Tamil Nadu	**Medium maturity:** Co 6
	Early maturity: CORG 9701, Vamban 1, Vamban 3
Tripura	**Early maturity:** Pusa 992, VLA 1

Table 28. Important information on the pigeonpea varieties

Sl No.	Variety	Year of release	Recommended niche	Salient features		Reaction to biotic and abiotic stresses and quality traits
				Plant type	Seed size	
			EARLY DURATION			
1.	TS 3R	2011	*Kharif*, TS, 1st fortnight June	Indeterminate	Bold	Res. to wilt; Tol. to drought
2.	PA 291	2010	*Kharif*, TS, 1st fortnight June (PWCS)	Indeterminate, semi-spreading	Small	Res. to SMD; Tol. to PhSBI and PB
3.	PAU 881	2008	*Kharif*, TS (June), in double cropping system	Indeterminate, semi-spreading	Small	Tol. to PB
4.	TT 401	2007	*Kharif*, TS, 2nd-3rd week June	Indeterminate	Bold	Tol. to wilt, PB, PF
5.	VLA 1	2007	*Kharif*, TS, 1st fortnight June	Indeterminate, spreading	Small	Res. to wilt and AB
6.	CORG 9701	2005	*Kharif*, TS, 1st fortnight June	Indeterminate, semi-spreading	Bold	Tol.to wilt, SMD, PhSBI, PB, PF
7.	Pusa 992	2004	*Kharif*, TS, 1st fortnight June (PWCS)	Indeterminate, semi-spreading	Medium	Mod. Susc. to PB; Res. to SMD; Susc. to PhSBI
8.	GT 101	2004	*Kharif*, TS, 2nd-3rd week June	Indeterminate	Medium	Tol. to wilt and SMD
9.	Banas	2004	*Kharif*, TS, 2nd-3rd week June	Indeterminate	Medium	Tol. to wilt and SMD
10.	Laxmi	2001	*Kharif*, TS, last week June-1st week July	Indeterminate, spreading	Medium	Res. to SMD; Mod. Res to wilt
11.	AKT 8811	2000	*Kharif*, TS, 2nd-3rd week June	Indeterminate, semi-spreading	Small	Mod. Res. to wilt; Tol. to PB
12.	Paras	1998	*Kharif*, TS, 1st fortnight June (PWCS)	Indeterminate, semi-spreading	Medium	Tol. to drought; Res. to SMD
13.	AL 201	1995	*Kharif*, TS, last week May-1st week June (PWCS)	Indeterminate, semi-spreading	Medium	Mod. Res. to CLS, PLS
14.	Vamban 1	1993	*Kharif*, TS, 1st fortnight June (PI)	Determinate, semi-spreading	Small	Susc. to SMD, PB
15.	GT 100	1992	*Kharif*, TS, 2nd-3rd week June	Determinate, semi-spreading	Bold	Tol. to PB, PF
16.	ICPL 87	1986	*Kharif*, TS, mid-June	Determinate	Bold	Tol. to FW
17.	Manak	1985	*Kharif*, TS, first fortnight June (PWCS)	Indeterminate, semi-spreading	Small	Tol. to wilt
18.	UPAS 120	1984	*Kharif*, TS, 2nd-3rd week June (PWCS)	Indeterminate, semi-spreading	Small	Mod. Susc. to PB, SMD, PhSBI

(Continued)

Table 28. *(Continued)*

Sl No.	Variety	Year of release	Recommended niche	Salient features		Reaction to biotic and abiotic stresses and quality traits
				Plant type	Seed size	
			MEDIUM DURATION			
19.	WRG 65	2012	*Kharif*, TS, last week June-1st week July	Indeterminate, spreading type	Bold	Res. to wilt
20.	BDN 711	2012	*Kharif*, TS, last week June-1st week July	Indeterminate, spreading,	Bold	Mod. Res. to wilt, SMD
21.	Rajeev Lochan	2011	*Kharif*, TS, last week June-1st week July	Indeterminate, semi-spreading	Medium - Bold	Res. to FW, SMD
22.	WRG 53	2009	*Kharif*, TS, last week June-1st week July	Indeterminate, semi-spreading	Medium	Res. to SMD
23.	WRP 1	2009	*Kharif*, TS, last week June-1st week July	Indeterminate, semi-spreading	Small	Res. to wilt
24.	TJT 501	2009	*Kharif*, TS, last week June-1st week July	Indeterminate, semi-spreading	Medium-Bold	Tol. to FW, SMD, PhSBI, PB, PF
25.	PKV TARA	2008	*Kharif*, TS, last week June-1st week July	Indeterminate, semi-spreading	Medium	Tol. to PB
26.	Vipula	2007	*Kharif*, TS, last week June-1st week July	Indeterminate, Semi-spreading Medium duration	Medium	Res.t to FW; Mod. Res. to SMD
27.	JKM 189	2007	*Kharif*, TS, last week June-1st week July	Indeterminate, Semi-spreading	Bold	Res. to wilt, SMD; Tol. to PhSBI, PB, PF
28.	BDN 708	2007	*Kharif*, TS, last week June-1st week July	Indeterminate, spreading	Bold	Mod. Res. to wilt, SMD; Tol. to PB, PF
29.	WRG 27	2003	*Kharif*, TS, last week June-1st week July	Indeterminate, semi-spreading	Bold	Mod. Res. to SMD
30.	BSMR 853	2002	*Kharif*, TS, last week June-1st week July	Indeterminate, spreading	Bold	Res. to wilt, SMD
31.	JKM 7	1996	*Kharif*, TS, last week June-1st week July (Sl)	Indeterminate, semi-spreading	Medium-Bold	Tol. to wilt, PB
32.	BSMR 736	1996	*Kharif*, TS, last week June-1st week July,	Indeterminate, semi-spreading	Bold	Res. to wilt, SMD
33.	Asha	1993	*Kharif*, TS, last week June-1st week July	Indeterminate, semi-spreading	Medium	Res. to wilt, SMD
34.	Co 6	1993	*Kharif*, TS, mid-June -1st week July	Indeterminate, spreading	Bold	Tol. to PB
35.	JA 4	1991	*Kharif*, TS, last week June-1st week July.	Indeterminate, semi- spreading	Bold	Tolerant to PB
36.	Maruthi	1986	*Kharif*, TS, last week June-1st week July	Indeterminate	Small	Res. to wilt; Susc. to SMD

(Continued)

Table 28. *(Concluded)*

Sl No.	Variety	Year of release	Recommended niche	Salient features		Reaction to biotic and abiotic stresses and quality traits
				Plant type	Seed size	
37.	BDN 2	1982	*Kharif*, TS, last week June-1st week July	Indeterminate, semi-spreading	Medium	Tol. to wilt
				LONG DURATION		
38.	NDA 2	2008	*Kharif*, TS, 2nd-3rd week July	Indeterminate, semi-spreading	Bold	Res. to SMD, wilt, root knot nematode
39.	MAL 13	2005	*Kharif*, TS, 2nd-3rd week July	Indeterminate, spreading	Bold	Res. to SMD; Susc. to wilt
40.	MA 6	2003	*Kharif*, TS, 2nd-3rd week July	Indeterminate, semi-spreading	medium	Res. to SMD; Mod. Susc. to wilt
41.	NDA 1	1997	*Kharif*, TS, 2nd-3rd week July	Indeterminate, erect and compact	Medium	Res. to SMD; Tol. to wilt & root rot
42.	Amar	1997	*Kharif*, TS, 2nd-3rd week July	Indeterminate, erect & compact	Bold	Highly Res. to SMD; Tol. to wilt, PB
43.	Pusa 9	1993	*Kharif*, TS, 2nd-3rd week July	Indeterminate, Semi-spreading	Bold	Res. to SMD, AB
44.	Bahar	1986	*Kharif*, TS, 2nd-3rd week July	Indeterminate, erect & compact.	Bold	Tol. to high moisture; Res. to SMD

Abbreviations: Mod.: Moderately; Res.: Resistant; Tol.: Tolerant ; Susc.: Susceptible; SMD: Sterility Mosaic Disease; PB: Pod Borer ; PhSBl: *Phytophthora* Stem Blight; FW: *Fusarium* Wilt,; PF: Pod Fly; AB: *Alternaria* Blight; TS: Timely Sown

Mungbean

Table 29. Promising and popular mungbean varieties

State	Season	Varieties
Andhra Pradesh	*Kharif*	IPM 02-14, COGG 912, OUM 11-5,
	Rabi	LGG 460, LGG 450, LGG 407, TM 96-2
Asom	*Kharif*	IPM 2-3, Pant Moong 4, Narendra moong 1
	Spring/ Summer	HUM 16, PDM 139, Pant Moong 5, HUM 12
Bihar and Jharkhand	*Kharif*	IPM 2-3, MH2-15, Pant Moong 4, HUM 1
	Spring/ Summer	HUM 16, PDM 139, Meha, Pant Moong 5
Delhi	*Kharif*	IPM 2-3, MH 02-15, Pant Moong 3
Gujarat	*Kharif*	Gujarat Moong 4, PKV AKM 4
Haryana	*Kharif*	IPM 2-3, MH 2-15, Muskan
	Spring/Summer	SML 668, Pant Moong 5
Himachal Pradesh and Jammu and Kashmir	*Kharif*	Pusa 0672, KM 2241, Shalimar Moong 1
Karnataka	*Kharif*	IPM 02-14, HUM 1, PKV AKM 4, COGG 912, KKM 3, LGG-460, TARM 1, OBGG 52, IPM2 3
Madhya Pradesh and Chhattisgarh	*Kharif*	Meha, JM 721, HUM 1, BM 4,
	Spring/Summer	Meha, PDM 139, HUM 1
Maharashtra	*Kharif*	HUM 1, BM 2002-1, PKV AKM 4, BM 4, TARM 2
Odisha	*Kharif*	PDM 139, OUM 11-5, COGG 912,IPM 2-3
	Rabi	PDM 139, LGG 460, TARM 1, OBGG-52,IPM2-3
Punjab	*Kharif*	IPM 2-3, MH 2-15, ML 818, ML 613
	Spring/Summer	SML 668, IPM 2-3, Pant Moong-5
Rajasthan	*Kharif*	SML 668, IPM 2-3, RMG 492, MH 2-15
	Spring/Summer	SML 668, PDM 139, Meha
Uttar Pradesh and Uttarakhand	*Kharif*	Pant Moong 5, Pant Moong 4, Narendra Moong 1
	Spring/Summer	HUM 16, IPM 02-3, PDM 139, , Meha, Pant Moong 5, HUM 12
Tamil Nadu	*Kharif*	IPM 2-14, CO 6, TM 96-2, Vamban 2, Vamban 3
	Rabi	ADT 3, Sujata (Hyb 12-4)
West Bengal	*Kharif*	MH 2-15, Pant Moong 4, Pant Moong 5, Narendra Moong 1
	Spring/Summer	HUM 16, IPM 2-3, PDM 139, Meha

Table 30. Important information on the mungbean varieties

Sl No.	Varieties	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
1.	IPM 02-14	2010	Spring /summer	Medium, green shiny seed, early, erect	Res. to MYMV
2.	IPM 02-3	2009	*Kharif*/ Spring /Summer	Early, large seeded	Res. to MYMV
3.	PKV AKM 4	2009	*Kharif* rainfed	Early, synchronous maturity, medium large shiny green seed	Res. to MYMV
4.	Pusa 0672	2009	*Kharif* rainfed	Medium large shiny green seed	Res. to MYMV
5.	KKM 3	2009	*Rabi*	Shiny green seed	Res. to PM
6.	KM 2241	2008	*Kharif* rainfed	Medium seed	Res. to MYMV
7.	Pant M 5	2007	Spring/Summer	Early maturity, large seed	Tol. to MYMV
8.	MH 2-15	2007	*Kharif* rainfed	Erect plant, medium seed	Res. to MYMV and CLS
9.	TM 96 – 2	2007	*Rabi*/spring	Medium seed	Tol. to high soil moisture; Res. to PM, CLS
10.	HUM 16	2006	Spring /Summer	Early maturity, large seed	Tol. to MYMV
11.	COGG 912	2005	*Kharif*	Early maturity	Res. to MYMV, CLS
12.	Shalimar M 1	2005	*Kharif* rainfed	Medium, large shiny seed	-
13.	Meha	2004	Spring/Summer	Early maturing, erect, 3-4 primary branches	Res. to MYMV
14.	Muskan	2003	Spring/Summer	Early maturing	Res. to MYMV
15.	HUM 12	2003	Spring/Summer	Early maturing	Mod. Res. MYMV, CLS
16.	OUM 11-5	2002	*Rabi*/Spring	-	Mod. Res. PM, MYMV, CLS
17.	OBGG 52	2002	*Rabi*/spring/*Kharif*	-	Tol. to MYMV
18.	ML 818	2002	Spring/Summer	Erect plant type	Tol. to MYMV
19.	RMG 492	2002	*Kharif*/ Rainfed	Small shiny seed	Tol. to MYMV
20.	Gujarat Moong 4	2002	*Kharif* Rainfed	Small green shiny seed	Tol. to MYMV
21.	SML 668	2002	Spring/Summer	Early matury, small green seed	Tol. to MYMV
22.	PDM 139	2001	Spring/Summer	Early maturity, small green seed	Res. to MYMV
23.	HUM 1	1999	Spring season	Shiny green seeds	Res. to MYMV
24.	CO 6	1999	Spring/Summer and *kharif*	Large green seeds	Res. to MYMV
25.	Pant M 4	1997	*Kharif*	Erect plant, dull green seed	Res. to MYMV
26.	LGG 460	1997	*Rabi*/Spring	Top bearing, medium maturity	Res. to MYMV
27.	ML 613	1996	*Kharif* rainfed	Shiny green seed	Res. to MYMV, Tol. to CLS
28.	LGG 407	1995	*Rabi*	Medium maturity	Tol. to MYMV, PM
29.	LGG 450	1995	*Rabi*	Medium maturity	Tol. to MYMV, PM, pre-harvest sprouting
30.	JM 721	1995	*Kharif* rainfed	Erect plant, medium large, dull green seed	Tol. to PM
31.	TARM 2	1994	*Rabi*	Small seed	Tol. to PM
32.	BM 4	1992	*Kharif* rainfed	Plant erect and bushy, green medium large seed	Tol. to MYMV, PM
33.	NDM 1	1992	*Kharif*/Spring	Dull green small seed	Res. to MYMV

Abbreviations: Mod.: Moderately; Res.: Resistant; Tol.: Tolerant; PM: Powdery Mildew; MYMV: Mungbean Yellow Vein Mosaic Virus; CLS: *Cercospora* Leaf Spot

Urdbean

Table 31. Promising and popular urdbean varieties

State	Season	Varieties
Andhra Pradesh	*Kharif*	Pant U 31, IPU 2-43, LBG 685, LBG 625
	Rabi	TU 94-2, LBG 623, LBG 709, LBG 611
Asom	*Kharif*	WBU 108, IPU 94-1 (Uttara)
Bihar and Jharkhand	*Kharif*	Pant U 31, WBU 108, IPU 94-1 (Uttara)
	Spring	Pant U 31, WBU 109, KU 92-1 (Azad Urd 1)
Gujarat	*Kharif*	GU 1, KU 96-3, TPU 4, AKU 4
Haryana	*Kharif*	KU 300 (Shekhar 2), IPU 94-1 (Uttara)
Himachal Pradesh	*Kharif*	Pant U 31, Pant U 40
Karnataka	*Kharif*	IPU 2-43, WBU 108, KU 301, TU 94-2, LBG 402
Madhya Pradesh Chhattisgarh	*Kharif*	Pant U 30, Jawahar Urd 3, KU 96-3, TPU 4, Jawahar Urd 2, Khargone 3
	Spring	Pant U 31
Maharashtra	*Kharif*	KU 96-3, TPU 4, AKU 4 (Melghat), AKU 15
Odisha	*Kharif*	IPU 2-43, WBU 108, KU 301
	Spring	B-3-8-8, OBG 17, Mash 338
Punjab	*Kharif*	WBU 108, IPU 94-1 (Uttara), Mash 414, Mash 338
	Spring	KU 300 (Shekhar 2), KUG 479
Rajasthan	*Kharif*	Pant U 31, WBU 108, IPU 94-1 (Uttara)
	Spring	KU 300, KUG 479
Uttar Pradesh and Uttarakhand	*Kharif*	Pant U 40, WBU 108, IPU 94-1 (Uttara), Narendra Urd 1
	Spring	KU 300, WBU 109, KU 92-2 (Azad Urd 1), Narendra Urd 1, KUG 479
Tamil Nadu	*Kharif*	IPU 2-43, Vamban 4, Vamban 7
	Rice-fallow	Vamban 3, TU 94-2, VBN-5, Vamban 2
West Bengal	*Kharif*	Pant U 31, WBU 108, IPU 94-1 (Uttara)
	Spring	Pant U 31, WBU 109, KU 92-1 (Azad Urd 1)

Table 32. Important information on the urdbean varieties

Sl No.	Varieties	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
1.	Vamban 7	2012	*Kharif* rainfed	Medium maturity	Res. to MYMV, PM, LCV and rust rot diseases
2.	KUG 479	2010	Spring season	Early maturity	Res. to MYMV
3.	WBU 109 (Sujata)	2008	Spring	Early maturity	Res. to MYMV
4.	IPU 02-43	2008	*Kharif* rainfed	Medium maturity	Res. to MYMV, PM
5.	LBG 625	2008	*Rabi*/Spring	Early maturity	-
6.	LBG 709	2006	Spring, *Rabi*, rice fallows	Medium maturity	Res. to wilt; Tol. to MYMV; photo sensitive
7.	Pant U 31	2005	*Kharif* /*Rabi*/Spring	Early maturity, photo-thermo insensitive	Res. to MYMV
8.	Pant U 40	2005	*Kharif*	Medium maturity	Res. to MYMV
9.	AKU 15	2005	*Kharif* rainfed	Medium maturity	Tol. to PM
10.	B 3–8–8 (Prasad)	2005	*Kharif*, *Rabi*	Medium maturity	Tol. to MYMV
11.	GU 1	2004	*Kharif* rainfed	Medium maturity	Tol. to PM, CLS
12.	KU 96-3	2003	*Kharif*	Medium maturity	Res. to MYMV
13.	Vamban 4	2003	*Rabi*/Spring	Early maturity	Tol. to MYMV, PM
14.	KU 300 (Shekhar 2)	2001	Spring	Early maturity	Res. to MYMV
15.	Vamban 3	2000	*Kharif* rainfed	Dull black seed	Res. to MYMV; Tol. to PM
16.	KU 92-1 (Azad Urd 1)	1999	*Kharif* rainfed, Spring	Early maturity	Res. to MYMV
17.	IPU 94-1 (Uttara)	1999	*Kharif* rainfed	Medium maturity	Res. to MYMV
18.	LBG 685	1999	*Kharif* rainfed	Medium maturity	Res. to wilt
19.	TU 94-2	1998	*Rabi*/Spring	Early maturity	Res. to MYMV; Tol. to PM
20.	KU 301	1998	*Kharif* rainfed	Medium maturity	Res. to MYMV; Tol. to PM
21.	Vamban 2	1997	*Kharif* rainfed	Glabrous pod	Res. to MYMV; Tol. to drought
22.	LBG 623	1997	*Rabi*/Spring	Photo-insensitive, large shiny black seed	Tol to MYMV
23.	Mash 338	1996	*Kharif* rainfed	Medium maturity	Rest. to MYMV
24.	Mash 414	1996	*Kharif* rainfed, spring	Medium maturity	Tol. to RR
25.	AKU 4	1996	*Kharif* rainfed, *Rabi*	Medium maturity	Res. to PM; Tol. to stress
26.	WBU 108	1995	*Kharif* rainfed	Erect, wider adaptability	Tol. to MYMV
27.	Narendra Urd 1	1993	*Kharif* rainfed	Large black seeds	Res. to MYMV
28.	LBG 611	1993	*Rabi*/Spring	Early maturity	Tol. to wilt
29.	TPU 4	1992	*Kharif* rainfed	Erect, medium tall	Tol to MYMV
30.	LBG 402	1991	*Rabi*/Spring, Rice fallows	Erect tall, dull large black seeds	Res. to PM
31.	Jawahar Urd 2	1987	*Kharif* rainfed	Main stem bearing, black and large seed	Tol. to CLS, MYMV
32.	Jawahar Urd 3	1987	*Kharif* rainfed	Medium seed size	Tol. to MYMV, CLS

Abbreviations: Mod.: Moderately; Res.: Resistant; Tol.: Tolerant; PM: Powdery Mildew; MYMV: Mungbean Yellow Vein Mosaic Virus;; CLS: *Cercospora* Leaf Spot; RR: Root Rot

Lentil

Table 33. promising and popular lentil varieties

State	Varieties
Asom	**Small seed :** HUL 57, WBL 77, KLS 218
Bihar	**Small seed :** HUL 57,
	Large seed : WBL 77, Arun (PL 77-12)
	Late sown (rice fallows) : Arun (PL 77-12), HUL 57
Delhi	**Large seed :** DPL 62 (Sheri), LH 84-8
Gujarat	**Large seed :** IPL 81, JL 3, IPL 316
Haryana	**Large seed :** DPL 62 (Sheri), IPL 406
Himachal Pradesh	**Small seed :** HUL 57
	Large seed : VL 507
Jammu and Kashmir	**Small seed :** HUL 57
	Large seed : VL 507
Madhya Pradesh	**Large seed :** IPL 81 (Noori), JL 3, IPL 406, IPL 316
Maharashtra	**Large seed :** IPL 81 (Noori), JL 3, IPL 316
NEH Region	**Small seed :** HUL 57
	Large seed : DPL 62
Odisha	**Small seed :** HUL 57, WBL 77
Punjab	**Large seed :** DPL 62 (Sheri), Pant L 4, LH 84-8, LL 147
Rajasthan	**Large seed :** IPL 406, DPL 62
Uttar Pradesh	**Large seed :** DPL 62 (Sheri), IPL 316, Narendra Masoor 1, IPL 406
	Small seed : HUL 57, KLS 218
	Late sown rice fallows : Narendra Masoor 1, HUL 57
Uttarakhand	**Large seed :** Pant L 7, VL 507;
	Small seed : Pant L 6
West Bengal	**Small seed :** HUL 57, WBL 77 , KLS 218
	Late sown (rice fallows) : WBL 77, HUL 57

Table 34. Important information on the lentil varieties

Sl No.	Varieties	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
1.	IPL 316	2013	*Rabi*, rainfed	Large seed	Tol. to wilt, rust
2.	Pant L 6	2009	*Rabi*, rainfed	Small seed	Res. to rust
3.	Pant L 7	2009	*Rabi*, rainfed	Large seed	Res. to rust
4.	WBL 77	2008	*Rabi*, rainfed, late sown	Small seed	Res. to rust
5.	IPL 406	2007	*Rabi*, ranfed, timely sown	Large seed	Res. to rust
6.	VL 507	2006	*Rabi*, ranfed, timely sown	Large seed	Tol. to wilt
7.	KLS 218	2005	*Rabi*, ranfed, timely sown	Small seed	Res. to rust
8.	HUL 57	2005	*Rabi*, rainfed, late sown	Small seed	Res. to rust
9.	IPL 81 (Noori)	2000	*Rabi*, ranfed, timely sown	Large seed	Tol. to rust, wilt
10.	JL 3	1999	*Rabi*, ranfed, timely sown	Large seed	Res. to wilt
11.	DPL 62 (Sheri)	1997	*Rabi*, ranfed, timely sown	Large seed	Res. to rust; Tol. to wilt
12.	Narendra Masoor 1	1997	*Rabi*, rainfed, Late sown	Large seed	Res. to rust; Tol. to wilt
13.	Pant L 4	1993	*Rabi*, ranfed, timely sown	Semi-spreading, small seed	Res. to rust; wilt
14.	LH 84-8 (Sapna)	1991	*Rabi*, ranfed, timely sown	Semi-spreading; bold seeds	Res. to rust
15.	LL 147	1987	*Rabi*, ranfed, timely sown	Small seed	Tol. to rust, wilt
16.	Arun (PL 77 - 12)	1986	*Rabi*, rainfed, late sown	Medium large seed	Tol. to rust

Abbreviations: Mod.: Moderately; Res.: Resistant; Tol.: Tolerant

Fieldpea

Table 35. Promising and popular fieldpea varieties

States	Varieties
Asom	**Dwarf type:** Malviya Matar 15, Prakash
	Tall type: Gomati, HFP 9426, Pant P 42
Bihar	**Dwarf type:** HUDP 15, DDR 23
	Tall type: VL 42
Delhi	**Dwarf type:** KPMR 522, DDR 27, Hariyal
	Tall type: Aman, Pant P 42
Haryana	**Dwarf type:** KPMR 522, Hariyal, DDR 27, HFP 529
	Tall type: HFP 9426, Pant P 42, DMR 7
Himachal Pradesh	**Dwarf type:** Prakash
	Tall type: HFP 9426, Pant P 42
Jammu and Kashmir	**Dwarf type:** HUDP 15, Prakash
	Tall type: HFP 9426, Pant P 42
Madhya Pradesh	**Dwarf type:** KPMR 400, Prakash, Vikas
	Tall type: Adarsh, Ambika
Maharashtra	**Dwarf type:** KPMR 400, Prakash, Vikas
	Tall type: Adarsh, Ambika,
Punjab	**Dwarf type:** KPMR 522, DDR 27, HFP 529
	Tall type: Aman, Pant P 42, DMR 7
Rajasthan	**Dwarf type:** KPMR 522, Hariyal, DDR 27, HFP 529
	Tall type: Aman, Pant P 42, DMR 7
Uttar Pradesh	**Dwarf type:** KPMR 400, Prakash, Vikas, HUDP 15, Dantiwada Fieldpea 1, Pant P 74
	Tall type: Adarsh, Aman
West Bengal	**Dwarf type:** HUDP 15, Dantiwada Fieldpea 1
	Tall type: VL 42

Table 36. Important information on the fieldpea varieties

Sl No.	Varieties	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
1.	HFP 529	2012	High input responsive	Dwarf type	Res. to PM; Tol. to rust
2.	Dantiwada Fieldpea 1	2011	High input responsive	Dwarf type	Res. to PM
3.	IPF 5-19 (Aman)	2009	Limited irrigation	Tall type	Res. to PM; Mod. Res. to rust
4.	TRCP 8 (Gomati)	2009	Limited irrigation	Tall type	Res. to PM
5.	Pant P 74	2009	High input responsive	Dwarf type	Res. to PM; Tol. to rust
6.	HFP 9426	2008	Limited irrigation	Green seed tall type	Res. to PM; Tol. to root rot
7.	VL 42	2007	Limited irrigation	Tall	Res. to PM
8.	Pant P 42	2007	Limited irrigation	Tall	Res. to PM; Tol. to rust
9.	Hariyal (HFP 9907 B)	2007	High input responsive	Dwarf type	Res. to PM; Tol. to rust
10.	IPFD 1-10 (Prakash)	2006	Limited irrigation	Dwarf type	Res. to PM; Tol. to rust
11.	IPFD 99-13 (Vikas)	2005	High input responsive	Dwarf type	Res. to PM
12.	DDR 27 (Pusa Panna)	2001	Limited irrigation	Very early	Res. to PM
13.	KPMR 400	2001	High input responsive	Dwarf type	Res. to PM
14.	KPMR 522	2001	Limited irrigation	Dwarf type	Res. to PM
15.	DDR 23 (Pusa Prabhat)	2000	High input responsive	Very early variety	Res. to PM
16.	Ambika	2000	Limited irrigation	Tall plants	Res. to PM
17.	IPF 99-25(Adarsh)	2000	Limited irrigation	Tall type	Res. to PM
18.	Malviya Mattar 15	1999	High input responsive	Resembles HFP 4	Res. to PM, rust, leaf miner
19.	DMR 7 (Alankar)	1996	Limited irrigation	Tall, large seed	Res. to PM

Abbreviations: Mod.: Moderately; Res.: Resistant; Tol.: Tolerant; PM: Powdery Mildew

Guar

Table 37. Promising and popular *guar* varieties

State	Varieties
Andhra Pradesh	Early maturing varieties like RGM 112, RGC 936, HG 563 and HG 365 are getting popular in Rayalseema region of Andhra Pradesh
Gujarat	GG 1 , GG 2
Haryana	HG 365 , HG 563 ,HG 870 , HG 884 ,HG 867 , HG 2-20
Madhya Pradesh	HG 563 , HG 365
Maharashtra (Marathwada and Vidarbha)	HG 563, HG 365 , RGC 936 early types are sought after in non-traditional areas of Yavatmal and Parbhani
Punjab	AG 112 and early varieties from Haryana state
Rajasthan	RGC 1033, RGC 1066 , RGC 1055, RGC 1038, RGC 1031, RGC 1017, RGC 1003, RGC 1002, RGM 112, RGC 986 ,RGC 936 ,RGC 197
Uttar Pradesh	HG 563, HG 365 and early varieties

Table 38. Important information on the *guar* varieties

Sl No.	Varieties	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
1.	RGC 1033	2011	*Kharif* rainfed	Branched, high gum content	Tol. to drought
2.	RGC 936	1994	*Kharif* rainfed	Dwarf, early maturing, branched, small seeds, 29-30% gum content	Tol. to BB
3.	RGC 1002	1999	Arid and semi-arid regions	Bold seeded, dwarf and profusely branched	Tol. to diseases
4.	RGC 1003	1999	Rainfed, coarse textured soils	Branched, medium early, vigorous growth habit, oppressed branched	Res. to diseases
5.	RGC 1017	2001	*Kharif* rainfed	Medium early, dwarf, profusely branched	Res. to diseases
6.	RGC 986	1999	*Kharif* rainfed	Tall, profusely branched and pubescent	Tol. to BB
7.	RGC 1055	2007	*Kharif* rainfed	Medium tall, profusely branched, seeds light grey, bold seeded	Tol to BB, RR
8.	RGC 1066	2007	*Kharif* rainfed	Unbranched, medium tall, pods long, pubescent, extra early maturing	Res. to BB, RR and aphids
9.	RGC 1031	2005	*Kharif* rainfed	Medium late, branched	Res. to BB
10.	RGC 1038	2006		Medium tall, branched, hairy, serrated leaf margins, seeds dark grey, bold, high gum content, early maturing	-
11.	RGM 112	2005	*Kharif* rainfed	Early maturing, branched, short stature	-
12.	RGC 197	1988	*Kharif* rainfed	Early, bold seeds and suitable for intercropping	-
13.	HG 2-20	2010	*Kharif* rainfed	Early maturing, branched	Mod. Res. to diseases
14.	HG 884	2010	*Kharif* rainfed	Medium maturing, high yield potential, better gum content	
15.	HG 870	2010	*Kharif* rainfed	High yield potential, early maturing	-
16.	HG 563	1998	*Kharif* rainfed	Early maturing, branched, high yield	Widely adapted
17.	HG 867	2005	*Kharif* rainfed	Branched, pubescent, creamish seed medium maturity	-
18.	HGS 365	1998	*Kharif* rainfed	Early maturing	Widely adapted
19.	GG 1	1991	*Kharif* rainfed	Late maturing, medium bold seeds, branched	Mod. Res. to BB
20.	GG 2	2005	*Kharif* rainfed	Early maturing, white flowered, pink seeded, branched, medium bold seeds	Res. to BB, RR, AB
21.	AG 112		*Kharif* rainfed	Early to medium maturing and unbranched	-

Abbreviations: Mod.: Moderately; Res.: Resistant; Tol.: Tolerant; AB: *Alternaria* Blight; BB: Bacterial Blight; RR: Root Rot

Mothbean

Table 39. Promising and popular mothbean varieties

States	Varieties
Gujarat	GMO 1 ,GMO 2
Haryana	Early varieties of Rajasthan
Maharashtra	Early maturing varieties from Rajasthan
Rajasthan	RMO 257, RMO 435 , RMO 2004 (RMB 25) , RMO 225 , RMO 40, CZM 1, CZM 2, CZM 3

Table 40. Important information on the mothbean varieties

Sl No.	Varieties	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
1.	RMO 257	2007	*Kharif* rainfed	Early, high yielding	Escape YMV
2.	CZM 3	2005	Suitable for all India less rainfall areas	Erect; upright, early maturity, Grain yield: 7-8 q/ha	Escape YMV
3.	RMO 423	2004	*Kharif* rainfed	Early maturing with better biomass	Escape YMV
4.	GMO 2	2004	*Kharif* rainfed	Medium	Escape YMV
5.	RMO 2004	2004	*Kharif* rainfed	Medium early maturing	Escape YMV
6.	CZM 2	2003	Moderate rainfall zones of 350-450 mm, input responsive	First variety developed through hybridization, semi-erect, early maturity; grain yield: 7-8 q /ha	Res. to YMV, suitable for dry regions
7.	RMO 435	2002	*Kharif* rainfed	Medium early	Escape YMV
8.	RMO 225	1999	*Kharif* rainfed	Early maturing	Tol. to YMV
9.	CZM 1	1999	High rainfall zones, input responsive	Semi-spreading, early maturity, grain yield: 3.5-4.0 q/ha	Res. to YMV
10.	FM 96	1998	Suited for dry region	Medium early	-
11.	RMO 40	1994	*Kharif* rainfed	Early maturing in 60-65 days, suitable for dry areas	First early variety
12.	GMO 1		*Kharif* rainfed	Late maturing	Dual purpose

Abbreviations: Mod.: Moderately; Res.: Resistant; Tol.: Tolerant; YMV: Yellow Mosaic Virus

Cowpea

Table 41. Promising and popular cowpea varieties

States	Varieties
Gujarat	GC 2, GC 3, GC 4, GC 5
Karnataka	KBC 2, DCS 47 1, Vamban 1
Kerala	Subra, Hridya, Kankamony, Krishnamony
Maharashtra	VCM 8
Rajasthan	RC 101, RC 19
Tamil Nadu	Co (CP) 7, Vamban 1
Uttarakhand	Pant lobia 1, Pant lobia 2, Pant lobia 3

Table 42. Important information on the cowpea varieties

Sl No.	Varieties	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
1.	DCS 47-1	2013	Late *kharif*	75-76 days, light brown seeds	Res. to YMV, rust, anthracnose
2.	Pant lobia 3 (PGCP 6)	2012	Summer	Bold seeded, light brown in colour, early maturing, suitable for rice and wheat fallow with high yield potential	-
3.	KM 5	2008	*Kharif* rainfed	Bold seeded, brown colour	Tol. to rust
4.	IT 38956-1	2007	*Kharif* rainfed	Bold seeded, white colour	Tol. to LS, rust
5.	CoVu 702 Co(CP) 7	2005	*Kharif* rainfed	Brown seeded, early maturing	Mod. Res. to PB, LCV
6.	GC 4	2005	*Kharif*/Summer	Bold seeded medium early maturing	-
7.	GC 5	2005	*Kharif*/Summer	Bold seeded, medium early maturing	-
8.	RC 101	2001	For dry regions	Seeds white, early maturing	-
9.	KBC 2	1998	*Kharif* rainfed	Late maturing, light brown seeded, long pods	Res. to rust
10.	Vamban 1	1998	*Kharif* rainfed	Brown seeded, long pods, less viny habit	
11.	GC 3	1997	*Kharif* rainfed	Medium early	Tol. to drought
12.	V 585	1997	*Kharif* rainfed, for better rainfall situation	Medium maturing, seeds creamy	-
13.	V 240	1993	*Kharif* rainfed	Large seeded seed, red medium late maturing, dual purpose	-
14.	V 130	1993	*Kharif* rainfed	Medium maturing , white seeded	Res. to CYMV
15.	RC 19	1987	For dry regions	Seed fawn coloured	-
16.	Pant lobia 1	-	*Kharif*/Summer	65 days variety, 27% protein content, white seeded	Res. to YMV, aphid
17.	Pant lobia 2	-	*Kharif*/Summer	Red seed, 30% protein content, 70 days variety	-
18.	Subra	-	Rice fallow	Seeds are off-white, bushy, of 67-70 days	-
19.	Hridya	-	Rice fallow	Bushy, early, seeds strawed coloured	Res. to aphid, PB, LR
20.	Krishnamony (PTB 2)	-	Rice fallow	Black seeded, bushy non-trailing, early maturing	-
21.	Kankamony (PTB 1)	-	*Kharif*	Reddish brown seeds, dual purpose, of 70-75 days	-

Abbreviations: Mod.: Moderately; Res.: Resistant; Tol.: Tolerant; CYMV: Cowpea Yellow Mosaic Virus; YMV: Yellow Mosaic Virus, LS: Leaf Spot; LCV: Leaf Curl Virus; LR: Leaf Rust

Horsegram

Table 43. Promising and popular varieties of horsegram

States	Varieties
Andhra Pradesh	CRIDA R1 18, CRHG 19 , PHG 9,Palem 1 , Palem 2
Gujarat	GHG 5 (Dantiwada Gujarat Horse gram-1)
Karnataka	PHG 9 ,BJPL 1,BGM 1
Rajasthan	AK 21 , AK 42 , AK 53
Tamil Nadu	CRHG 19
Uttarakhand	VLG 8 , VLG 10 , VLG 15 , VLG 19
Maharashtra	D 40 1

Table 44. Important information about the horsegram varieties

Sl No.	Varieties	Year of release	Recommended niche	Salient features		Reaction to biotic and abiotic stresses and quality traits
				Maturity group	Seed colour/ plant type	
1.	AK 53	2013	*Kharif*, rainfed	Extra early	-	-
2.	CRHG 19	2012	*Kharif*, rainfed	Medium	Brown	Tol. to major diseases
3.	VLG 19	2010	*Kharif* rainfed	Medium	-	Mod. Res. to anthracnose
4.	Indira kulthi 1	2010	*Kharif* rainfed	-	Black	-
5.	VLG 15	2008	*Kharif* rainfed	Medium	-	Mod. Res. to anthracnose
6.	BJPL 1	2008	*Kharif* rainfed	Medium early	-	Mod. Res. to PM, YMV
7.	CRIDA 1-18 R	2007	*Kharif* rainfed	Medium	-	Tol. to PM, YMV, LB
8.	VLG 10	2006	*Kharif* rainfed	Medium late	-	Mod. Res. to anthracnose, SR
9.	VLG 8	2006	*Kharif* rainfed	Medium late	-	Mod. Res. to anthracnose, SR
10.	AK 42	2005	*Kharif* rainfed	Medium	Red	-
11.	AK 21	1999	*Kharif* rainfed	Early	Synchronized growth	-
12.	Palem 2	1998	*Kharif* rainfed	-	Yellow, bold poded	-
13.	Palem 1	1998	*Kharif* rainfed	-	Yellow, Semi-spreading	-
14.	PHG 9	1997	*Kharif* rainfed	Medium	Viny growth habit	-
15.	BGM 1	1990	*Kharif* rainfed	-	Light brown, bushy, tendrils,	Tol. to YMV
16.	D40 1	1990	*Kharif* rainfed	Early	light brown	-

Abbreviations: Mod.: Moderately; Res.: Resistant; Tol.: Tolerant; PM: Powdry Mildew; YMV: Yellow Mosaic Virus; LB: Late Blight; SR: Sclerotia Rot

Oilseeds

Soybean

Table 45. Promising and popular soybean varieties

State	Varieties
Madhya Pradesh	JS 95-60, JS 93-05, JS 335, NRC 7, NRC 37, JS 97-52, MAUS 81 (Shakti), MAUS 61-2
Rajasthan	JS 9305, JS 335, NRC 37, JS 97-52, MAUS 81 (Shakti), MAUS 61-2, Pratap Soya 1, Pratap Soya 2, RKS 24
Gujarat	JS 93-05, JS 335, NRC 37, JS 97-52, MAUS 81 (Shakti)
Maharashtra (Marathwada and Vidarbha)	JS 9305, MAUS 61-2, JS 97-52, NRC 37, MAUS 71, MAUS 158, Phule Kalyani, MAUS 61, MAUS 81 (Shakti), TAMS 38
Southern Maharashtra	Pratap Soya 2, MACS 450, MAUS 61, MAUS 71, MAUS 158, Phule Kalyani, TAMS 38
Himachal Pradesh	VL Soya 63, VL Soya 59, VL Soya 47, Palam Soya, Hara Soya
Uttarakhand	VL Soya 65, VL Soya 63, VL Soya 59, VL Soya 47
Punjab	SL 744, SL 688, Pusa 9814, PS 1347, SL 525, Pusa 97-12, PS 1225
Haryana	SL 688, Pusa 9814, PS 1347, SL 525, Pusa 97-12, PS 1225
Uttar Pradesh	SL 688, Pusa 9814, PS 1347, SL 525, Pusa 97-12, PS 1225
Chhattisgarh	JS 93-05, JS 335, NRC 7, NRC 37, JS 97-52, MAUS 81 (Shakti), MAUS 61-2
Jharkhand	Pratap Soya 1, Pratap soya 2, JS 97-52, MAUS 71, Indira Soya 9
Andhra Pradesh	Pratap Soya 2, MACS 450, MAUS 61, LSb 1
Karnataka	DSb-1, Pratap Soya 2, MACS 450, MAUS 61

Table 46. Important information on the soybean varieties

Sl No.	Varieties	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
1.	SL 744	2012	Timely sown irrigated conditions	Determinate, late (139 days), small seed	Res. to YMV, SMV
2.	MAUS 158	2010	*Kharif*, rainfed, timely sown	Semi determinate, medium (95 days), medium seed	Res. to BP, RRR, RAB, PLS, CR, TLS, CLS, MLS, YMV
3.	VL Soya 65	2010	*Kharif*, rainfed, timely sown	Late (121 days)	Res. to FELS, PB, LB
4.	DSb 1	2009	*Kharif*, rainfed, timely sown	Semi determinate, early (90-95 days)	Res. to GB, green and grey semi-looper and SF; Less susceptible to SR;
5.	PS 1225	2009	*Kharif*, rainfed, timely sown	Determinate, late (125 days), small seed	Res. to YMV, BP, ChR, CR, anthracnose, PB, SMV
6.	JS 97-52	2008	*Kharif*, rainfed, timely and late sown, excessive soil moisture condition	Semi determinate, medium (100 days), small seed	Res. to YMV, CR; Mod. Res. to RAB
7.	PS 1347	2008	*Kharif*, rainfed, timely sown	Determinate, late (123 days), medium seed	Res. to YMV, RAB, BP, SMV, ChR
8.	SL 688	2008	Timely sown irrigated	Determinate, late (125 days), medium seed	Res. to YMV
9.	VL Soya 59	2008	*Kharif*, rainfed, timely sown	Semi determinate, late (135 days), bold seed	Res. to PB, TLS
10.	VL Soya 63	2008	*Kharif*, rainfed, timely sown	Determinate, late (130 days),	Res. to PB and TLS
11.	JS 95-60	2007	*Kharif*, rainfed, timely and late sown, draught prone areas	Determinate, early (82-88 days), bold seed	Res. to SF, defoliators; Tol. to RR, BP, RAB,
12.	Pratap Soya 1	2007	*Kharif*, rainfed, timely sown	Determinate, medium (96-104 days), medium seed	Resistant to GB
13.	Pratap Soya 2	2007	*Kharif*, rainfed, timely and late sown	Determinate, early (91 days), medium seed	Mod. Res. to BP, GB, LM; Susc.e to rust
14.	SL 525	2007	Timely sown irrigated	Determinate, late (121 days), medium seed	Res. to YMV; Tol. to SB, RKN
15.	Phule Kalyani	2006	*Kharif*, rainfed, timely sown	Determinate, medium (95-100 days), bold seed	-
16.	Pusa 9814	2006	*Kharif*, rainfed, timely sown	Determinate, late (125 days), medium seed	Res. to YMV, SMV, PB
17.	Palam Soya	2005	*Kharif*, rainfed, timely sown	Determinate, late (121 days), bold seed	Res. to FELS
18.	Pusa 9712	2005	*Kharif*, rainfed, timely sown	Determinate, late (116 days), medium seed	Res. to YMV
19.	TAMS 38	2005	*Kharif*, rainfed, timely sown	Determinate, early (95 days), medium seed	-

(Continued)

Table 46. *(Concluded)*

Sl No.	Varieties	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
20.	MAUS 81 (Shakti)	2004	*Kharif*, rainfed, timely sown	Semi determinate, early (93-97 days), medium seed	Res. to BP, RAB, SMV, YMV, PB
21.	JS 93-05	2002	*Kharif*, rainfed, timely and late sown	Semi determinate, early (90-95 days), bold seed	-
22.	MAUS 61 (Pratikar)	2002	*Kharif*, rainfed, timely sown	Semi determinate, medium (95-100 days), medium seed	Res. to MLS
23.	MAUS 61-2 (Pratishtha)	2002	*Kharif*, rainfed, timely sown	Semi determinate, medium (100-105 days), medium seed	Res. to BP, RAB, SMV, YMV, PB; Mod.Res. to SR
24.	MAUS 71 (Samrudhi)	2002	*Kharif*, rainfed, timely sown	Medium (93-100 days), medium seed	
25.	Hara Soya	2001	*Kharif*, rainfed, timely sown	Semi determinate, late (108-130 days), bold seed	Res. to BP, BS, BB, FELS, PB
26.	Indira Soya 9	2001	*Kharif*, rainfed, timely sown	Semi determinate, late (106 days), medium seed	Res. to rust; Mod. Res. to ST, GB, LF
27.	LSb-1	2001	*Kharif*, rainfed, timely and late sown, escapes terminal drought	Determinate, early (65-71 days), bold seed	-
28.	NRC 37 (Ahilya 4)	2001	*Kharif*, rainfed, timely sown, suitable for high rainfall areas	Determinate, medium (99-105 days), small seed	Mod. Res. to CR, BP, PB and bud blight like syndrome
29.	VL Soya 47	2000	*Kharif*, rainfed, timely sown	Determinate, late (122-125 days), bold seed	Res./ Tol. to anthracnose, CLS, BLB, FELS and aphids
30.	MACS 450	1999	*Kharif*, rainfed, timely and late sown, escapes terminal drought	Semi determinate, early (90-95 days), bold seed	Res. to YMV, BP and defoliators
31.	NRC 7 (Ahilya 3)	1997	*Kharif*, rainfed, timely and late sown, drought tolerant	Determinate, early (90-99 days), bold seed	Res. to BP, MLS; Tol. to stem fly, GB, green semilooper and defoliators
32.	JS 335	1994	*Kharif*, rainfed, timely sown, widely adaptable	Semi determinate, medium (95-100 days), medium seed	Res. to BP; Susc. to YMV

Abbreviations: Mod.: Moderately; Res.: Resistant; Tol.: Tolerant; BS: brown Spot, LF: leaf Folder; ST: Stem Tunneling; YMV: Yellow Mosaic Virus; SMV: Soybean Mosaic Virus; BP: Bacterial Pustule; PB: Pod Blight; MLS; *Myrothecium* Leaf Spot; SR: Soybean Rust; BB: Bud Blight; FELS: Frog Eye Leaf Spot; GB; Girdle Beetle; CR: Charcoal Rot; RAB: *Rhizoctonia* Aerial Blight

Groundnut

Table 47. Promising and popular groundnut varieties

State	Varieties
Andhra Pradesh	Kadiri 6, Kadiri 7, Kadiri 8, Narayani, ICGV 91114, Kadiri 9, GPBD 4, Abhaya, Prasuna, Greeshma, Ajeya, Vijetha, Kadiri Harithandra, ICGV 00350
Gujarat	GG 2, GG 20, TG 37A, GG 5, GG 6, GG 7, JL 501, GJG 9, GJG 31, TPG 41, Dh 86
Jharkhand	BAU 13, Girnar 3, GPBD 5, Vijetha, Dh 86, Dh 101, TG 38B, TG 51
Karnataka	GPBD 4, TGLPS 3, Ajeya, Vijetha, VRI (Gn) 6, ICGV 91114, TAG 24, Kadiri Harithandra
Madhya Pradesh	JGN 3, JGN 23, AK 159, GG 8
Maharashtra	AK 159, JL 220, JL 286, JL 501, AK 303, AK 265, Ratneshwar, TLG 45, TAG 24, Dh 86, Kadiri Harithandra
NEH region	BAU 13, ICGS 76, ICGV 86590, GPBD 5, TAG 24, Dh 86, Dh 101, TG 38B, TG 51, TG 37A
Odisha	OG 52-1, ICGV 91114, Girnar 3, TAG 24, TG 38B, TG 51, TG 37A, Dh 86, Dh 101
Punjab	M 548, Girnar 2, HNG 10, TG 37A, Prakash, Amber, Utkarsh, GG 14, GG 21, HNG 69, HNG 123, Raj Mungphali 1, SG 99
Rajasthan	HNG 10, Girnar-2, TG 37A, Prakash, Amber, Utkarsh, GG 14, GG 21, HNG 69, HNG 123, Raj Mungphali-1, TBG 39, Pratap Mugphali 1, Pratap Mugphali-2, JL 501
Tamil Nadu	VRI 2, VRI (Gn) 6, TMV (Gn) 13, Co (Gn) 5, Co 6, ALR 2, VRI (Gn) 7, GPBD 4, ICGV 00348, ICGV 00350
Uttar Pradesh	Prakash, Amber, Utkarsh, HNG 10, Girnar 2, GG 14, GG 21, TG 37A, HNG 69, HNG 123, Raj Mungphali 1, Dh 86
Uttarakhand	VL Mungphali 1
West Bengal	Girnar 3, TAG 24, TG 37A, TG 51, Dh 86, Dh 101, TG 38B

Table 48. Important information on the groundnut varieties

Sl No.	Varieties/ hybrid	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
1.	ICGV 00350	2012	*Rabi*-summer	Erect, medium maturity, small seed	Res. to LLS, rust; Tol. to stem rot
2.	HNG 123	2012	*Kharif*	Semi-spreading , late maturity, large seed	Tol. to collar rot, stem rot,ELS
3.	Raj Mungfali 1 (RG 510)	2012	*Kharif*	Spreading , late maturity, large seed	Tol. to collar rot
4.	CO 6	2012	*Kharif*	Semi-spreading , late maturity, medium seed	Res. to LLS, rust
5.	GJG 31 (J 71)	2012	*Kharif*	Erect, early maturity, small seed	Tol. to stem rot
6.	GJG 9 (J 69)	2012	Summer	Erect, medium maturity, medium seed	-
7.	JL 501	2010	*Kharif*	Erect, early maturity, medium seed	-
8.	Vijetha (R 2001-2)	2010	*Kharif*	Erect, medium maturity, small seed	Res. to PBND
9.	Girnar 3 (PBS 12160)	2010	*Kharif*	Erect, early maturity, small seed	Tol. to leaf miner and thrips
10.	Kadiri Haritandhra (K 1319)	2010	*Rabi*-summer	Erect, late maturity, medium seed	-
11.	GPBD 5	2010	*Kharif*	Erect, early maturity, small seed	Res. to LLS and rust
12.	HNG 69	2010	*Kharif*	Semi-spreading , late maturity, large seed	Tol. to collar rot, stem rot and ELS
13.	VRI (Gn) 6 (VG 9816)	2009	*Kharif*	Erect, early maturity, small seed	Tol. to LLS, rust, PBND
14.	Jawahar Groundnut 23	2009	*Kharif*	Erect, early maturity, small seed	Tol. to ELS and LLS
15.	Kadiri 7	2009	*Kharif*	Semi-spreading, late maturity, large seed	Tol. to sucking pest and leaf spots
16.	Kadiri 8	2009	*Kharif*	Semi-spreading, late maturity, large seed	Tol. to sucking pest and LS leaf spots
17.	Kadiri 9	2009	*Kharif*	Erect, early maturity, small seed	Tol. to early-and end-of-season drought
18.	Greeshma	2009	*Kharif* and *rabi*-summer	Erect, early maturity, medium seed	Tol. to LLS
19.	TGLPS 3 (TDG-39)	2009	*Kharif*	Semi-spreading , medium maturity, large seed	-
20.	TG 51	2008	*Rabi*-summer	Erect, late maturity, small seed	Tol. to SR stem rot and RR root rot
21.	Ajeya (R 2001-3)	2008	*Kharif*	Erect, medium maturity, small seed	Drought tolerant
22.	VL- Moongphali 1	2008	*Kharif*	Erect, late maturity, medium seed	Res. to LLS and root rot
23.	Girnar 2 (PBS 24030)	2008	*Kharif*	Semi-spreading, late maturity, large seed	Tol. to rust and LLS
24.	ICGV 00348	2008	*Kharif*	Semi-spreading , late maturity; medium seed	Tol. to LS and rust
25.	VRI (Gn) 7	2008	*Kharif*	Semi-spreading , late maturity, medium seed	Tol. to leaf miner, LLS and rust

(Continued)

Table 48. *(Continued)*

Sl No.	Varieties/ hybrid	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
26.	Vasundhara (Dh 101)	2007	*Rabi*-summer	Erect, late maturity, small seed	Tol. to SR, PBND, thrips and *Spodoptera litura*
27.	ICGV 91114	2007	*Kharif*	Erect, extra early maturity, medium seed	Tol. to drought , LLS and rust
28.	Narayani (TCGS 29)	2007	*Kharif* and *rabi*-summer	Erect, early maturity, medium seed	Tol. to mid-season moisture deficit stress
29.	AK 265	2007	*Kharif*	Semi-spreading , medium maturity, medium seed	Res. to rust and LLS
30.	M 548	2007	*Kharif*	Spreading , medium maturity, large seed	-
31.	TBG 39 (TG 39)	2007	*Kharif*	Semi-spreading , medium maturity, large seed	-
32.	AK 303	2007	*Kharif*	Semi-spreading , late maturity, large seed	-
33.	GG 8 (J 53)	2006	*Kharif*	Erect, early maturity, small seed	Tol. to PBND and collar rot
34.	TG 38B (TG 38)	2006	*Rabi*-summer	Erect, late maturity, medium seed	Tol. to stem rot
35.	Prasuna (TCGS 341)	2006	*Kharif* and *rabi*-summer	Erect, medium maturity, medium seed	Tol. to Kalahasti malady
36.	Abhaya (TPT 25)	2006	*Kharif* and *rabi*-summer	Erect, early maturity, small seed	Tol. to early-and-mid season moisture deficit stress
37.	TMV (Gn)13	2006	*Kharif*	Erect, early maturity, medium seed	Tol. to early-and mid-season moisture stress conditions
38.	Prutha (Dh 86)	2005	*Rabi*-summer	Erect, late maturity, small seed	Tol. to tikka and sucking pests
39.	Kadiri 6 (K 1240)	2005	*Rabi*-summer	Erect, early maturity, small seed	Tol. to leaf spots
40.	Pratap Mugphali 2 (ICUG 92195)	2005	*Kharif*	Erect, early maturity, small seed	Tol. to ELS, LLS, PBND, *Spodoptera litura*, leaf miner and thrips
41.	Pratap Mugphali 1 (ICUG 92035)	2005	*Kharif*	Erect, early maturity, small seed	Tol. to ELS, LLS, PBND, *Spodoptera litura,* leaf miner and thrips
42.	Ratneshwar (LGN 1)	2005	*Kharif*	Erect, early maturity, small seed	Tol. to stem rot
43.	Co(GN) 5	2005	*Kharif*	Semi-spreading , late maturity, medium seed	Tol. to rust, PBND, leaf miner and *Spodoptera litura*
44.	Utkarsh (CSMG 9510)	2005	*Kharif*	Spreading , late maturity, large seed	-
45.	GG 21 (JSSP 15)	2005	*Kharif*	Semi-spreading, late maturity, large seed	-
46.	TPG 41	2004	*Rabi*-summer	Erect, late maturity, large seed	-
47.	TG 37A	2004	*Kharif* and *rabi*-summer	Erect, late maturity, small seed	Possesses fresh seed dormancy up to 1 week
48.	Vikas (GPBD 4)	2004	*Kharif*	Erect, early maturity, small seed	Res. to LLS and rust

(Continued)

Table 48. *(Concluded)*

Sl No.	Varieties/ hybrid	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
49.	TLG 45	2004	*Kharif*	Erect, medium maturity, large seed	-
50.	SG 99	2004	Summer	Erect, early maturity, medium seed	Tol. to PBND
51.	Phule Unap (JL 286)	2004	*Rabi*-summer	Erect, extra early maturity, small seed	-
52.	GG 6	2003	*Rabi*-summer	Erect, early maturity, medium seed	-
53.	GG 14 (JSP 28)	2003	*Kharif*	Spreading , medium maturity, medium seed	Tol. to thrips, *Spodoptera litura* and leaf miner
54.	AK 159	2002	*Kharif*	Erect, early maturity small seed	-
55.	GG 7 (J-38)	2001	*Kharif*	Erect, early maturity medium seed	Tol. to LLS
56.	Phule Vyas (JL 220)	2000	*Kharif*	Erect, extra-early maturity, medium seed	-
57.	GG 5	1999	*Kharif*	Erect, medium maturity, medium seed	Tol. to drought
58.	CSMG 884 (Prakash)	1999	*Kharif*	Semi-spreading, medium maturity, large seed	Tol. to leaf spots and PBND
59.	HNG 10	1998	*Kharif*	Semi-spreading , late maturity, medium seed	-
60.	JGN 3 (Jawahar Groundnut 3)	1997	*Kharif*	Erect, early maturity, small seed	Tol. of drought
61.	Smruti (OG 52-1)	1995	*Kharif* and *rabi*-summer	Erect, medium maturity, medium seed	Res. to collar rot , stem rot, rust and leaf spots
62.	ALR 2 (ALG 56)	1994	*Kharif*	Erect, early maturity, medium seed	Res. to rust and LLS
63.	Birsa Bold (BAU 13)	1993	*Kharif*	Spreading , medium maturity, large seed	Tol. of collar rot and PBND
64.	GG 20 (Gujarat groundnut 20)	1992	*Kharif*	Semi-spreading , medium maturity, large seed, Suitable for confectionery	-
65.	CSMG 84-1 (Ambar)	1992	*Kharif*	Spreading , late maturity, medium seed	Tol. to high temperature; Res. to ELS and LLS
66.	TAG 24	1991	*Kharif* and *rabi*-summer	Erect, semi-dwarf, small seed	High Harvest Index (>50%) and high water use efficiency
67.	ICGV 86590 (ICGS 86)	1991	*Kharif*	Erect, early maturity, small seed	Res. to multiple diseases (rust, LLS, PBND, stem and pod rots); and *Spodoptera litura*
68.	VRI 2	1989	*Kharif* and *rabi*-summer	Erect, early maturity, medium seed	Tol. to ELS, LLS and rust
69.	ICGS 76 (ICGV 87141)	1989	*Kharif*	Semi-spreading, medium maturity, medium bold seed	Res. to ELS and LLS
70.	GG 2 (Gujarat Groundnut 2)	1983	Summer	Erect, early maturity, small seed	High water-use efficiency

Abbreviations: Mod.: Moderately; Res.: Resistant; Tol.: Tolerant; ELS: Early Leaf Spot; LLS: Late Leaf Spot; PBND: Peanut Bud Necrosis Disease; (Small seed= less than 35g/100 seed; medium seed= more than 35 to 45g/100 seed; large seed= more than 45g/100 seed)
(Maturity group: Extra-early = less than 95 days; early=less than110 days; medium=111 to 120 days; late= more than 120 days)

Rapeseed-mustard

Table 49. Promising and popular rapeseed-mustard varieties/hybrids

State	Crop	Recommended varieties/hybrids
Asom	Indian mustard	Pusa Mahak (JD 6), Pusa Mustard 25
Bihar	Indian mustard	Pusa Mahak (JD 6)
	Yellow sarson	Pitambari, YSH 401
Chhattisgarh	Indian mustard	Pusa Mahak (JD 6), Pusa Mustard 25
Delhi	Indian mustard	NRCDR 2, Pusa Mustard 21 (LES 1-27)),Pusa Mustard 22, Pusa Mustard 24, DMH 1 (hybrid), RB 50, RGN 145, Pusa Mustard 25, Pusa Karishma, Pusa Vijay, Pusa Mustard 26
	Karan rai	Pusa Swarnim, Pusa Aditya
Gujarat	Indian mustard	GM 3
Haryana	Indian mustard	Swaran Jyoti, Vasundhra, CS 54, RGN 48, Navgold, NRCDR 2, Pusa Mustard 21 (LES 1-27)), Pusa Mustard 22, CS 56, Pusa Mustard 24, DMH 1 (hybrid), RB 50, RGN 145, Pusa Mustard 25, Pusa Mustard 26, Laxmi
Himachal Pradesh	Indian mustard	RCC 4
	Gobhi sarson	Him Sarson 1
Jammu and Kashmir	Indian mustard	NRCDR 2, Pusa Mustard 21 (LES 1-27)),RGN 13, Pusa Mustard 22, DMH 1 (hybrid), RB 50, RGN 145, Pusa Mustard 25,
Jharkhand	Indian mustard	Pusa Mahak (JD 6), Pusa Mustard 25
Madhya Pradesh	Indian mustard	Maya, Swaran Jyoti,Vasundhra, CS 54, Ashirwad, RGN 73, NRCHB 101, NRCHB 506 (hybrid), DMH 1 (hybrid), JM 2, JM 3, Jagannath, JM 1, Pusa Mustard 27
Odisha	Indian mustard	Pusa Mahak (JD 6), Pusa Mustard 25
	Toria	Anuradha, Parbati
Punjab	Indian mustard	Aravali, Geeta, RGN 48, Navgold, NRCDR 2, Pusa Mustard 21 (LES 1-27), Pusa Mustard 22, CS 54, Pusa Mustard 24, DMH 1 (hybrid), RB 50, RGN 145, Pusa Mustard 25, PBR 210, RLC 1, RLC 2, Pusa Mustard 26
	Gobhi sarson	GSC 5, GSC 6
Rajasthan	Indian mustard	Aravali, RGN 13, Swaran Jyoti,Vasundhra, CS 54, Ashirwad, RGN 48, NRCDR 2, Pusa Mustard 21 (LES 1-27)), RGN 73, Pusa Mustard 22, CS 56, Pusa Mustard 24, Pusa Mustard 25, Pusa Mustard 27, DMH 1 (hybrid), NRCHB 101, NRCHB 506 (hybrid), RB 50, RGN 145, RRN 505
	Taramira	Karan Tara, Narendra Tara
Uttar Pradesh	Indian mustard	Maya, Vasundhra, CS 54, Ashirwad, Pusa Mustard 21 (LES 1-27)), RGN 73, NRCHB 101, NRCHB 506 (hybrid), Pusa Mustard 25, Basanti, Kanti, Urvashi, Jagannath, NDRE 4, Pusa Mustard 27
	Yellow sarson	Pitambari, YSH 401
Uttarakhand	Indian mustard	Maya, Vasundhra, CS 54, Ashirwad, Pusa Mustard -21 (LES 1 27)), RGN 73, NRCHB 101, NRCHB 506 (hybrid), Pusa Mustard 25, Basanti, Kanti, Urvashi
	Toria	VLT 3, Uttara
	Yellow sarson	Pitambari, YSH 401
West Bengal	Indian mustard	Pusa Mahak (JD 6), Pusa Mustard 25, Pusa Mustard 27
	Yellow sarson	Pitambari, YSH 0401

Table 50. Important information on the rapeseed-mustard varieties / hybrids

Sl No.	Varieties/ hybrid	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
			INDIAN MUSTARD		
1.	RLC 2	2012	*Rabi*, irrigated, timely sown	Late, 140-150 days, small seed	Low erucic acid content
2.	Chhattisgarh Sarson 1	2010	*Rabi*	-	-
3.	Pant Rai 19	2012	*Rabi*, irrigated, normal sown	Medium early maturity group (99-133 days)	-
4.	Pusa Mustard 28	2011	*Rabi*, irrigated,	Medium early maturity group (97-131 days)	Tolerant to stem rot, white rust and powdery mildew
5.	RH 0119	2010	*Rabi*, irrigated		
6.	DRMR 601	2010	*Rabi*, irrigated, timely sown	Late, 144 days	High temperature and salinity tolerance
7.	Pusa Mustard 26 (NPJ 113)	2010	*Rabi*, irrigated, late sown	Medium maturity 111-130 days, small seed	Moderately tolerant to high temperature at seedling and maturity stage
8.	Pusa Mustard 27 (EJ 17)	2010	*Rabi*, irrigated, early sown	Medium maturity 111-130 days, small seed	Tolerant to high temperature at seedling and maturity stage
9.	Dhara Mustard (hybrid 1)	2009	*Rabi*, irrigated, timely sown	Late maturity 131-150 days, small seed	High pod density, resistant to white rust
10.	NRC HB 101	2009	*Rabi*, irrigated, late sown	Late maturity 131-150 days, bold seed	-
11.	NRCHB 506 (hybrid)	2009	*Rabi*, irrigated, timely sown	Late maturity 131-150 days, medium seed	-
12.	RB 50	2009	*Rabi*, rainfed, timely sown	Late maturity 131-150 days, bold seed	-
13.	RGN 145	2009	*Rabi*, irrigated, late sown	Late maturity 131-150 days, medium seed	-
14.	Pusa Mustard 25 (NPJ 112)	2009	*Rabi*, irrigated, early sown	Early maturity <110 days, small seed	High temperature tolerance at juvenile stage
15.	Pusa mustard 22 (LET 17)	2008	*Rabi*, irrigated, timely sown	Late maturity 131-150 days, small seed	-
16.	CS 56	2008	*Rabi*, irrigated, late sown	Late maturity 120-130 days, medium seed size	Salt tolerant, 1000 seed weight more than 6 g
17.	Pusa Mustard 24 (LET 18)	2008	*Rabi*, irrigated, timely sown	Late maturity 131-150 days, bold seed, low erucic acid (<2%)	
18.	Pusa Vijay	2008	*Rabi*, irrigated, timely sown	Late maturity 135-154 days, medium seed size	High temperature tolerance at seedling stage and salinity up to 12 DS/m
19.	RLC 1 (ELM-079)	2008	*Rabi*, irrigated, timely sown	Late maturity 131-152 days, small seed	Low erucic acid (<2%)
20.	PBR 210	2007	*Rabi*, irrigated, early sown	Late maturity 131-150 days, medium seed size	-
21.	NRCDR 2	2007	*Rabi*, irrigated timely sown	Late maturity 131-150 days, medium seed size	-

(Continued)

Table 50. *(Continued)*

Sl No.	Varieties/ hybrid	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
22.	Pusa Mustard 21 (LES 1-27)	2007	*Rabi*, irrigated, timely sown	Late maturity 131-150 days, small seed, low erucic acid (<2%)	-
23.	RGN 73	2007	*Rabi*, irrigated, timely sown conditions	Late maturity 131-150 days, small seed size	-
24.	RGN 48	2006	*Rabi*, rainfed, timely sown	Late maturity 131-150 days, medium seed size	-
25.	Navgold (YRN 6)	2006	*Rabi*, irrigated, late sown	Late maturity 131-150 days, medium seed size	-
26.	RRN 505	2006	*Rabi*, irrigated, late sown	Late maturity 131-150 days, medium seed size	-
27.	GM 3	2006	*Rabi*, irrigated, timely sown	Late maturity 131-150 days, medium seed size	-
28.	CS 54	2005	*Rabi*, irrigated, early sown	Late maturity 131-150 days, medium seed size	Tolerant to sodic and saline soils
29.	Ashirwad (RK 01-03)	2005	*Rabi*, irrigated, late sown	Medium maturity 111-130 days, medium seed size	Moderately resistant at leaf and pod stage to *Alternaria* blight and resistant to white rust diseases
30.	Pusa Mahak (JD 6)	2005	*Rabi*, rainfed, timely sown	Late maturity 131-150 days, medium seed size	-
31.	JM 2	2005	*Rabi*, irrigated, timely sown	Late maturity 131-150 days, medium seed size	Resistant to white rust disease
32.	JM 3	2005	*Rabi*, irrigated, timely sown	Late maturity 131-150 days, medium seed size	Tolerant to *Alternaria* blight disease
33.	Pusa Karishma (LES 39)	2005	*Rabi*, irrigated, timely sown	Late maturity 131-150 days, small seed size Low erucic acid (< 2%)	
34.	Kanti (RK 9807)	2003	Multiple cropping, early sowing (mid-September)	Late maturity 131-150 days, small seed size	-
35.	Maya (RK 9902)	2003	*Rabi*, irrigated, timely sown	Late maturity 131-150 days, medium seed size	Resistant to white rust disease
36.	RGN 13	2003	*Rabi*, irrigated, timely sown	Late maturity 131-150 days, medium seed size	-
37.	Swaran Jyoti (RH 9801)	2003	*Rabi*, irrigated, late sown	late maturity 131-150 days, medium seed size	-
38.	Vasundhra (RH 9304)	2003	*Rabi*, irrigated, timely sown	Late maturity 120-130 days, medium seed size	-
39.	RCC 4	2001	*Rabi*, irrigated, timely sown	Compact plant type, late maturity 131-150 days, small seed size	-

(Continued)

Table 50. *(Continued)*

Sl No.	Varieties/ hybrid	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
40.	Aravali Mustard	2001	*Rabi*, rainfed, timely sown	Medium maturity 111-130 days, medium seed size	-
41.	Urvashi	2001	*Rabi*, irrigated, timely sown	Late maturity 131-150 days, medium seed size	Tolerant to high temperature during juvenile stage
42.	Narendra Ageti Rai 4	2001	*Rabi*, irrigated, early sown	early maturity <110 days, small seed size	White rust and downy mildew tolerant
43.	Basanti	2001	*Rabi*, irrigated, timely sown	Late maturity 131-150 days, medium seed size ,yellow seed	Resistant to white rust and tolerant to *Alternaria* blight diseases
44.	CS 52	1998	*Rabi*, irrigated, timely sown	Late maturity 131-150 days, medium seed size	Tolerant to sodic and saline soils
45.	Laxmi (RH 8812)	1997	*Rabi*, irrigated, timely sown	Late maturity 131-150 days, bold seed	-
				KARAN RAI	
46.	Pusa Swarnim	2003	*Rabi*, rainfed, timely sown	Medium maturity 120-140 days, medium seed	-
47.	Pusa Aditya	2006	*Rabi*, rainfed, timely sown.	Very Late maturity >160 days, small seed	-
				TARAMIRA	
48.	Karan Tara	2001	*Rabi*, rainfed, timely sown	Medium Maturity 120-130 days, medium seed size	-
49.	Narendra Tara	2007	*Rabi*, rainfed, timely sown	Medium maturity 125-135 days, small seed	-
50.	Vallabh Taramira 1	2010	*Rabi*, rainfed, timely sown	Medium maturity 130-135 days, small seed	-
51.	Vallabh Taramira 2	2010	*Rabi*, rainfed, timely sown	Medium maturity 135-140 days, small seed	-
				TORIA	
52.	Parbati	2001	*Rabi*, rainfed, timely sown	Late maturity 101-120 days, small seed	-
53.	Anuradha	2002	*Rabi*, rainfed, timely sown	Late maturity 101-120 days, small seed	-
54.	VL Toria 3	2007	*Rabi*, rainfed, timely sown	Very late maturity >120 days, small seed	-
55.	Uttara	2009	*Rabi* timely sown Irrigated	Late maturity 145-170 days, small seed size	-
56.	NRCYS 05-02	2009	*Rabi*, irrigated, timely sown	Late maturity 101-120 days, small seed	
57.	Pitambari (RKYS 02-05)	2010	*Rabi*, rainfed, timely sown	late maturity 110-115 days, bold seed	

(Continued)

Table 50 *(Concluded)*

Sl No.	Varieties/ hybrid	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
58.	YSH 0401	2009	*Rabi,* timely Sown	Compact, early maturity 115-130 days, small seed size	
			GOBHI SARSON		
59.	GSC 5	2007	*Rabi*, irrigated, timely sown	Medium maturity 121-140 days, small seed, low erucic (< 2%) and low glucosinolate (26-41 micromoles/g defatted seed meal)	
60.	GSC 6 (OCN 3)	2008	*Rabi*, irrigated, timely sown	Late maturity 141-160 days, small seed	
61.	Him Sarson 1	2009	*Rabi* timely sown, Irrigated	Late maturity 145-170 days, small seed size	

Sunflower

Table 51. Promising and popular sunflower varieties/hybrids

State	Varieties/hybrids
Karnataka	***Kharif* & *Rabi:*** KBSH 53, KBSH 41, RSFH 130, KBSH 44, KBSH 1, DRSF 113 ***Rabi:*** DRSH 1
Andhra Pradesh	***Kharif* & *Rabi*:** KBSH 44, KBSH 1, DRSF 113; ***Rabi:*** DRSH 1
Maharashtra (Vidarbha) *	***Kharif* & *Rabi:*** KBSH 1, DRSF 113, LSFH 35; ***Rabi:*** DRSH 1 ***Kharif:*** LFS-8 ***Kharif:*** TAS 82
Tamil Nadu	***Kharif* & *Rabi:*** KBSH 44, KBSH 1, CO 2, COSFV 5, DRSF 113; ***Rabi:*** DRSH 1
Punjab	**Spring:** DRSH 1, PSH 569
Other states (Odisha, Uttar Pradesh, Bihar, West Bengal, Haryana)	***Kharif* & *Rabi*:** KBSH 1, DRSF 113; ***Rabi:*** **summer:** DRSH 1

*Varieties and hybrids mentioned against each region are specific to that region in addition to the state releases

Table 52. Important information on the sunflower varieties/ hybrids

Sl No.	Variety/ hybrid	Year of release	Recommended niche	Salient features			Reaction to biotic and abiotic stresses and quality traits
				Yield (kg/ha)	Maturity (days)	Oil content (%)	
1.	CO 2	2012	*Kharif* & *Rabi*	1900-2200	85-90	38-40	Mod. Res. to *Alternaria* leaf spot, rust; Tol. to thrips and leaf hopper
2.	RSFH 130	2012	*Kharif* & *Rabi*	1200-1500	95-100	40	Tol. to necrosis
3.	PSH 569	2010	Summer	2000-2200	100	40	Mod. Res. to stem and head rot
4.	KBSH 53	2009	*Kharif* & *Rabi*	1200-1700	95-100	40-42	Tol. to powdery mildew
5.	LSFH 35	2008	*Kharif* & *Rabi* Black seed	1600-1900	95-100	36-38	Res. to downy mildew
6.	DRSF 113	2007	*Kharif* & *Rabi*,	1200-1500	90-92	36-39	High temperature tolerance, medium hull and black seed
7.	LFS 8	2007	*Kharif* & *Rabi*	1300-1600	90-95	36-39	Tol. to downy mildew, rust and *Alternaria*
8.	COSFV 5	2007	*Kharif* & *Rabi*	1300-1500	100-105	39-40	Mod Res. to *Alternaria* leaf spot, rust and SND
9.	TAS 82	2007	*Kharif*	800-1300	90-95	38-40	Tol. to thrips, white fly, necrosis and leaf hopper
10.	DRSH 1	2006	*Rabi*-summer	1300-1600	95-105	42-44	
11.	KBSH 41	2005	*Kharif* & *Rabi*	1000-1700	90-95	40-42	
12.	KBSH 44	2003	*Kharif* & *Rabi*	1700-2000	88-92	36-38	Tol. to moisture stress
13.	KBSH 1	1992	*Kharif* & *Rabi*	1500-2000	90-95	40-42	Res. to rust , downy mildew; Tol. to head borer

Safflower

Table 53. Promising and popular safflower varieties/hybrids

State	Varieties/ hybrids
Karnataka	***Rabi:*** A 2, PBNS 40, NARI–H 15, Phule Kusum
Andhra Pradesh	***Rabi:*** PBNS 40, NARI –H 15, Phule Kusum
Maharashtra	***Rabi:*** PBNS 40, PBNS 12, NARI –H 15, Phule Kusum, NARI 6
Vidarbha*	***Rabi:*** AKS 207
Western Maharashtra*	***Rabi:*** SSF 708
Marathwada*	***Rabi:*** Sharda
Madhya Pradesh and Chhattisgarh	***Rabi:*** JSF 97, JSI 73, JSF 1, PBNS 40, NARI –H 15, Phule Kusum
Other states (Odisha, Bihar, Jharkhand, West Bengal, Gujarat)	***Rabi:*** PBNS 40, NARI–H 15, Phule Kusum

*Varieties and hybrids mentioned against each region are specific to that region in addition to the state releases

Table 54. Important information on safflower varieties/ hybrids

Sl No.	Variety/ hybrid	Year of release	Recommended niche	Salient features			Reaction to biotic and abiotic stresses and quality traits
				Yield (kg/ha)	Maturity (days)	Oil content (%)	
1.	SSF 708	2012	*Rabi* & Rainfed and irrigated	1300-2200	115-120;	29	Mod Tol. to aphid
2.	PBNS 40	2007	*Rabi* & Rainfed and irrigated, Non-spiny	1500-1600	118-128	27	Mod. Tol. to *Alternaria* wilt, aphid
3.	PBNS 12	2007	*Rabi* & Rainfed and irrigated	1500-2000	135-140	29	Mod Tol. to aphid, *Alternaria*
4.	AKS 207	2007	*Rabi* & Rainfed	1200-1400	120-135	30	
5.	NARI –H 15	2006	*Rabi* and irrigated	2000-2200	126-129	28	Tol. to aphid
6.	Phule Kusum	2005	*Rabi* & Rainfed	1200-2200	125-140	28-29	Tol. to moisture stress
7.	JSF 97	2005	*Rabi* & Rainfed, Non-spiny	1500-1600	130-135	30	Tol. to aphid, wilt and *Alternaria*
8.	NARI 6	2001	*Rabi* & Rainfed and irrigated, Non-spiny	1000-1200	117-137	30	Mod. Tol. to wilt
9.	JSI 73	1999	*Rabi* & Rainfed and irrigated, Non-spiny	1400-1500	140-145	31	Tol. to rust, powdery mildew, aphid and wilt
10.	A 2	1997	*Rabi* & Rainfed	1200-1700	120-125	31	
11.	Sharda	1993	*Rabi* & Rainfed and irrigated	1200-1800	125-130	29	Mod. Tol. to aphid and wilt
12.	JSF 1	1987	*Rabi* & Rainfed and irrigated	1500-1600	140-145	30	

Castor

Table 55. Promising and popular castor varieties/hybrids

State	Varieties/ hybrids
Gujarat	GCH 7, DCH 519, GCH 6, GCH 4, GC 3
Karnataka	DCH 177, DCH 519, GCH 4, DCS 107,48-1 (Jwala)
Andhra Pradesh	DCH 177, DCH 519, GCH 4, DCS 107, 48-1(Jwala), Kiran, Haritha, Kranthi (PCS 4)
Maharashtra	DCH 177, DCH 519, GCH 4, DCS 107,48-1(Jwala)
Rajasthan	RHC 1, DCH 519, GCH 4, DCS 107
Other states (Odisha, Bihar, Jharkhand, Madhya Pradesh, Haryana, Uttar Pradesh and Chhattisgarh)	DCH 177, DCH 519, GCH 4, DCS 107,48-1(Jwala)

Table 56. Important information on the castor varieties/hybrids

Sl No.	Variety/ hybrid	Year of release	Recommended niche	Salient features			Reaction to biotic and abiotic stresses and quality traits
				Yield (kg/ha)	Maturity (days)	Oil content (%)	
1.	GC 3	2012	Irrigated	2340		49.6	Res. to wilt; Tol. to *Macrophomina* root rot
2.	DCS 107	2011	Rainfed & irrigated	1600-1800	100-135	49	Res. to wilt; Tol. to leaf hopper
3.	GCH 7	2007	Irrigated	3000-3500	110 -210	49	Res. to nematode-wilt complex
4.	48-1 (Jwala)	2007	Rainfed & irrigated	1100-1500	110-120	48	Res. to wilt, capsule borer; Tol. to jassid and *Botrytis*
5.	DCH 519	2006	Rainfed and irrigated	1700-2000	100-110	49	Res. to *Fusarium* wilt and jassids
6.	Kiran	2004	Rainfed	1200-1500	90-180	48-51	Tol. to *Botrytis* and jassids
7.	Haritha	2004	Rainfed	1400-1600	90-180	48-51	Res. to wilt
8.	RHC 1	2002	Rainfed and irrigated	2500-3000	45-90	49	
9.	DCH 177	2000	Rainfed	1500-1600	90-180	49	Mod. Res. to wilt
10.	GCH 6	1999	Irrigated	1400-2300	95-210	48	Tol. to *Macrophomina* root rot, wilt
11.	Kranthi (PCS 4)	1999	Rainfed and irrigated	1365	90-150	49	Mod. Res. to *Fusarium* wilt
12.	GCH 4	1988	Rainfed & irrigated	1800-2000	100-210	48-50	Res. to leafhopper

Linseed

Table 57. Promising and popular linseed varieties

State	Situation	Varieties
Asom	Rainfed	Shekhar, Garima, Shubhra, Sweta
	Irrigated	Shekhar, Garima, Shubhra
	DP	Ruchi, Shikha, Gaurav, Nagarkot
Bihar	Rainfed	Shekhar, Sweta, Shubhra,
	Irrigated	Shekhar, Garima, Shubhra
	DP	Rashmi, Meera, Shikha, Gaurav, Ruchi
Chhattisgarh	Rainfed	Sharda, Indira Alsi 32, Kartika,
	Utera	Sharda, Indira Alsi 32, Kartika
	Irrigated	Suyog, and RLC 92
Haryana	Irrigated	Binwa,
	DP	Nagarkot
Himachal Pradesh and	Rainfed	Sheela
Jammu and Kashmir	*Utera*	Bhagsu
	Irrigated	Binwa
	DP	Nagarkot
Jharkhand	Rainfed	Shekhar, Sweta, Shubhra
	Irrigated	Shekhar, Garima, Shubhra
	DP	Rashmi, Meera, Shikha, Gaurav, Ruchi
Karnataka	Rainfed	Sharda, Indira Alsi 32, Padmini
	Irrigated	Suyog, Jawahar 23, RLC 92
Madhya Pradesh	Rainfed	Padmini, JLS 9, Shival
	Utera	Padmini, JLS 9, Shival
	Irrigated	Suyog, JLS 9, Jawahar 23 and Azad Alsi 1
Maharashtra	Rainfed	Sharda, Indira Alsi 32, Padmini, Jawahar 23
	Utera	Sharda, Indira Alsi 32, Padmini, Jawahar 23
	Irrigated	Suyog, RLC-92
Odisha	Rainfed	Sharda, Indira Alsi-32, Padmini,
	Irrigated	Suyog, Jawahar 23, RLC 92
Punjab	Irrigated	Binwa,
	DP	Nagarkot,
Rajasthan	Rainfed	Padmini, Shival
	Irrigated	Suyog, Jawahar 23, Azad Alsi 1
	DP	Meera, Rashmi, Nagarkot, Parvati
Uttar Pradesh	Rainfed	Shekhar, Sweta, Shubhra
(Excluding Bundelkhand)	Irrigated	Shekhar, Garima, Shubhra, Neelum
	DP	Rashmi, Meera, Shikha, Gaurav, Nagarkot, Parvati, Ruchi
Bundelkhand of Uttar Pradesh	Rainfed	Padmini, Jawahar 23, Shival
	Irrigated	Suyog, Azad Alsi 1
West Bengal	Rainfed	Shekhar, Shubhra, Sweta, Neela
	Irrigated	Shekhar, Garima, Shubhra
	DP	Rashmi, Meera, Shikha, Gaurav, Nagarkot, Parvati, Ruchi

Table 58. Important information on the linseed varieties

Sl No.	Variety/ hybrid	Year of release	Recommended niche	Salient features			Reaction to biotic and abiotic stresses and quality traits
				Plant type and seed	Maturity (days)	Oil content (%)	
1.	Neelum	1978	*Rabi*	Erect, medium height, bold brown seed, disk shape blue flower	140-145	43	Tolerant to wilt and rust
2.	Neela	1982	*Rabi*	Semi erect, medium height, funnel shape blue flower, small brown seed	135-145	40	Moderately tolerant to rust
3.	Jawahar 23	1985	*Rabi*	Semi-erect, medium height, funnel white flower, medium light brown seed	120-130	43	Resistant to rust, wilt and powdery mildew
4.	Garima	1985	*Rabi*	Erect, medium height, disk shape blue flower, Light brown medium seed	125-135	42	Resistant to rust; tolerant to powdery mildew, *Alternaria* blight and wilt
5.	Shubhra	1985	*Rabi*	Semi erect, medium height , funnel white flower, dark brown medium seed	125-135	45	Resistant to rust; tolerant to *Alternaria* blight; moderately resistant to powdery mildew
6.	Gaurav	1987	*Rabi*	Erect, tall height, disk shape, red-violet flower, non dehiscent fawn medium seed,	135-140	43	Resistant to rust and wilt; tolerant to *Alternaria* blight
7.	Nagarkot (KL 31)	1995	*Rabi*	Erect, medium height, disk shape blue flower, light brown medium seed	165-170	43	Resistant to wilt, powdery mildew
8.	Shikha (LCK 8528)	1997	*Rabi*	Erect, tall height, disk shape blue flower, brown medium seed	135- 140	42	Resistant to rust, wilt; tolerant to *Alternaria* blight
9.	Padmini (LMH 62)	1999	*Rabi*	Semi erect, dwarf Height , disk shape Violet flower, light brown medium seed,	125	43	Moderately resistant to rust, wilt and powdery mildew
10.	JLS 9	1999	*Rabi*	Erect, dwarf height, funnel white flower, Light brown medium seed	115-135		Resistant to rust, wilt and powdery mildew; tolerant to *Alternaria* blight

(Continued)

Table 58. *(Continued)*

Sl No.	Variety/ hybrid	Year of release	Recommended niche	Salient features			Reaction to biotic and abiotic stresses and quality traits
				Plant type and seed	Maturity (days)	Oil content (%)	
11.	Rashmi (LCK 9216)	1999	*Rabi*	Erect, tall height, disk shape blue flower, Light brown medium seed	135-140	41	Res. to PM, rust, wilt; Mod. Res. to *Alternaria* blight and bud fly
12.	Meera (RL 993)	2000	*Rabi*	Erect, tall height, disk shape blue, Light brown medium seed	136-140	42	Res. to rust, wilt, PM; Mod. Res. to *Alternaria* blight; tol. to bud fly
13.	Parvati (LMH 16-5)	2001	*Rabi*	Erect, tall height, disk shape blue flower, Light brown medium seed	140-146	42	Res. to rust, wilt, powdery mildew; Mod. Res. to *Alternaria* blight; tolerant to bud fly
14.	Sheela (LCK 9211)	2001	*Rabi*	Semi-erect, medium Height, disk shape Blue flower, dark brown medium seed	155-160	41	Res. to rust, wilt; Mod. Res. to *Alternaria* blight and bud fly
15.	Shekhar (LCK 9313)	2001	*Rabi*	Semi erect, medium height, disk shape Blue flower, brown medium seed	135-140	42	Res. to powdery mildew rust, wilt; Mod. Res. to *Alternaria* blight
16.	Suyog (SLS27)	2004	*Rabi*	Semi erect, medium height, funnel white, Light brown medium seed	118-125	42	Mod. Res. to rust, powdery mildew and linseed bud fly
17.	Binwa (KL210)	2005	*Rabi*	Medium height, red violet flower, Yellow medium seed	176-180	40	Res. to rust
18.	Indira Alsi-32 (RLC81)	2005	*Rabi*	Erect, dwarf height, Disk shape blue flower, light brown medium seed	101-106	39	Res. to powdery mildew
19.	Kartika (RLC76)	2005	*Rabi*	Medium height, l blue flower, brown medium seed	103-108	43	Mod. Res. to wilt, powdery mildew and bud fly
20.	Deepika (RLC 78)	2006	*Rabi*	Medium height, disk shape blue flower, light brown medium seed	110-115	41	Res. to powdery mildew
21.	Sharda (LMS 4-27)	2006	*Rabi*	Dwarf height, funnel white flower, brown medium seed	98-108	41	Mod. Res. to wilt, powdery mildew and bud fly

(Continued)

Table 58. *(Concluded)*

Sl No.	Variety/ hybrid	Year of release	Recommended niche	Salient features			Reaction to biotic and abiotic stresses and quality traits
				Plant type and seed	Maturity (days)	Oil content (%)	
22.	Azad Alsi 1	2008	*Rabi*	Erect, tall height, red violet blue flower, dark brown, medium seed	118-125		Res. to rust, Mod. Res. to wilt, powdery mildew and bud fly
23.	RLC 92	2008	*Rabi*	Medium tall, ting blue flower, brown medium seed	104	38	Mod. Res. to wilt, powdery mildew and bud fly
24.	Shival (SLS 67)	2010	*Rabi*	Dwarf, star shaped white flower, early in maturity, light brown seed		40	Mod. Res. to powdery mildew and rust
25.	Bhagsu (KL 215)	2010	*Rabi*	Medium height, blue flower, brown small seed	178-209	36	Mod. Res. to rust, wilt and *Altenaria* blight
26.	Ruchi (LCK 5021)	2011	*Rabi*	Medium tall, blue flower, shining brown medium seed	130-135	40	Mod. Res. to powdery mildew and rust

Sesame

Table 59. Promising and popular sesame varieties

State	Varieties in order of priority
Andhra Pradesh	Swetha Til, Chandana, Varaha, Gautama, Hima
Bihar	Krishna
Chhattisgarh	TKG 21, TKG 22, TKG 55, JTS 8
Gujarat	G.Til 2, G.Til 3, G.Til 4, G.Til 10
Haryana	HT 1, HT 2
Himachal Pradesh	Brijeshwari
Karnataka	DS 1, DS 5, DSS 9
Kerala	Thilathara, Thilarani, Thilak
Madhya Pradesh	TKG 21, TKG 22, TKG 55, JTS 8, TKG 306, PKDS 11, TKG 308, PKDS 12
Maharashtra	***Kharif:*** AKT 64, JLT 408 **Summer** : AKT 101, PKV NT 11
Odisha	Uma, Nirmala, Prachi, Amrit, Shubra, Smarak
Punjab	TC-289, RT 346
Rajasthan	RT 127, RT 346, RT 351
Tamil Nadu	***Kharif:*** TMV (Sv) 7 ***Rabi:*** SVPR 1, VRI (Sv) 2, TMV (Sv) 7 **Summer:** SVPR 1, VRI (Sv) 1, VRI (Sv) 2, TMV (Sv) 7
Uttar Pradesh	Shekhar, Pragati
West Bengal	Rama, Savitri

Table 60. Important information on the sesame varieties

Sl No.	Variety/ hybrid	Year of release	Recommended niche	Salient features				Reaction to biotic and abiotic stresses and quality traits
				Maturity (days)	Yield (kg/ha	Oil content (%)	Plant type and seed	
1.	G.Til 4	2012	*Kharif*	80-85	720-750	47-49	Seed white	-
2.	DS 5	2012	*Kharif*	90-95	600-700	49-51	Seed white bold	-
3.	DSS 9	2012	*Kharif*	85-90	600-650	48-50	Seed white	Tol. to bacterial blight and *Alternaria*
4.	Shubhra	2012	*Kharif*/ Summer	78-82,	800-900	48-52	Seed white	-
5.	Smarak	2012	*Kharif*/ Summer	80-85	800-900	48-52	Synchronous maturity, seed golden yellow	-
6.	RT 351	2011	*Kharif*	80-85	700-800	48-51	Seed white	Tol. to leaf curl; Mod. Res. to *Macrophomina*, powdery mildew, *Alternaria* and *Cercospora*
7.	TKG 308	2010	*Kharif*	85-90	750-800	48-50	Seed white	Tol. to *Phytophthora*; Mod. Res.to *Cercospora*, powdery mildew and *Alternaria*
8.	PKDS 12	2010	Summer	82-85	700-750	48-52	Indeterminate, seed white	-
9.	JLT 408	2010	*Kharif*	80-85,	750-800	51-53	Seed white	Tol. to *Cercospora Alternaria Macrophomina* and powdery mildew
10.	G.Til 3	2009	*Kharif*	84-88	750-800	48-52	Seed white and bold	-
11.	AKT 101	2009	Summer	88-90	750-850	50-53	Indeterminate, seed white	Mod. Res. to bacterial blight
12.	RT 346	2009	*Kharif*	80-85	750-850	49-51	Short intermodal distance, seed white	Tol. to leaf curl; Mod. Res. to *Macrophomina*, PM, *Alternaria* and *Cercospora*
13.	TMV (Sv) 7	2009	*Kharif*/ *Rabi*/ Summer	85-90	750-800	50-52	Seed brown	Tol. to *Macrophomina*
14.	Savitri	2008	*Kharif*/ *Rabi*/ Summer	84-88,	750-850	48-52	Seed light brown	Tol. to *Macrophomina*
15.	Amrit	2007	*Kharif*/ *rabi*/ summer	80-85	750-850	43-46	Seed light brown	Tol. to *Macrophomina*, powdery mildew and *Alternaria*;
16.	Shekhar	2007	*Kharif*	85-90	750-800	50-53	Indeterminate, seed white	Tol. to powdery mildew, *Phytopthora* and *Macrophomina*

(Continued)

Table 60. *(Continued)*

Sl No.	Variety/ hybrid	Year of release	Recommended niche	Salient features				Reaction to biotic and abiotic stresses and quality traits
				Maturity (days)	Yield (kg/ha	Oil content (%)	Plant type and seed	
17.	Pragati	2007	*Kharif*	85-90	700-750	48-52	Indeterminate, seed white	Tol. to powdery mildew; Moderately Tol. to *Phytopthora* and *Macrophomina*
18.	Hima	2006	Late *Kharif*/ *Rabi* / Summer	80-85	700-750	48-50	Indeterminate, seed white	Tol. to *Alternaria*
19.	Thilathara	2006	*Kharif*/ Summer/ rice fallows	84-88	600-650	48-52	Seed dark brown	Tolerant to *powdery* mildew,
20.	Thilarani	2006	*Kharif*/ Summer/ rice fallows	82-86	700-750	46-50	Determinate, seed dark brown	Tol. to powdery mildew,
21.	Thilak	2006	*Kharif*/ *Rabi*/ Summer	85-90	600-650	48-50	Determinate, seed dark brown	Tol. to powdery mildew,
22.	TKG -306	2006	*Kharif*	85-90	750-800	49-52	Determinate, seed white	Tol. to *Phytophthora*, *Macrophomina*, *Cercospora* and powdery mildew
23.	PKDS-11	2006	*Kharif*	82-85	650-700	46-50	Indeterminate, seed dark brown	-
24.	VRI (Sv) 2	2006	*Kharif* *Rabi* Summer	80-85	700-800	50-52	Well branched, seed dark brown	Mod. Res. to *Macrophomina*
25.	G.Til -10	2005	*Kharif* *Rabi*	88-92	700-750	48-50	Determinate, seed black	Tol. to bacterial blight,
26.	Chandana	2004	*Kharif*/ *Rabi*/ Summer	84-88	600-650	45-48	Determinate, seed brown	Tol. to bacterial blight
27.	Nirmala	2003	*Kharif*/ Summer	84-88	650-700	42-45	Indeterminate, seed white	Res. to bacterial Leaf spot, Powdery mildew, Mod. Res. to *Alternaria*,
28.	Prachi	2002	*Kharif*/ Summer	85-90	700-750	42-45	Indeterminate, seed black	Mod. Res. to *Cercospora*, Powdery mildew *Macrophomina*
29.	JTS-8	2001	*Kharif*	82-85	650-700	50-53	Seed white	Mod.res. to Macrophomina, *Alternaria* and *Phytophthora*
30.	AKT-64	2001	*Kharif*	85-90	700-750	48-52	Indeterminate, seed white	Tol. to *Cercospora*, *Macrophomina* and Bacterial blight

(Continued)

Table 60. *(Concluded)*

Sl No.	Variety/ hybrid	Year of release	Recommended niche	Salient features				Reaction to biotic and abiotic stresses and quality traits
				Maturity (days)	Yield (kg/ha	Oil content (%)	Plant type and seed	
31.	RT 127	2001	*Kharif*	82-86	750-850	50-52	Indeterminate, shiny capsule, seed white bold	Tol. to bacterial leaf spot and powdery mildew
32.	Swetha Til	1999	Late *Kharif*/ *Rabi*/ Summer	82-86	600-650	50-52	Determinate, seed white	Tol. to powdery mildew
33.	TKG 55	1999	*Kharif*	82-85	650-700	50-53	Seed white	Tol. to *Phytophthora*
34.	DS 1	1997	*Kharif*	95-100	600-650	48-51	Indeterminate, seed white bold	Tol. to bacterial blight and *Alternaria*
35.	VRI (Sv) 1	1997	*Kharif*	80-82	600-700	46-50	Indeterminate, seed brown	Mod. Res. to powdery mildew
36.	Varaha	1995	*Kharif*/ *Rabi*	82-85	800-850	50-53	Determinate, seed dark brown	
37.	Gautama	1995	*Kharif*/ *Rabi*	76-80	800-850	50-53	Determinate, seed light brown	Tol. to *Alternaria*
38.	G.Til 2	1995	*Kharif*	88-92	750-800	48-52	Indeterminate, seed white	Tol. to bacterial blight and wilt
39.	TKG 22	1995	*Kharif*	82-85	600-700	50-54	Seed white	Tol. to *Phytophthora*
40.	TKG 21	1993	*Kharif* *Rabi*	85-90	650-700	52-54	Seed white	Tol. to *Alternaria* and bacterial leaf spot
41.	SVPR 1	1993	*Kharif*	82-86	750-800	48-50	Indeterminate, bold capsules, seed white	Tol. to *Alternaria*
42.	Uma	1992	*Kharif*	85-90	650-750	42-45	Determinate, seed pale white	-
43.	Krishna	1990	*Kharif*	88-95	700-750	45-48	Indeterminate, seed black	Tol. to *Alternaria*
44.	Rama	1989	*Kharif* *Rabi* Summer	85-90,	700-800	46-48	Determinate, seed reddish brown	Tol. to *Macrophomina*
45.	TC 289	1988	*Kharif*	80-85	750-800	50-52	Indeterminate, seed white	Tol. to *Marcrophomina*
46.	HT 1	1978	*Kharif*	85-90	600-650	44-46	Determinate, seed white	Tol. to phyllody and leaf curl

Niger

Table 61. Promising and popular niger varieties

State	Varieties in order of priority
Madhya Pradesh	JNC 6, JNC 1, JNC 9
Maharastra	IGPN 2004 1, IGP 76
Karnataka	RCR 18, DNS 4, IGP 76
Odisha	Deomali (GA 10), Utkal Niger 150
Chhattisgarh	JNC 9, Deomali (GA 10), BNS 10
Jharkhand	Birsa Niger 1, Birsa Niger 2, BNS 10
Gujarat	GN 1, NRS 96-1 (GN 2)

Table 62. Important information on the niger varieties

Sl No.	Variety/ hybrid	Year of release	Recommended niche	Salient features				Reaction to biotic and abiotic stresses and quality traits
				Maturity (days)	Yield (kg/ha)	Oil content (%)	Plant type and seed	
1.	DNS 4	2012	*Kharif*	90-95	500-600	38-40	Robust growth habit, seed shiny black	-
2.	IGPN 2004-1	2009	*Kharif*	95-100	650-700	35-38	Seed shiny black	Tol.to *Alternaria* and powdery mildew
3.	Utkal Niger 150	2009	*Kharif*	105-110	650-700	38-40	Seed black and bold	Mod. Tol. to *Alternaria* and *Cercospora*; Tol. to *Cuscuta* infestation
4.	BNS 10	2009	*Kharif*	95-100	650-700	36-38	Seed shiny black	-
5.	JNC 1	2006	*Kharif*	94-98	650-700	36-40%	Seed black	Tol. to moisture stress
6.	JNC 9	2006	*Kharif*	95-100	650-700	38-40%	Seed black	Tol. to moisture stress
7.	Birsa Niger 2	2005	*Kharif*	95-100	600-650	35-38	Seed black	-
8.	NRS 96-1 (GN 2)	2005	*Kharif*	90-95	650-700	35-38	Seed black	
9.	JNC 6	2002	*Kharif*	95-100	650-700	35-38%	Seed shiny dark black	Tol. to moisture stress
10.	GN 1	2001	*Kharif*	95-100	600-650	35-38	Seed black	-
11.	RCR 18	2000	*Kharif*	100-105	500-550	33-35	Robust growth habit, seed light black	-
12.	Birsa Niger 1	1996	*Kharif*	95-100	550-600	36-38	Seed light black	-
13.	Deomali (GA 10)	1992	*Kharif*	110-115	600- 650	38-40	Seed dark black	-
14.	IGP 76	1985	*Kharif*	100-105	450-500	35-38	Seed black	Mod. Res. to *Cercospora*, *Alternaria* and powdery mildew

Commercial Crops

Sugarcane

Table 63. Promising and popular sugarcane varieties

State	Varieties in order of priority
Andhra Pradesh	**Early** : CoOr 03151, CoC 01061, 87A298, 93A145, 97A85, 2000V59, 2003V46, 2001A63 **Mid-late :** Co 86249, Co 83V15
Asom	**Early** : Co 0232, CoBln 9101, CoBln 9102, CoBln 9103, CoBln 94063 **Mid-late** : Co 0233, CoBln 9104, CoBln 9605, CoBln 90006, CoBln 02173
Bihar	**Early** : CoSe 01421, Co 0232, CoLk 94184, CoSe 96234 **Mid-late** : Co 0233, CoSe 96436
Gujarat	**Early :** Co 0403, CoN 05071, CoN 07072 **Mid-late** : Co 86032, Co 0218, Co 2001-15, Co 2001-13, Co 99004, CoN 05072, CoN 04131, CoM 0265
Haryana	**Early** : CoPK 05191, Co 0237, Co 0239, Co 0238, Co 0118, CoS 96268, Co 98014 **Mid-early:** CoS 8436 **Mid-late :** Co 05011, CoH 128, Co 0124, CoS 96275, CoPant 97222, CoH 119
Karnataka	**Early** : Co 0403, CoSnk 03044, Co 94012 **Mid-late** : CoVC 2003-165, CoVC 99463, Co 62175, Co 86032, CoSnk 03632, Co 0218, Co 2001-15, Co 2001-13, Co 99004
Kerala	**Early** : Co 0403 **Mid-late** : Co 86032, Co 0218, Co 2001-15, Co 2001-13, Co 99004, Co TI 88322
Madhya Pradesh	**Early :** Co 0403, CoJN 86141 **Mid-late :** Co 86032, Co 0218, Co 2001-15, Co 2001-13, Co 99004, CoJN 86600
Maharashtra	**Early :** Co 0403, Co 94012, VSI 434, Co 92005 **Mid-late :** Co 86032, Co 0218, Co 2001-15, Co 2001-13, Co 99004, CoM 0265, CoVSI 9805
Odisha	**Early :** CoOr 03151, CoC 01061, CoOr 03152, CoOr 05346, Co 6907 **Mid-late :** Co 86249, CoOr 04152, Co 86032, Co 86249, Co 87044, 86 V 96
Punjab	**Early:** CoPK 05191, Co 0237, Co 0239, Co 0238, Co 0118, CoS 96268, Co 98014, CoS 95255, CoJ 85 **Mid-late** : Co 05011, CoH 128, Co 0124, CoS 96275, CoPant 97222, CoH 119, CoS 8436, CoJ 88 **Late:** CoJ 89
Rajasthan	**Early:** CoPK 05191, Co 0237, Co 0239, Co 0238, Co 0118, CoS 96268, Co 98014, CoS 95255 **Mid-late :** Co 05011, CoH 128, Co 0124, CoS 96275, CoPant 97222, CoH 119
Tamil Nadu	**Early:** Co 0403, Co 92005, Coastal area. CoC(SC)24, TNAU(SC) Si 7 **Mid-late :** Co 0218, Co 2001-15, Co 2001-13, Co 99004, Coastal area.. TNAU(SC) Si 8
Uttarakhand	**Early:** CoPK 05191, Co 0237, Co 0239, Co 0238, Co 0118, CoS 96268, Co 98014, CoPant 94211, CoPant 03220 **Mid-late :** Co 05011, CoH 128, Co 0124, CoS 96275, CoPant 97222, CoH 119, CoPant 96219, CoPant 99214, CoPant 05224
Uttar Pradesh	**Early:** CoPK 05191, Co 0237, Co 0239, Co 0238, Co 0118, CoS 96268, Co 98014, CoS 95255, CoSe 03234, CoS 03251, CoS 08272, UP 05125 **Mid-late:** Co 05011, CoH 128, Co 0124, CoS 96275, CoPant 97222, CoH 119, CoS 98259, CoSe 01424, CoSe 01434, CoS 07250, CoS 08279
West Bengal	**Early** : CoSe 01421, Co 0232, CoLk 94184, CoSe 96234 **Mid-late** : Co 0233, CoSe 96436

Table 64. Important information on the sugarcane varieties

Sl No.	Variety	Year of release	Salient features			Reaction to biotic and abiotic stresses and quality traits
			Maturity	Cane yield (t/ha)	Sucrose (%)	
1.	CoN 07072	2013	Early	136.0	18.5	Mod. Res. to red rot and smut
2.	CoS 08279	2012	Mid-late	106.0	13.8	Mod. Res. to red rot
3.	CoPant 05224	2012	Mid-late	85.0	18.5	Mod. Res. to red rot
4.	CoSnk 03632	2012	Mid-late	175.0	20.40	Mod. Res. to smut, red rot; Tol. to drought
5.	Co 0403	2012	Early	101.6	18.2	Mod. Res. to red rot, smut
6.	TNAU (SC) Si 8	2012	Mid-late	146.0	12.9	Mod. Res. to red rot; Tol. to drought, waterlogging
7.	CoOr 04152	2012	Mid-late	120.0	16.5	Mod. Res. to red rot
8.	CoOr 05346	2012	Early	105.0	16.5	Mod. Res. to red rot
9.	2001 A63	2012	Early	130.0	19.0	Mod. Res. to red rot; Tol. to moisture stress
10.	CoH 128	2012	Mid-late	76.2	17.7	Mod. Res. to red rot, wilt
11.	Co 0237	2012	Early	71.3	18.8	Mod. Res. to red rot, wilt
12.	Co 05011	2012	Mid-late	81.8	18.0	Mod. Res. to red rot, wilt
13.	CoPK 05191	2012	Early	81.1	17.0	Mod. Res. to red rot
14.	CoS 03251	2011	Early	76.0	13.9	Mod. Res. to red rot
15.	CoS 08272	2011	Early	110.0	13.5	Mod. Res. to red rot
16.	UP 05125	2011	Early	87.0	12.9	Mod. Res. to red rot
17.	CoPant 03220	2011	Early	95.0	18.5	Mod. Res. to red rot
18.	CoVC 99463	2011	Mid-late	180.0	18.8	Mod. Res. to foliar diseases, borers; Tol. to drought
19.	CoOr 03151	2011	Early	105.2	15.5	Mod. Res. to red rot
20.	CoBln 02173	2010	Mid-late	83.7	19.3	Mod. Res. to red rot, borers; Tol. to drought
21.	Co 0218	2010	Mid-late	103.7	20.8	Mod. Res. to red rot
22.	TNAU (SC) Si 7	2010	Early	155.0	13.0	Mod. Res. to red rot; Tol. to drought, waterlogging
23.	CoOr 03152	2010	Early	110.0	16.5	Mod. Res. to red rot
24.	97A85	2010	Early	120.0	18.7	Mod. Res. to red rot; Tol. to moisture stress, waterlogging
25.	2000V59	2010	Ealry	130.0	18.5	Tol. to waterlogging and drought
26.	2003V46	2010	Early	130.0	19.5	Mod. Res. to red rot; Tol. to waterlogging
27.	Co 0124	2010	Mid-late	75.7	18.2	Mod. Res. to red rot
28.	Co 0239	2010	Early	79.2	18.6	Mod. Res. to red rot
29.	CoSe 01434	2009	Mid-late	103.0	13.9	Mod. Res. to red rot
30.	CoS 07250	2009	Mid-late	108.0	13.5	Mod. Res. to red rot
31.	Co 0232	2009	Early	67.8	16.5	Mod. Res. to red rot, smut, wilt
32.	Co 0233	2009	Mid-late	67.8	17.5	Mod. Res. to red rot, smut, wilt
33.	Co 92005	2009	Early	129.0	19.7	Mod. Res. to red rot, wilt
34.	Co VSI 9805	2009	Mid-late	139.0	21.3	Mod. Res. to red rot, rust, grassy shoot disease

(Continued)

Table 64. *(Continued)*

Sl No.	Variety	Year of release	Salient features			Reaction to biotic and abiotic stresses and quality traits
			Maturity	Cane yield (t/ha)	Sucrose (%)	
35.	Co 2001-13	2009	Mid-late	108.6	19.0	Mod. Res. to red rot, smut, wilt
36.	Co 2001-15	2009	Mid-late	113.0	19.4	Mod. Res. to red rot, smut
37.	CoC (SC) 24	2009	Early	133.0	12.8	Mod. Res. to red rot, smut; Tol. to drought, waterlogging
38.	Co 0118	2009	Early	78.2	18.4	Mod. Res. to red rot, smut, wilt
39.	Co 0238	2009	Early	81.0	18.0	Mod. Res. to red rot, wilt
40.	CoSe 03234	2008	Early	95.0	13.9	Mod. Res. to red rot
41.	CoS 98259	2008	Mid-late	86.0	13.3	Mod. Res. to red rot
42.	CoSe 01424	2008	Mid-late	111.0	13.2	Mod. Res. to red rot
43.	CoLk 94184	2008	Early	76.0	18.0	Mod. Res. to red rot
44.	CoVC 2003-165	2008	Mid-late	180.0	17.9	Tol. to woolly aphid and drought
45.	VSI 434	2008	Early	118.0	21.4	Mod. Res. to red rot, smut; Tol. to drought
46.	CoJN 86600	2008	Mid-late	110.7	18.0	Mod. Res. to red rot
47.	CoPant 99214	2007	Mid-late	85.0	19.0	Mod. Res. to red rot
48.	CoBln 94063	2007	Early	87.1	19.6	Mod. Res. to red rot and borers
49.	CoBln 90006	2007	Mid-late	85.3	19.4	Mod. Res. to red rot and borers; Tol. to flood, drought
50.	CoSnk 03044	2007	Early	120.0	20.9	Mod. Res. to smut, red rot; Tol. to drought
51.	CoM 0265	2007	Mid-late	150.0	19.0	Mod. Res. to red rot, smut; Tol. to water stress and salinity
52.	Co 99004	2007	Mid-late	116.7	18.8	Mod. Res. to red rot
53.	Co 98014	2007	Early	76.3	17.6	Mod. Res. to red rot; Tol. to moisture stress
54.	CoS 96268	2007	Early	69.8	17.9	Mod. Res. to red rot; Tol. to moisture stress
55.	CoPant 97222	2007	Mid-late	88.2	18.2	Mod. Res. to red rot; Tol. to moisture stress
56.	CoJ 20193	2007	Mid-late	75.9	17.9	Mod. Res. to red rot; Tol. to moisture stress
57.	CoS 96275	2007	Mid-late	80.8	17.3	Mod. Res. to red rot; Tol. to moisture stress
58.	CoC 01061	2006	Early	110.8	17.4	Mod. Res. to red rot
59.	93A145	2006	Ealry	125.0	17.5	Tol. to waterlogging, drought
60.	CoBln 9101	2005	Early	81.4	19.4	Tol. to drought
61.	CoBln 9102	2005	Early	87.6	18.2	Mod. Res. to red rot; Tol. to drought
62.	CoBln 9103	2005	Early	86.8	19.2	Tol. to drought
63.	CoBln 9104	2005	Mid-late	80.6	19.6	Mod. Res. to red rot; Tol. to drought
64.	CoBln 9605	2005	Mid-late	96.7	20.0	Tol. to drought
65.	CoH 119	2005	Mid-late	82.8	17.5	Mod. Res. to red rot; Tol. to moisture stress

(Continued)

Table 64. *(Concluded)*

Sl No.	Variety	Year of release	Salient features			Reaction to biotic and abiotic stresses and quality traits
			Maturity	Cane yield (tonnes/ha)	Sucrose (%)	
66.	CoJ 89	2004	Late	81.5	18.0	Mod. Res. to red rot
67.	CoPant 94211	2004	Early	75.0	19.0	Mod. Res. to red rot
68.	CoPant 96219	2004	Mid-late	80.0	19.0	Mod. Res. to red rot
69.	CoSe 96234	2004	Early	64.1	17.9	Mod. Res. to red rot
70.	CoSe 96436	2004	Mid-late	67.1	17.7	Mod. Res. to red rot
71.	Co 94012	2004	Early	128	20.9	Mod. Res. to red rot, smut
72.	CoJ 88	2002	Mid-late	84.3	18.0	Mod. Res. to red rot; Tol. to lodging and salinity
73.	87A298	2002	Ealry	140.0	19.5	Tol. to moisture stress
74.	83V15	2002	Mid-late	120.0	20.3	Mod. Res. to red rot; Tol. to moisture stress, waterlogging
75.	CoJ 85	2000	Ealry	76.5	18.0	Mod. Res. to red rot
76.	Co 86032	2000	Mid-late	102.0	20.1	Mod. Res. to smut
77.	Co 86249	2000	Mid-late	104.2	18.7	Mod. Res. to red rot; Tol. to waterlogging
78.	Co 86249	2000	Mid-late	104.2	18.7	Mod. Res. to red rot, smut
79.	Co 87044	2000	Mid-late	101.0	18.3	Mod. Res. to smut
80.	CoN 04131	2012	Mid-late	140.0	18.2	Mod. Res. to red rot, smut; Tol. to waterlogging
81.	CoN 05071	2008	Early	142.9	18.8	Mod. Res. to red rot, smut; Tol. to waterlogging, drought
82.	CoN 05072	2008	Mid-late	134.9	17.7	Mod. Res. to red rot, smut
83.	CoJN 86141	1999	Early	118.0	22.5	Mod. Res. to red rot, smut, wilt; Tol. to drought
84.	Co TI 88322	1990	Mid-late	120.52	11.24	Mod. Res. to red rot; Tol. to waterlogging
85.	CoS 8436	1987	Mid early	70.00	18.00	Mod. Res. to red rot; Tol. to lodging
86.	Co 62175	1975	Mid-late	180.00	17.50	Tol. to waterlogging

Cotton

Table 65. Promising and popular cotton varieties

State	Variety / hybrid
Punjab	F 1378, F 846, F 505, F1054, F 1861, LH 1556, LH 2076, FDK 124, LD 327, FMDH 3, LMDH 8
Haryana	H 1098, H 1098 I, H 1236, H 1226, H 1117, H 1300, HD 432, HD 123, CISA 310, HD 324, CISA 614, CSHH 198 (Shreshth), CSHH 243, CSHH 238, CISAA 2, AAH 1
Rajasthan	RS 2013, RS 810, RS 875, RST 9, RG 8
Gujarat	G Cot 20, G Cot 21, C Cot 23, G Cot Hy 6, G Cot Hy 8, DCH 32, Suvin, G Cot 16, Anand Desi Cotton 1, G Cot 19
Maharashtra	Suraj, RHC 688, CNHO 12, NH 615, NH 545, NH 452, AKH 081, AKH 8828, AKH 8401, PA 255, PA 402, AKA 5, AKA 7, AKA 8, JLA 794, Phule Anmol, Pule Dhanwantry, PKV Suvarna
Madhya Pradesh	JK 4, JK 5, JK 35, KH 2
Odisha	Surabhi
Andhra Pradesh	L 604, Surabhi, Suraj, NDLHH 240, LAHH 7, Suvin, Narasimha, Aravinda, Nandyal 1
Karnataka	Abadhita, Suraj, Surabhi, RAHH 95, RAHH 98, DHH 543, RAS 299-1, DCH 32, RAHB 87, Suvin, Sahana, RAH 100, DLSa 17, DDhc 11, Jayadhar
Tamil Nadu	MCU 5, Surabhi, Suraj, MCU 5 VT, MCU 7, Supriya, SVPR 2, SVPR 3, SVPR 4, Suvin, DCH 32, Varalaxmi, KC 3, K 10

Table 66. Important information on the cotton varieties

Sl No.	Variety/hybrid	Year of release	Salient features		Reaction to biotic and abiotic stresses and quality traits
			Maturity (days)	Fibre quality	
1.	Anand Desi Cotton 1	2012	-	Short Staple	
2.	Phule Anmol	2012	180-185	Medium Staple (2.5 % Span length = 26 mm)	Resistant to BLB, ALB
3.	Phule Dhanwantary	2012	160-165	Short Staple (2.5 %) Span length = 18 mm)	Resistant to BLB; Mod. Res. to grey mildew, ALB; tolerant to major pest
4.	FDK 124	2011	-	Short Staple (2.5 % Span length = 20 mm)	
5.	H 1300	2011	165-170	Medium Staple (2.5 % Span length = 25 mm)	Resistant to CLCuV
6.	LH 2076	2010	-	Medium Staple (2.5 % Span length = 27 mm)	Resistant to CLCuV, BLB, fungal foliar leaf spot
7.	H 1098 i	2010	165-170	Medium Staple (2.5 % Span length = 25 mm)	Resistant to CLCuV
8.	H 1236	2010	165-170	Medium Staple (2.5 % Span length = 27 mm)	Resistant to CLCuV
9.	HD 432	2010	160-170	Short Staple (2.5 % Span length = 21 mm)	
10.	CISA 310	2010	145-150	Short Staple (2.5 % Span length = 20 mm)	
11.	RHC 688	2010	150-160	Medium Staple (2.5 % Span length = 27 mm)	
12.	CNHO 12	2010	160-165	Medium Staple (2.5 % Span length = 25 mm)	Resistant to white rust
13.	SVPR4	2010	150	Medium Staple (2.5 % Span length = 28 mm)	
14.	CICR 3 (CISA 614)	2010	150	Short Staple (2.5 % Span length = 21 mm)	
15.	NH 615	2009	160-170	Long Staple (2.5 % Span length = 28 mm)	Drought tolerent
16.	RAH 100	2009	160-165	Medium Staple (2.5 % Span length = 28 mm)	
17.	RAHH-98	2009	170	Long Staple (2.5 % Span length = 29 mm)	Tolerant to jassids and bollworm
18.	RAHH-95 (Virajita)	2009	160-170	Medium Staple (2.5 % Span length = 26 mm)	
19.	AKDH 5 (PKV Suvarna)	2009	180-190	Medium Staple (2.5 % Span length = 25 mm)	
20.	RAHB 87	2009	180	Extra Long Staple (2.5 % Span length = 36 mm)	
21.	DLSa 17 (Gunavanti)	2009	145-150	Medium Staple (2.5 % Span length = 28 mm)	Resistant to sucking pests and bollworms
22.	G Cot 20	2008	-	Medium Staple (2.5 % Span length = 26 mm)	

(Continued)

Table 66. *(Continued)*

Sl No.	Variety/hybrid	Year of Release	Salient features		Reaction to biotic and abiotic stresses and quality traits
			Maturity (days)	Fibre quality	
23.	Suraj	2008	165	Long Staple (2.5 % Span length = 30 mm)	Resistant to jassids
24.	AKH 8828	2008	-	Medium Staple (2.5 % Span length = 27 mm)	
25.	AKA 8	2008	-	Medium Staple (2.5 % Span length = 24 mm)	Drought tolerant
26.	DHH 543 (Suvidha)	2008	-	Long Staple	
27.	RAS 299-1	2008	-	Medium Staple	
28.	DDhc 11	2008	-	Short Staple	
29.	CSHH 243	2008	165-170	Long Staple (2.5 % Span length = 28 mm)	Resistant to CLCuV
30.	PAU 626H (FMDH 3)	2008	-	Short Staple (2.5 % Span length = 20 mm)	
31.	H 1226	2007	-	Medium Staple (2.5 % Span length = 25 mm)	
32.	KC 3	2007	-	Short Staple (2.5 % Span length = 22 mm)	
33.	Moti(LMDH 8)	2007	-	Short Staple (2.5 % Span length = 20 mm)	
34.	Jawahar Kapas 35 (JK 35)	2007	160	Medium Staple (2.5 % Span length = 24 mm)	
35.	JawaharKapas 5 (JK 5),	2007	-	Medium Staple (2.5 % Span length = 24 mm)	
36.	NDLHH 240	2007	-	Medium Staple	
37.	Nandya1 1	2007	-	Short Staple	
38.	Lam Cotton Hybrid-7	2007	145-150	Medium Staple	
39.	Hybrid kalyan (CSHH 238)	2007	Early	Long Staple (2.5 % Span length = 28 mm)	
40.	HD 324	2005	-	Short Staple (2.5 % Span length = 18 mm)	
41.	CSHH 198 (Shreshth)	2005	162	Long Staple (2.5 % Span length = 27 mm)	
42.	CISAA 2	2005	160-170	Short Staple (2.5 % Span length = 20 mm)	
43.	PA 402	2005	-	Medium Staple (2.5 % Span length = 26 mm)	
44.	JLA 794	2005	170-180	Medium Staple (2.5 % Span length = 26 mm)	
45.	NH 545	2004	-	Medium Staple (2.5 % Span length = 25 mm)	
46.	PA 255	2004	-	Medium Staple (2.5 % Span length = 28 mm)	
47.	F 1861	2003	Medium	Medium Staple (2.5 % Span length = 26 mm)	

(Continued)

Table 66. *(Continued)*

Sl No.	Variety/hybrid	Year of Release	Salient features		Reaction to biotic and abiotic stresses and quality traits
			Maturity (days)	Fibre quality	
48.	G Cot 19	2003	114	Medium Staple (2.5 % Span length = 25 mm)	
49.	H 1117	2002	175	Medium Staple (2.5 % Span length = 24 mm)	
50.	RS 2013	2002	165-175	Medium Staple (2.5 % Span length = 25 mm)	
51.	JK 4	2002	160-170	Medium Staple (2.5 % Span length = 25 mm)	
52.	G Cot 21	2001	-	Short Staple (2.5 % Span length = 22 mm)	
53.	AKA 7	2001	150	Short Staple	
54.	Sahana	2001	-	Medium Staple (2.5 % Span length = 28 mm)	
55.	HD 123	2000	165-175	Short Staple (2.5 % Span length = 20 mm)	
56.	RS 810	2000	170-180	Medium Staple (2.5 % Span length = 26 mm)	
57.	L 604	2000	150-160	Medium Staple (2.5 % Span length = 26 mm)	
58.	Aravinda	2000	165	Short Staple (2.5 % Span length = 22 mm)	
59.	SVPR 3	2000	135-140	Medium Staple (2.5% Span length = 26 mm)	
60.	AAH 1	1999	180	Short Staple (2.5% Span length = 20 mm)	
61.	Narasimha	1999	160	Medium Staple (2.5% Span length = 26 mm)	
62.	F 1378	1997	175-180	Medium Staple (2.5% Span length = 26 mm)	
63.	H 1098	1997	165-175	Short Staple (2.5 % Span length = 22 mm)	
64.	Surabhi	1997	165	Long Staple (2.5 % Span length = 32 mm)	
65.	SVPR 2	1997	150-160	Medium Staple (2.5 % Span length = 25 mm)	
66.	K 11	1997	130-135	Medium Staple (2.5 % Span length = 26 mm)	
67.	LH 1556	1996	Early	Medium Staple (2.5% Span length = 28 mm)	
68.	RS 875	1996	150-160	Medium Staple (2.5% Span length = 27 mm)	
69.	G Cot 16	1996	135	Medium Staple (2.5% Span length = 27 mm)	

(Continued)

Table 66. *(Concluded)*

Sl.No.	Variety/hybrid	Year of Release	Salient features		Reaction to biotic and abiotic stresses and quality traits
			Maturity (days)	Fibre quality	
70.	NH 452	1996	150-160	Medium Staple (2.5% Span length = 24 mm)	
71.	F 846	1993	-	Medium Staple (2.5 % Span length = 25 mm)	
72.	F1054	1993	-	Medium Staple (2.5% Span length = 27 mm)	
73.	AKH 8401	1993	-	Short Staple	
74.	RST 9	1992	-	Medium Staple (2.5% Span length = 24 mm)	
75.	Abadhita	1990	-	Medium Staple (2.5% Span length = 25 mm)	
76.	LD 327	1989	-	Short Staple (2.5 % Span length = 17 mm)	
77.	RG 8	1988	145-150	Non-spinnable (2.5 % Span length = 16 mm)	
78.	G Cot Hy 8	1988	-	Medium Staple (2.5 % Span length = 26 mm)	
79.	AKH 081	1988	-	Medium Staple	
80.	K 10	1986	-	Medium Staple (2.5 % Span length = 24 mm)	
81.	Supriya	1985	140-145	Long Staple (2.5 % Span length = 28 mm)	
82.	MCU 5 VT	1984	165	Long Staple (2.5 % Span length = 32 mm)	
83.	MCU 7	1984	130-135	Medium Staple (2.5 % Span length = 24 mm)	
84.	DCH 32	1983	190	Extra Long Staple (2.5 % Span length = 33 mm)	
85.	AKA 5	1983		Short Staple	
86.	G Cot Hy 6	1982	190-210	Long Staple (2.5 % Span length = 30 mm)	
87.	KH 2	1982	180	Medium Staple (2.5 % Span length = 25 mm)	
88.	Jayadhar	1982		Short Staple	
89.	Suvin	1978	210	Extra Long Staple (2.5 % Span length = 36 mm)	
90.	MCU 5	1976	165	Long Staple (2.5 % Span length = 29 mm)	

Jute

Table 67. Promising and popular Jute varieties

State	Variety / hybrid
Asom	***Olitorius* jute:** AAU OJ 1 (Tarun), JRO-204 (Suren), JRO 524 (Naveen), JBO 2003 H (Ira), CO 58 (Sourav), JBO 1 (Sudhangshu), JRO 128 (Surya) ***Capsularis* jute:** AAU CJ 1 (Apeswaree), JRC 532 (Sashi),), JRC 698 (Shrabanti white), JRC 80 (Mitali), RRPS 27 C 3 (Monalisa), JBC 5 (Arpita),
Bihar	***Olitorius* jute:** JRO 204 (Suren), JRO 524 (Naveen), JRO 128 (Surya) ***Capsularis* jute:** KTC 1 (Rajendra sada pat-I), JRC 532 (Sashi), JRC 517 (Sidhartha), JRC 698 (Shrabanti white), JRC 80 (Mitali), RRPS 27 C 3 (Monalisa), JBC 5 (Arpita), JRCM 2 (Partho)
Odisha	***Olitorius* jute:** KOM 62 (Revati), JRO 204 (Suren), JRO 524 (Naveen), JRO 66 (Golden jubilee tossa), JRO 128 (Surya), JBO 2003-H (Ira), CO 58 (Sourav), JBO 1 (Sudhangshu), ***Capsularis* jute:** KC 1 (Joydev), KJC 7 (Shrestha), JRC 517 (Sidhartha), JRC 4444 (Baldev), TJ 40 (Mahadev)
Uttar Pradesh	***Capsularis* jute:** NDC 2008 (Ankit), UPC 94 (Reshma), JRC 532 (Sashi), JRC 517 (Sidhartha), JRC 698 (Shrabanti white), JRC 80 (Mitali), RRPS 27 C 3 (Monalisa), JBC 5 (Arpita),
West Bengal	***Olitorius* jute:** JRO 204 (Suren), JRO 524 (Naveen), JRO 128 (Surya), JRO 8432 (Shakti tossa), S 19 (Subala), JBO 2003 H (Ira), CO 58 (Sourav), JBO 1 (Sudhangshu), JRO 66 (Golden jubilee tossa), JRO 2407 (Samapti) ***Capsularis* jute:** JRC 532 (Sashi), JRC 517 (Sidhartha), JRC 698 (Shrabanti white), JRC 80 (Mitali), RRPS 27 C 3 (Monalisa), JBC 5 (Arpita), JRCM 2 (Partho)

Table 68. Important information on the Jute varieties

Sl No.	Variety	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
1.	JRCM 2 (Partho)	2013	Suitable for mid-March to April sowing	-	-
2.	KJC 7	2011	Suitable for early March to early April sowing	-	Low incidence of diseases and pests and fibre quality better in tenacity
3.	CO 58 (Sourav)	2010	Suitable for mid-February to mid-March	-	Tolerant to drought and water logging, tolerant to major pest and diseases. Better fibre quality
4.	JRO 2407 (Samapti)	2010	March sowing	Matures in 140-150 days	Fibre quality of TD3 grade. Resistant to root, stem rot semilooper, stem weevil, yellow mite etc.
5.	JBO 1 (Sudhangshu)	2010	Suitable for mid-March	Pod non-shattering type	Resistance to premature flowering, better fibre quality, resistance to major pests and diseases
6.	JBC 5 (Arpita)	2010	West Bengal, Uttar Pradesh, Odisha, Asom and Bihar,	Pod non-shattering type	Resistance to premature flowering, better fibre quality, resistance to major pests and diseases
7.	JRC 532 (Sashi)	2009	Timely sowing	Pod non-shattering, matures in 110 days	Drought resistant at early stage of growth and tolerate water logging
8.	JRC 517 (Sidharth)	2009	Waterlogging situations	Pod non-shattering, matures in 120 days	Drought resistant at early stage of growth and tolerate water logging
9.	RRPS 27 C 3 (Monalisa)	2009	Early sowing	Pod non-shattering type	Resistance to premature flowering, better fibre quality, resistance to major pest and diseases
10.	NDC 2008 (Ankit)	2009	Waterlogging situations	-	Better fibre quality, tolerant to drought and water logging, tolerant to major pest and diseases.
11.	JBO 2003 H (Ira)	2008	Suitable for mid-March sowing	Pod non-shattering type	Resistant to premature flowering, better fibre quality, resistance to major pests and diseases
12.	AAU CJ 1 (Apeswaree)	2008	Suitable for early March - mid April sowing	-	-

(Continued)

Table 68. *(Concluded)*

Sl No.	Variety	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
13.	JRO 204 (Suren)	2007	Medium and upland	Pod non-shattering type, matures in 110 days	Drought resistant at early stage of growth and tolerates water-logging
14.	AAU OJ 1 (Tarun)	2007	Waterlogged regions	Pod non-shattering type, matures in 120 days	drought resistant at early stage of growth and tolerates water-logging
15.	S 19 (Subala)	2005	Suitable for early (mid-March) sowing	Resistant to premature flowering	Tolerant to major pests and diseases, finer fibre quality with lesser lignin content
16.	JRC 80 (Mitali)	2005	Suitable for mid-March to early April sowing in both high and lowland	-	Withstand drought at early stage of growth and water-logging at later stage of growth
17.	JRO 128 (Surya)	2002	Suitable for early (mid-March) sowing	Pod non-shattering type	Very good fibre quality
18.	JRO 8432 (Shakti tossa)	1999	Suitable for early (mid-March) sowing	Premature flowering resistant, non-shattering pod.	
19.	JRC 698 (Shrabanti white)	1999	Suitable for mid-April sowing	Pod non-shattering type	Fibre quality W2 grade having fineness with fairly good fibre tenacity
20.	JRO 66 (Golden jubilee tossa)	1997	Ideal for mid-April to early May sowing	Pod non-shattering type	Fibre quality TD2 grade
21.	KTC 1 (Rajendra sada pat-I)	1994	Suitable for mid-April sowing	Pod non-shattering type	-
22.	KOM 62 (Revati)	1992	Early sowing	Pod non-shattering type	
23.	KC 1 (Joydev)	1992	Sowing in mid-April	Pod non-shattering type	-
24.	TJ 40 (Mahadev)	1983	Sowing in April	Pod shattering type	Better fibre quality
25.	UPC 94 (Reshma)	1983	Sowing in late Feb to late March	Pod non-shattering type	-
26.	JRC 4444 (Baldev)	1980	Sowing in early March-mid April	Pod non-shattering type	-
27.	JRO 524 (Navin)	1977	Sowing in mid-March, Tossa jute growing belt	Pod non-shattering, no premature flowering. Relatively better in retting and extraction	Least susceptible to yellow mite and is resistant to root rot diseases in high rainfall areas

Kenaf (Mesta)

Table 69. Promising and popular Kenaf varieties

State	Varieties
Andhra Pradesh	AMC 108, MT 150 (Nirnal) and JBM 81 (Shakti)
Bihar	HC 583, AMC 108, JRM 5 (Shrestha), JBM 81 (Shakti)
Odisha	JBM 71 (Shanti), AMC 108, JRM 5 (Shrestha), JBM 81 (Shakti)
West Bengal	MT 150 (Nirnal), JBM 2004 D (Sumit), JRM 3 (Sneha), JRM 5 (Shrestha), JBM 81 (Shakti).

Table 70. Important information on the kenaf varieties

Sl No.	Variety	Year of release	Recommended niche	Reaction to biotic and abiotic stresses and quality traits
1.	JBM 81 (Shakti)	2013	Sowing in mid-April to mid-May; Rainfed	-
2.	JBM 71 (Shanti)	2012	Rainfed	-
3.	JRM 3 (Sneha)	2010	Sowing in mid-April	-
4.	JRM 5 (Shreshtha)	2010	Sowing in mid-April	Tolerant to major pests and diseases. Fibre fineness: 2.48 tex; Fibre tenacity: 25.88 g/tex, Grade: TD_3
5.	JBM 2004 D(Sumit)	2009	Sowing in April	Resistant to foot and stem rot and tolerant to spiral borer mealy bug and good fibre quality and strength
6.	MT 150(Nirmal)	2005	Sowing in mid-April to mid-May	Superior paper pulp quality for newsprint
7.	AMC 108	1982	Sowing in mid-April to mid-May	Resistant to foot and stem rot diseases; tolerant to jassids and spiral borer

Sunnhemp

Table 71. Promising and popular sunnhemp varieties

State	Varieties
Bihar	K 12 Yellow, SH 4 (Sailesh), SUN 053 (Swastika), SUIN 037 (Ankur)
Madhya Pradesh	K 12 Yellow, SH 4 (Sailesh), SUN 053 (Swastika), SUIN 037 (Ankur)
Odisha	SH 4 (Sailesh), SUN 053 (Swastika), SUIN 037 (Ankur) and K 12 Yellow
Uttar Pradesh	SH 4 (Sailesh), SUN 053 (Swastika), SUIN 037 (Ankur) and K 12 Yellow
West Bengal	SH 4 (Sailesh), SUN 053 (Swastika), SUIN 037 (Ankur) and K 12 Yellow

Table 72. Important information on the sunnhemp varieties

S No.	Name of variety	Year of release	Recommended niche	Salient features	Reaction to biotic and abiotic stresses and quality traits
1.	SUIN 037 (Ankur)	2013	Early sowing	-	Res. to vascular wilt and sunnhemp mosaic disease, hairy caterpillar and top shoot borer infestation
2.	SUN-053 (Swastika)	2010	Timely sowing	-	Res. to pest and diseases; better fibre quality
3.	SH 4 (Sailesh)	2004	Timely sowing	Seed coat is yellow, higher yield	
4.	K 12 Yellow	1971	Timely sowing	Seed coat is blackish brown	Good fibre quality

Roselle

Table 73. Promising and popular varieties of roselle

State	Varieties
Andhra Pradesh	AMV 5 (Durga), AMV 4 (Kalinga), AMV 3 (Surya), AMV 7 (Janardhan).
Bihar	GR 27 (Madhuri), AMV-5 (Durga), AMV-4 (Kalinga) and HS 7910 (Ujjal)
Odisha	AMV 5 (Durga), AMV 4 (Kalinga), AMV 3 (Surya), AMV 7 (Janardhan).
West Bengal	GR 27 (Madhuri), AMV 5 (Durga), AMV 4 (Kalinga) and HS 7910 (Ujjal)

Table 74. Important information on the roselle varieties

Sl No.	Name of variety	Year of release	Salient features	Reaction to biotic and abiotic stresses and quality traits
1.	AMV 7 (Janardha)	2011	-	Tol. to moisture stress and major pests and diseases
2.	GR 27 (Madhuri)	2007	Stem green with red patches only in nodes	Tol. to pests and diseases
3.	AMV 5 (Durga)	2007	Higher fibre yield	Tol. to pests and diseases; Good fibre quality
4.	AMV 4 (Kalinga)	1991	Stem has less bristles,	Mod. Res. to jassids and foot and stem rot diseases
5.	HS 7910 (Ujjal)	1977	Stem has less bristles	Res. to major pests; Tol. to *Phytopthora parasitica*

Tobacco

Table 75. Popular tobacco varieties

State	Popular varieties
Andhra Pradesh-FCV tobacco	
Traditional Black Soils	Siri
Southern Light and Black Soils	Siri, Hema, VT 1158
Northern Light Soils	Kanchan, CH 3
Andhra Pradesh-Burley tobacco	Banket A1, HDBRG
Andhra Pradesh-Natu tobacco	Bhairavi, Kommugudem
Andhra Pradesh-Bidi tobacco	Anand 119
Karnataka-FCV tobacco	Kanchan, FCH 222
Karnataka-Bidi tobacco	Anand 119, Anand 2
Gujarat-Bidi tobacco	Anand 119, GT 7
Gujarat-Rustica tobacco	GC 1
Tamil Nadu-Chewing tobacco	Abirami, Bhagyalakshmi
West Bengal-Motihari tobacco	Torsa, DD 437, Dharla
West Bengal-Jati tobacco	Chama, Podali
Odisha- Pikka tobacco	Gajapati
Uttar Pradesh-Hookah tobacco	SK 417, Azad Kanchan
Uttar Pradesh-Bidi tobacco	K Local
Bihar-Chewing tobacco	PT 76, Vaishali Special

Table 76. Information on the tobacco varieties

State	Popular varieties	Year of release	Important characters
Andhra Pradesh-FCV tobacco			
Traditional Black Soils	Siri	2006	High- yielding light cast suitable to black soils; leaf yield 2,900 kg/ha
Southern Light and Black Soils	Siri	2006	High yielding light cast suitable to black soils; leaf yield 2,900 kg/ha
	Hema	1987	Suitable to light and black soil areas; leaf yield 1,600 kg/ha
	VT 1158	1993	Resistant to TMV; leaf yield 2,000 kg/ha
Northern Light Soils	Kanchan	1998	Semi-favorful; tolerant to black shank and root-knot nematodes; leaf yield 2,400 kg/ha
	CH 3	2013	Semi-flavorful hybrid tobacco; leaf yield 2,700 kg/ha
Andhra Pradesh-Burley tobacco	Banket A1	1994	Suitable for light soils in East Godavari, Visakhapatnam, Vijayanagaram districts; resistant to TMV; leaf yield 1,800 kg/ha
	HDBRG	1980	Green burley type with higher nicotine content; leaf yield 2000 kg/ha

(Continued)

Table 76. *(Concluded)*

State	Popular varieties	Year of release	Important characters
Andhra Pradesh-Natu tobacco	Bhairavi	2006	Suitable for rain-fed cigarette natu tobacco-producing areas; leaf yield 2,600 kg/ha
	Kommugudem	1960	Suitable for irrigated natu tobacco- producing areas; leaf yield 2,000 kg/ha
Andhra Pradesh-Bidi tobacco	Anand 119	1984	leaf yield potential1,600 kg/ha
Karnataka-FCV tobacco	Kanchan	1998	Tolerant to black shank and root-knot nematodes; leaf yield 1,800 kg/ha
	FCH 222	2012	High degree of tolerance to *Fusarium* wilt disease; leaf yield 2,200 kg/ha
Karnataka-Bidi tobacco	Anand 119	1984	leaf yield 2,000 kg/ha
	Anand 2	1984	leaf yield 2,600 kg/ha
Gujarat-Bidi tobacco	Anand 119	1984	leaf yield 2,600 kg/ha
	GT 7	1993	Rainfed bidi tobacco- growing areas of Gujarat; cured leaf yield 2,500 kg/ha
Gujarat-Rustica tobacco	GC 1	1981	Suitable for *Rustica* /Calcutti tobacco- growing areas of Gujarat; cured leaf yield 2,700 kg/ha
Tamil Nadu-Chewing tobacco	Abirami	2006	Suitable for southern, central and western zones except coastal belt; cured leaf yield 4,000 kg/ha
	Bhagyalakshmi	1980	Suitable for sun cured tobacco producing areas; cured leaf yield 3,500 kg/ha
West Bengal-Motihari tobacco	Torsa	2008	Silty/sandy loam soil region in *Motihari* tobacco tract of Cooch Behar district; leaf yield 2,200 kg/ha
	DD 437	1977	Suitable for *Motihari* tobacco producing areas; leaf yield 1,900 kg/ha
	Dharla	2001	Suitable for North Bengal region; leaf yield 2,700 kg/ha
West Bengal-Jati tobacco	Chama	1956	Suitable for clayey soils of North Bengal region; leaf yield 1,800 kg/ha
	Podali	1956	Suitable for sandy soils of North Bengal region; leaf yield 1,600 kg/ha
Odisha- Pikka tobacco	Gajapati	2002	leaf yield 1,800 kg/ha
Uttar Pradesh-Hookah tobacco	SK 417	1960	leaf yield 2,800 kg/ha
	Azad Kanchan	2008	leaf yield 2,500 kg/ha
Uttar Pradesh-Bidi tobacco	K Local	1960	leaf yield 1,800 kg/ha
Bihar-Chewing tobacco	PT 76	1990	yield potential 2,600 kg/ha
	Vaishali Special	1993	yield potential 2,800 kg/ha

Forage Crops and Grasses

Berseem

Table 77. Promising and popular berseem varieties/hybrids

State	Varieties/hybrids
Andhra Pradesh	UPB 110
Asom	Bundel Berseem 3
Bihar	Bundel Berseem 3, Wardan
Chhattisgarh	UPB 110,
Delhi	UPB 110, BL 2, Wardan, Mescavi
Gujarat	UPB 110,
Haryana	Bundel Berseem 2, UPB 110, BL 2, BL 22, Wardan, Mescavi
Himachal Pradesh	BL 180, BL 2, Wardan, Mescavi
Jammu and Kashmir	BL 22
Jharkhand	Bundel Berseem 2
Karnataka	UPB 110
Kerala	UPB 110
Madhya Pradesh	Bundel Berseem 2, UPB 110, Wardan, Mescavi
Maharashtra	Bundel Berseem 2, UPB 110
Odisha	Bundel Berseem 3
Punjab	BL 180, BL 2, BL 22, Bundel Berseem 2, UPB 110, Wardan, Mescavi
Rajasthan	BL 180, UPB 110, Wardan
Tamil Nadu	UPB 110,
Uttar Pradesh	Bundel Berseem 2, UPB 110, BL 2, Wardan
Uttarakhand	Bundel Berseem 2, BL 180, UPB 110, BL 2
West Bengal	Bundel Berseem 3

Table 78. Important information on the berseem varieties/ hybrids

Sl No.	Crop/ varieties	Year of release	Recommended niche	Salient features	
				GFY potential (q/ha)	Others
1	BL 180	2006	Irrigated	625	-
2	Bundel Berseem 3	2001	-	560	-
3	Bundel Berseem 2	1997	*Rabi* season	850	Fodder superior in digestibility
4	UPB 110	1993	-	650	
5	BL 2	1989	Irrigated	765	
6	BL 22	1987	Irrigated	620	Supplies green fodder up to end of June
7	Wardan	1981	-	726	
8	Mescavi	1975	Irrigated and high soil fertility	700	

GFY: Green Fodder Yield

Oat

Table 79. Promising and popular oat varieties/hybrids

State	Varieties/hybrids
Andhra Pradesh	Bundle Jai 2004, Phule Haritha, Bundle Jai-851, UPO 212, OS-6
Asom	Bundle Jai 2004, Phule Haritha, Bundel Jai-992, Bundle Jai 851, UPO 212, OS 6
Bihar	Bundle Jai 2004, Phule Haritha, Bundel Jai-992, Bundle Jai 851, UPO 212, OS 6
Delhi	Kent, JHO 851(multicut), UPO 212
Gujarat	JO 3-93, JO 3-91, OS 346, OL 125, Bundle Jai 822, UPO 212, UPO 94, OS 6, Kent
Haryana	Bundle Jai 2004, Phule Haritha, Bundel Jai 992, Bundle Jai 851, OL 125, UPO 212, UPO 94, OS 6, Kent
Himachal Pradesh	SKO 96, SKO 90, Bundel Jai 991, OL125
Jammu and Kashmir	SKO 96, SKO 90, Bundel Jai 991, Bundle Jai 2004, Phule Haritha, Bundle Jai 851, UPO 212, OS 6
Jharkhand	Bundle Jai 2004, Phule Haritha, Bundle Jai 851, UPO 212, OS 6
Karnataka	Bundle Jai 2004, Phule Haritha, Bundle Jai 851, UPO 212, OS 6
Madhya Pradesh	JO 3-93, JO 3-91, OS 346, OL 125, Bundle Jai 822, UPO 94, Kent
Maharashtra	JO 3-93, JO 3-91, OS 346, OL 125, Bundle Jai 822, UPO 212, OS 6, Kent
Odisha	Bundle Jai 2004, Phule Haritha, Bundel Jai 992, Bundle Jai 851, UPO 212, OS 6
Punjab	Bundle Jai 2004, Phule Haritha, Bundel Jai 992, Bundle Jai 851, OL125, UPO 212, UPO 94, OS 6, Kent
Rajasthan	Bundle Jai 2004, Phule Haritha, Bundel Jai 992, Bundle Jai 851, OL 125, UPO 212, UPO 94, OS 6, Kent
Tamil Nadu	Bundle Jai 2004, Phule Haritha, Bundle Jai 851, UPO 212, OS 6
Uttar Pradesh	JO 3-93, JO 3-91, NDO 1, Bundel Jai 992, OL125, Bundle Jai 822, UPO 94, Kent
Uttarakhand	Bundel Jai 991, Bundle Jai 2004, Phule Haritha, Bundel Jai 992, Bundle Jai 851, OL125, UPO 212, UPO 94, OS 6, Kent
West Bengal	Bundle Jai 2004, Phule Haritha, Bundel Jai 992, Bundle Jai 851, UPO 212, OS 6

Table 80. Important information on the oat varieties/ hybrids

Sl No.	Varieties	Year of release	Recommended niche	GFY potential (q/ha)
1.	SKO 96	2011	-	-
2.	JO 3-93	2010	-	460
3.	SKO 90	2010	Hill zone	-
4.	OS 346	2010	-	535
5.	JO 3-91	2009	-	475
6.	NDO-1	2009	Salt affected soils	535
7.	Bundel Jai 991	2007	Hill zone	345
8.	Bundel Jai 2004	2007	Except Central zone	390
9.	Bundel Jai 992	2007	*Rabi*	495
10.	Phule Haritha	2006	*Rabi*	600
11.	Bundel Jai 851	1997	-	525
12.	OL 125	1995	-	565
13.	Bundel Jai 822	1989	-	475
14.	UPO 212	1989	-	595
15.	UPO 94	1982	-	450
16.	OS 6	1981	-	526
17.	Kent	1975	-	550

Cowpea

Table 81. Promising and popular cowpea varieties/hybrids

State	Varieties/hybrids
Andhra Pradesh	MFC 08-14
Asom	UPC 625, UPC 622, UPC 618, Bundel Lobia 1, UPC 4200, UPC 5287, UPC 5286, GFC 3, GFC 2, GFC 1, EC 4216, Kohinoor
Bihar	UPC 625, UPC 622, Bundel Lobia 1, UPC 4200, UPC 5287, UPC 5286, GFC 3, GFC 2, GFC 1, EC 4216, Kohinoor
Gujarat	UPC 625, UPC 618, UPC 9202, UPC 8705, Bundel Lobia 1, UPC 287, UPC 5287, UPC 5286, GFC 3, GFC 2, GFC 1, EC 4216, Kohinoor
Haryana	UPC 625, UPC 622, UPC 618, UPC 607, UPC 8705, Bundel Lobia 2, Bundel Lobia 1, UPC 287, UPC 5287, UPC 5286, GFC 3, GFC 2, GFC 1, EC 4216, Kohinoor
Himachal Pradesh	UPC 625, UPC 622
Jammu and Kashmir	UPC 622
Jharkhand	IL 1177, UPC 625, UPC 622, UPC 618, UPC 4200
Karnataka	MFC 08-14
Kerala	MFC 08-14, UPC 8705, Bundel Lobia 1, UPC 287, UPC 5287, UPC 5286, GFC 3, GFC 2, GFC 1, EC 4216, Kohinoor
Madhya Pradesh	UPC 625, UPC 618, UPC 607, UPC 9202
Maharashtra	UPC 625, UPC 618, UPC 9202, UPC 8705, Bundel Lobia 1, UPC 287, UPC 5287, UPC 5286, GFC 3, GFC 2, GFC 1, EC 4216, Kohinoor
Odisha	IL 1177, UPC 622, UPC 618, UPC 4200
Punjab	UPC 625, UPC 618, UPC 607, UPC 8705, Bundel Lobia 2, Bundel Lobia 1, UPC 287, UPC 5287, UPC 5286, GFC 3, GFC 2, GFC 1, EC 4216, Kohinoor
Rajasthan	UPC 625, UPC 622, UPC 618, UPC 607, Bundel Lobia 2, Bundel Lobia 1, UPC 287, UPC 5287
Tamil Nadu	MFC 08-14, UPC 8705, Bundel Lobia 1, UPC 287, UPC 5287, UPC 5286, GFC 3, GFC 2, GFC 1, EC 4216, Kohinoor
Uttar Pradesh	IL 1177, UPC 625, UPC 622, UPC 618, UPC 607, UPC 9202, UPC 8705, Bundel Lobia 2, Bundel Lobia 1, UPC 4200, UPC 287, UPC 5287, UPC 5286, GFC 3, GFC 2, GFC 1, EC 4216, Kohinoor
Uttarakhand	UPC 622, UPC 618, UPC 607, UPC 8705, Bundel Lobia 2, Bundel Lobia 1, UPC 287, UPC 5287, UPC 5286, GFC 3, GFC 2, GFC 1, EC 4216, Kohinoor
West Bengal	IL 1177, UPC 625, UPC 622, UPC 618, UPC 4200

Table 82. Important information on the cowpea varieties/ hybrids

Sl No.	Varieties	Year of release	Recommended niche	GFY potential (q/ha)
1.	IL 1177	2012	Irrigated (summer), rainfed (*kharif*)	-
2.	UPC 625	2008	Irrigated (summer), rainfed (*kharif*)	420
3.	UPC 622	2007	Irrigated (summer), rainfed (*kharif*)	396
4.	UPC 618	2006	Irrigated (summer), rainfed (*kharif*)	390
5.	UPC 607	2002	Irrigated (summer), rainfed (*kharif*)	420
6.	UPC 9202	1999	Irrigated (summer), rainfed (*kharif*)	400
7.	UPC 8705	1995	Irrigated (summer), rainfed (*kharif*)	385
8.	Bundel Lobia 2	1993	Irrigated (summer), rainfed (*kharif*)	350
9.	Bundel Lobia 1	1992	Irrigated (summer), rainfed (*kharif*)	370
10.	UPC 4200	1991	Irrigated (summer), rainfed (*kharif*)	325
11.	UPC 287	1988	Irrigated (summer), rainfed (*kharif*)	350
12.	UPC 5287	1986	Irrigated (summer), rainfed (*kharif*)	360
13.	UPC 52 86	1981	Irrigated	328
14.	Gujarat Forage Cowpea 3	1980	Irrigated	276
15.	Gujarat Forage Cowpea 2	1980	Irrigated	273
16.	EC 4216	1977	Irrigated	300
17.	Kohinoor	1975	Irrigated	360

Other forages and grasses

(*Bajra*, Maize, Rice-bean, *Guar*, Gobhi sarson, Anjan grass, Dhaman grass, Dharaf grass, Guinea grass, Dinanath grass, Job's tear, Lampa grass, Marvel grass, Sen grass, *Setaria* grass, Tall fescue)

Table 83. Promising other forage and grass varieties/hybrids

Crop	Varieties/ Hybrids	State(s)
Bajra	BAIF Bajra 1	Chhattisgarh, Gujarat, Haryana, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Uttarakhand
	Giant Bajra	Andhra Pradesh, Chhattisgarh, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Uttar Pradesh, Uttarakhand
	Proagro No. 1	Andhra Pradesh, Karnataka, Maharashtra
	Avika Bajra Chari 19	Haryana, Punjab, Rajasthan, Uttar Pradesh, Uttarakhand
	AFB 3	Haryana, Punjab, Rajasthan, Uttarakhand
	NDFB 3	Uttar Pradesh
	Narendra Chara Bajra 2	Uttar Pradesh
Maize	African Tall	Andhra Pradesh, Asom, Bihar, Haryana, Himachal Pradesh, Jammu and Kashmir, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, Uttarakhand, West Bengal
	Pratap Makka Chari 6	Haryana, Punjab, Rajasthan, Uttar Pradesh
	J 1006	Haryana, Punjab, Himachal Pradesh, Uttar Pradesh
Rice-bean	Bidhan 1	Asom, Bihar, NEH states, Jharkhand, Odisha, West Bengal
	RBL 6	Bihar, Haryana, Odisha, Karnataka, Punjab, Tamil Nadu, Uttarakhand, West Bengal, Uttar Pradesh, Delhi
	Bidhan Rice Bean 2	Asom, Bihar, Jharkhand, NEH states, Odisha, West Bengal
	Bidhan Rice Bean 3	Asom, Bihar, Jharkhand, NEH states, Odisha, West Bengal
Guar	Bundel Guar 3	Gujarat, Haryana, Punjab, Rajasthan, Uttar Pradesh
	Bundel Guar 2	Haryana, Punjab, Rajasthan
	Bundel Guar 1	Haryana, Punjab, Rajasthan
	HG 75	Haryana, Punjab, Rajasthan
	HFG 119	Haryana, Punjab, Rajasthan
Gobhi sarson	Sheetal	Himachal Pradesh
	GSL 1	Punjab
Anjan grass	Bundel Anjan 3	Andhra Pradesh, Haryana, Karnataka, Kerala, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh
	Bundel Anjan 1	Andhra Pradesh, Haryana, Karnataka, Kerala, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh
	Marwar Anjan	Andhra Pradesh, Haryana, Karnataka, Kerala, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh
Dhaman grass	Marwar Dhaman	Andhra Pradesh, Haryana, Karnataka, Punjab, Tamil Nadu, Uttar Pradesh
Dharaf grass	Bundel Dhawalu Grass1	Chhattisgarh, Gujarat, Haryana, Madhya Pradesh, Maharashtra, Rajasthan, Uttar Pradesh, Punjab

(Continued)

Table 83. *(Concluded)*

Crop	Varieties/ Hybrids	State(s)
Guinea grass	PGG 14	Gujarat, Haryana, Himachal Pradesh, Madhya Pradesh, Maharashtra, Punjab, Uttar Pradesh
	PGG 616	Haryana, Punjab, Rajasthan, Uttar Pradesh, Uttarakhand
	PGG 9	Haryana, Himachal Pradesh, Punjab, Rajasthan, Uttarakhand
	Bundel Guinea 1	Himachal Pradesh, Maharashtra, Punjab, Tamil Nadu, Uttar Pradesh
	Bundel Guinea 2	Himachal Pradesh, Maharashtra, Punjab, Tamil Nadu, Uttar Pradesh
Dinanath grass	Bundel Dinanath 2	Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Maharashtra, Tamil Nadu, Uttar Pradesh
	Bundel 1	Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Maharashtra, Tamil Nadu, Uttar Pradesh
	Pusa Dinanath Grass	Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Maharashtra, Tamil Nadu, Uttar Pradesh
	Jawahar Pennisetum 12	Chhattisgarh, Madhya Pradesh, Maharashtra, Uttar Pradesh
Job's tear	Bidhan Coix 1	Asom, Bihar, Jharkhand, NEH states, Odisha, West Bengal
Lampa grass	Bundel Lama Ghass 1	Chhattisgarh, Gujarat, Haryana, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Uttar Pradesh
Marvel grass	Gujarat Marvel Grass 1	Gujarat, Rajasthan
Sen grass	Bundel Sen Ghas 1	Chhattisgarh, Gujarat, Haryana, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Uttar Pradesh
Setaria grass	Setaria 92	Himachal Pradesh, Uttarakhand
	S 18	Himachal Pradesh, Uttarakhand
Tall fescue	EC 178182	Himachal Pradesh, Uttarakhand, Jammu and Kashmir

Table 84. Important information on the forage and grass varieties/ hybrids

Sl No.	Varieties	Year of release	Recommended niche	GFY potential (q/ha)
			Bajra	
1.	AFB 3	2011	-	525
2.	NDFB 3	2011	-	483
3.	Avika Bajra Chari	2009	Rainfed	380
4.	BAIF Bajra 1	2008	-	473
5.	Narendra Chara Bajara 2	2008	Problem soils situation	400
6.	Proagro No.1	1997	Irrigated (summer); rainfed (monsoon)	750
7.	Giant Bajra	1980	-	645
			Maize	
8.	Pratap Makka Chari 6	2008	-	405
9.	African Tall	1982	-	595
10.	J 1006	1989	-	430
			Rice-bean	
11.	RBL 6	2000	-	310
12.	Bidhan 1	2000	-	280
			Guar	
13.	Bundel Guar 3	1998	Arid and semi-arid zones	345
14.	Bundel Guar 2	1994	Semi-arid zone	280
15.	Bundel Guar 1	1993	Arid and semi-arid zones	310
16.	HG 75	1981	-	320
17.	HFG 119	1981	-	350
			Gobhi Sarson	
18.	Sheetal	1995	Lower and mid hills of HP	320
19.	GSL 1	1986	irrigated	340
			Anjan Grass	
20.	Bundel Anjan 3	2006	Arid and semi-arid tract, rainfed	376
21.	Bundel Anjan 1	1989	Arid and semi-arid region	410
22.	Marwar Anjan	1985	Arid and semi-arid region	170
			Dhaman Grass	
23.	Marwar Dhaman	1985	Arid and semi-arid region	95
			Dharaf Grass	
24.	Bundel Dhawalu grass 1	2007	Semi-arid, tropical and sub-tropical areas in rangeland conditions	375
25.	Bundel Guinea 2	2008	Humid, arid, tropical and sub-tropical areas during *Kharif*	650
26.	Bundel Guinea 1	2004	Humid, arid, tropical & sub-tropical areas during *Kharif*	650
27.	PGG 616	2000	Hill zones, irrigated	495
28.	PGG 14	1988	North and Central zone	1450
29.	PGG 9	1986	Temperate and North west zones	710
			Dinanath Grass	
30.	Bundel Dinanath 2	1989	-	375
31.	Bundle 1	1987	-	345
32.	Pusa Dinanath Grass	1982	except hilly tract	685
33.	Jawahar Pennisetum 12	1974	-	520

(Continued)

Table 84. *(Concluded)*

Sl No.	Varieties	Year of release	Recommended niche	GFY potential (q/ha)
			Job's tear	
34.	Bidhan Coix 1	2008		395
			Lampa Ghas	
35.	Bundel Lampa Ghas 1	2008		320
			Marvel Grass	
36.	Gujarat Marvel Grass 1	1980		348
			Sen Grass	
37.	Bundel Sen Ghas 1	2007		355
			Setaria Grass	
38.	Setaria 92	2005		375
39.	S 18	2007		-
			Tall Fescue	
40.	EC 178182	2009		300

Annexures

Annexure I

Breeder seed indent and production during 2009-10 to 2011-12 (Quantity in Quintals)

Crops	2009-10		2010-11		2011-12	
	Indent	Production	Indent	Production	Indent	Production
			CEREALS			
Wheat	32330	35049	29692	38469	28860	35745
Rice	3880	5387	4604	6095	5772	6828
Sorghum	55	221	36	167	113	158
Maize	179	243	178	232	211	173
Barley	2496	3053	1778	2900	1842	1906
Pearl millet	8	8	10	28	15	32
Small millet	5	24	22	42	18	47
			PULSES			
Chickpea	9380.75	8849.67	9888.84	10786.90	9915.4	11141.21
Lentil	346.55	515.96	431.49	433.29	643.6	717.77
Fieldpea	177.80	1303.60	331.83	997.25	838.45	959.34
Urdbean	500.98	617.15	507.71	805.42	845.96	1030.65
Mungbean	797.58	1168.65	1058.77	1072.96	1243.80	1342.91
Pigeonpea	276.14	499.13	475.09	974.99	537.36	1317.20
Rajmash	2.05	4.70	-	-	-	-
Cowpea	66.30	81.80	29.70	27.60	54.00	41.62
Mothbean	151.12	113.00	221.05	261.91	212.80	94.57
Horsegram	1.00	1.50			12.00	10.50
			OILSEEDS			
Groundnut	22896.65	16406.5	11422.75	15091.6	18114.80	20075.65
Soybean	11624.95	12516.88	22292.75	18327.16	22972.50	20853.40
Sunflower	13.93	36.13	8.85	36.20	31.50	47.80
Niger	5.90	17.09	15.99	10.24	11.40	14.68
Castor	16.66	88.25	24.3	201.88	11.49	28.00
Sesame	3.00	9.13	27.65	49.02	41.56	67.06
Rapeseed and Mustard	76.28	137.71	75.32	150.21	49.28	150.51
Linseed	37.51	68.21	49.01	97.08	145.00	156.53
Safflower	10.30	137.55	20.45	51.15	26.73	52.65
			FORAGE CROPS			
Cowpea	7.50	16.60	9.20	16.10	42.65	12.10
Maize	54.14	71.70	63.22	92.68	74.87	76.60
Sorghum	55.30	220.60	23.00	28.62	33.90	52.51
Teosnite	4.00	3.50	5.00	10.00	-	-
Guar	480.04	389.00	247.70	520.00	277.20	574.60
Bajra	1.35	1.50	1.50	8.50	5.55	6.30

(Continued)

Annexure I (Concluded)

Crops	2009-10		2010-11		2011-12	
	Indent	Production	Indent	Production	Indent	Production
Rice-bean	3.00	3.10	-	-	3.00	3.00
Oat	224.30	370.50	202.10	305.33	1082.10	890.20
Berseem	45.25	59.95	68.80	50.00	94.05	84.05
Lucerene	7.60	8.40	6.40	6.38	13.00	6.67
Gobhi Sarson	-	-	0.44	1.40	0.60	1.85
			FIBRE CROPS			
Jute	5.79	7.80	8.16	12.88	13.48	15.14
Sun-hemp	-	-	-	-	10.00	11.00
Cotton	36.63	101.74	43.63	57.79	31.54	58.6
Total Cereal Crops	38954	43985	36294	47814	36831	44889
Total Pulse Crops	11700	13155	12944	15360	14303	16656
Total Oilseed Crops	34685	29417	33937	34015	41404	41446
Total Forage Crops	882	1145	627	1039	1627	1708
Total Fibre Crops	42	110	52	71	55	85
Grand Total	86264	87812	83880	98419	94220	104784

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(Continued)

(Continued Annexure II)

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(Continued)

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