सत्यमेव जयते

Annual Report 2016-17

Protection of Plant Varieties and Farmers' Rights Authority

Department of Agriculture, Cooperation & Farmers Welfare

Ministry of Agriculture & Farmers Welfare

Government of India

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FOREWORD

It gives me pleasure to present the Annual Report of the Protection of Plant Varieties and Farmers' Rights Authority (PPV&FRA) for the year 2016–17. India, a signatory country of the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) of the World Trade Organization (WTO), having ratified the said Agreement made provision for giving effect to sub-paragraph (b) of paragraph 3 of the Article 27 in Part II of the agreement and enacted Protection of Plant Varieties and Farmers' Rights Act in 2001(53 of 2001). Subsequently, the Govt. of India established the PPV&FR Authority in 2005.

The mandate of the Authority is to provide an effective legal system as prescribed by the PPV&FR Act, 2001 for protecting plant varieties and the rights of farmers, plant breeders and researchers; to encourage the seed industry for developing new varieties of plants of economic importance and to recognize the farmers for their contribution towards conserving and improving traditional plant genetic resources. India is among the first few countries of the world to enact the PPV&FR Act, 2001 on the *sui generis* system as per our national requirements. The Act fulfils our international obligations and commitments to the spirit of International Treaty on Plant Genetic Resources for Food & Agriculture (ITPGRFA).

The Authority began receiving applications in the year 2007 and in the past decade, the Authority has worked towards creating a system for registering new and extant plant varieties through plant varieties registry; developing guidelines for testing distinctiveness, uniformity and stability (DUS) of plant varieties; recognizing farmers across the country who are involved in conserving traditional plant varieties and contribute in development of new varieties; established National Gene Bank, field gene banks, DUS network for crops, etc. A Farmers' Cell was established to provide assistance to the farmers for the registration of their varieties and to conduct training–cum-awareness programs for promoting the conservation and sustainable use of plant genetic resources. The Authority has expanded its registration to 140 crops species and is in process of preparing the DUS test guidelines for another 10 crop species. The

Authority publishes various publications like *Plant Variety Journal of India*, compendiums and technical brochures on the functions and activities of the Authority.

In the year 2012, two branch offices were established, at Ranchi covering the territorial region of Jharkhand, Bihar, West Bengal, Chhattisgarh, Orissa and Andaman and Nicobar Islands; and at Guwahati covering the states of Sikkim, Assam, Meghalaya, Manipur, Mizoram, Nagaland, Tripura and Arunachal Pradesh (Gazette Notification No. 929 dated April 27, 2012). The PPV&FR Authority, with the support from Ministry of Agriculture and Farmers Welfare, has received formal approval from Govt of India to establish three more branch offices (Gazette Notification No. S.O. 182 dated January 19, 2017). The Authority, in collaboration with respective SAUs, will establish these offices at Pune, Palampur and Shivamogga during 2017–18.

During the reporting year, the Authority has conducted many training-cum-awareness programs in close co-operation with different Zonal Project Directorates, Krishi Vigyan Kendras (KVKs), ICAR institutes, SAUs, NGOs and organizations across the country. The Authority also participated in several Kisan Mela and Kisan Utsav at various places showcasing its activities, spreading awareness about the value of intellectual property rights related to plant varieties and the essence of PPV&FR Act, 2001.

The Authority was fortunate enough that Shri Radha Mohan Singh, Hon'ble Union Minister of Agriculture and Farmers Welfare, had kindly conferred Plant Genome Saviour Community Awards (2012-13 and 2013-14) and Plant Genome Saviour Farmer Reward and Recognition (2014) on two occasions, viz., 24 August and 21 December in 2016. In these occasions, 10 farming communities were awarded, 13 farmers were rewarded and 31 farmers were recognized for their contribution in conserving traditional varieities.

For streamiling the activities of the Authroity, a review meeting of the DUS Centers was held at IGKV, Raipur with the scientists of various DUS centers and DUS projects to learn about their progress and to resolve problems and difficulties, if any. For strengthening international relations with Germany and Netherlands, several meetings were conducted to place India in harmonization with UPOV convention and to derive a convention country status through bi-lateral agreements.

I feel privileged in placing on record the able guidance and direction provided by the Hon'ble Union Minister of Agriculture and Farmers Welfare, Shri Radha Mohan Singh for the growth and development of the Authority. I am also equally indebted to Dr S K Pattanayak, Secretary, Department of Agriculture, Co-operation & Farmers Welfare and Dr. T Mohapatra, Secretary, DARE & Director General, ICAR for their guidance,

leadership and their constant support. I express my sincere gratitude to Dr Ashok Dalwai, Additional Secretary, Department of Agriculture, Co-operation & Farmers Welfare & Shri Rajesh Kumar Singh, former Joint Secretary (Seeds) for their keen interest and valuable support to the Authority. I gratefully acknowledge the contributions of the Hon'ble members of the Authority and other officers who have served various committees/task forces with dedication and helped the Authority in touching the new horizon.

I am also thankful to Nodal Officers of the DUS Centers of the Indian Council of Agricultural Research (ICAR), State Agricultural Universities (SAUs), Council of Scientific and Industrial Research (CSIR), Indian Council of Forest Research and Education (ICFRE) for providing continuous support to Authority for achieving its goals. With deep sense of sincere gratitude, I wish to convey my thanks to the officers of the Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, ICAR, ICFRE, CSIR, Ministry of Law and Justice, Ministry of Environment, Forest and Climate Change for their continuous support and guidance from time to time. I am also thankful to Director, Indian Agricultural Research Institute (IARI), New Delhi and Director, National Bureau of Plant Genetic Resources (NBPGR), New Delhi for successfully shouldering various responsibilities entrusted by the Authority. I acknowledge with thanks the services of our esteemed bankers i.e. State Bank of India and Syndicate Bank for their financial services and support. I am highly grateful for the CAG for their timely support, guidance and direction.

I appreciate and compliment the editorial team for an effective coordination and timely compilation of the Annual Report.

(B Rajender)
Chairperson

ACKNOWLEDGEMENTS

I would like to express my sincere gratitude to Dr. R.R. Hanchinal, Former Chairperson, PPV&FR Authority, for his valuable support, motivation and enthusiasm and comprehensive views in the preparation of this report describing the performance of the Authority during the period of 2016–17.

I acknowledge the kind support and guidance of Shri S.K. Pattanayak, Secretary, Ministry of Agriculture, Co-operation and Farmers Welfare and Dr. B. Rajender, Joint Secretary (Seeds), Department of Agriculture, Co-operation & Farmers Welfare (DAC&FW) and Acting Chairperson, PPV&FRA.

I owe my special word of appreciations to Dr Krtika Anbazhagan (Technical Examiner), Shri Dipal Roy Choudhury (Joint Registrar) and Shri D.S. Raj Ganesh (Legal Advisor) for their sincere efforts in writing, compiling and synthesizing this Annual Report.

My appreciation goes to Dr Ravi Prakash (Registrar), Dr. T.K. Nagarathna (Registrar), Dr. S.A. Desai (Registrar), Shri J.P. Singh (Finance Advisor), Dr Ritu Jain (Joint Registrar), Shri Umakant Dubey (Deputy Registrar), Shri R.S. Sengar (Deputy Registrar), and Shri R.R. Pradhan (Legal Advisor) for their support in bringing the Annual Report of the Authority.

I am grateful for the inputs provided by Dr. Ajay Kumar Singh, (STO), Dr. D.S. Pilania (Technical Assistant) and Dr. Manisha Gautam, Dr. Jasbir Madan, Dr. Jyoti Jaiswal (STEs). My special word of thanks goes to Mr. Shyam Narayan, Mr. Arvind Kumar (Computer Assistants), Mr. Suneet Kumar and Mr. Stephen T. (Technical Examiners), Mr. Vikram Singh, Ms. Neeta Kumari, Mr. Yadram, Mr. Santosh Singh Bisht (Office Assistants), who have invested their time in providing assistance in bringing this document to completion in a time bound manner. I am also thankful to all the staff of PPV&FRA for providing necessary inputs in the preparation of Annual Report.

The Authority is highly thankful for the support and cooperation received from of Seed Division, Internal Finance Division of the DAC&FW and also from Indian Council of Agricultural Research (ICAR). We sincerely cherish the partnership that PPV&FR Authority has built over time with the various institutes of the ICAR, SAUs, CSIR, ICFRE and KVKs for their best co-operation in conducting DUS trials and providing valuable inputs for the preparation of this report.

(Rakesh Chander Agrawal)

Registrar General

EXECUTIVE SUMMARY

India enacted the Protection of Plant Varieties and Farmers' Rights (PPV&FR) Act in 2001 (53 of 2001) by adopting *sui generis* system. The main objective of the PPV&FR Act is to provide for the establishment of an effective system for protection of plant varieties, the rights of farmers and plant breeders and to encourage the development of new varieties of plants of economic importance. It is a unique Act, which fulfills the spirit of International Treaty on Plant Genetic Resources for Food & Agriculture on one hand and conforms to the provisions of UPOV, 1978 Convention on the other. It also strikes a balance between the rights to breeders and the farmers as per the national requirement. For the purpose of this Act, the PPV&FR Authority was established in the year 2005. The Authority has been consistently improvising the system of registering the plant varieties, connecting the stakeholders, encourage innovation in seed sector, acknowledge the contribution and value of farmers of the nation, develop a national gene fund, build and maintain gene banks, etc. since its inception.

So far, the Government of India notified 140 crops species on the recommendations of PPV&FR Authority for plant variety registration. During the reporting period, the Authority has notified 38 genera species. In the year 2016–17, the Authority received a total of 3569 applications belonging to three categories of farmers' (3041), new (221) and extant (307) varieties. The maximum number of applications belonged to farmers' category including (3041), followed by applications filed by public institutions (300) and private organizations (228). Highest numbers of applications were received for rice (1119), followed by maize (257), pigeonpea (161), black gram (122), wheat (103), brinjal (98), kodo millet (97), field pea (80), little millet (79), chilli (79), bottle gourd (70) and other crops as mentioned in Table 1.

In the annual year of 2016–17, a total of 495 certificates of registration were issued. Of these, 288 belonged to Farmers, 107 belonged to private organizations and 99 belonged to public organizations. Excluding the Farmers' varieties, 99 new varieties, 62 varieties of common knowledge and 46 extant notified varieties were registered. The highest number of certificates were issued in Rice (288), followed by tetraploid cotton (39), maize (33), wheat (19), okra (16), tomato (14), diploid cotton (11), sorghum (7), soybean (6), barley (6), and other crops as mentioned in Table 4.

In the Authority meeting held in 11 November 2016, the members arrived at important decisions regarding several techno-legal and administrative matters

including approval of the extant notified varieties for registration, approval of the annual account of the Authority and conferring of Plant Genome Saviour Community Awards 2013–14.

The Legal Cell of the Authority pursued the cases filed in different Courts. Thirty-four cases were pending, out of which six were disposed-off and the remaining cases are still pending against the Authority. One notification was published in the Gazette of India wherein ten genera/species (jasmine, tuberose, papaya, China aster, peach, Japanese plum, strawberry, chilli, bell pepper and paprika, finger millet and foxtail millet) were notified for the purpose of registration of varieties.

The Right to Information (RTI) Cell received 87 applications either directly or through transfer from other Departments seeking information under RTI Act, 2005. The information sought was made available within the stipulated timeframe.

Farmers' Cell of the PPV&FR Authority organized two Plant Genome Saviour Awards Ceremony in the year of 2016–17 conferring awards for the years 2013–14 and 2014–15. A total of 44 farmers were 10 farmining communities were implemented the provisions of the farmers' rights as enshrined in the Act and provided funds to various institutions, DUS centers, ZPDs, KVKs and other stakeholders for conducting training-cum-awareness programmes across the country. The Authority participated in farmers' fairs, agriculture fairs held at various places to disseminate the information on Farmers' Rights, registration of varieties including farmers' varieties and important provisions of PPV&FR Act, 2001. Special drive of awareness was undertaken in the North-Eastern Hill areas to mobilize farmers for registration of their traditional and farmers' varieties including landraces. The support of KVK system of ICAR network was also taken. The Authority was consulted by the Department of Agriculture, Cooperation & Farmers Welfare on various technical matters, including International affairs relating to bilateral cooperation, ITPGRFA, CBD, UPOV, WIPO and other international conventions.

The Authority received Rs. 1975.00 lakh as grants-in-aid from Department of Agriculture, Cooperation & Farmers Welfare, during the year 2016–17 and utilized Rs. 1886.90 lakh after adjusting unspent balance of Rs. 7.38 lakh of previous year leaving a balance of Rs. 95.40 lakh.

The Annual Report of Authority was timely forwarded to the Department of Agriculture, Cooperation & Farmers Welfare for placing before both the houses of Parliament. The annual accounts of the Authority for the year 2016–17 were finalized and audited within the prescribed time schedule and placed before both the houses of the Parliament within statutory time limit.

CHAPTER 1: BRIEF INTRODUCTION

Plant genetic resources are vital for the survival of humanity as they serve as sources of genetic variation to create new varieties of plants for food, fibre, fodder, forest and industrial use. Traditional plant breeders include farming community/forest dwellers that nurture these diversity, made selection to produce plants of use since millennia. Modern plant breeders collected genetic diversity through exploration in biodiversity rich zones, use different tool to increase values for cultivation. Plant Breeders' Rights are therefore a mean to recognise their contribution and create an ecosystem that sustain innovation continuum, can establish a mechanism to exert responsible stewardship over germplam, support long term research and development that enhance agricultural productivity, promote plant breeding in public/private sector and high quality provide seeds/planting material to farmers.

Enforcement of Intellectual Property Rights (IPRs) in Agriculture led to the "Plant Patent Act, 1930" in USA and formation of the *Union Internationale pour la Protection des Obtentions Végétales* (UPOV) or the International Union for the Protection of New Varieties of Plants in 1961 at Europe which was subsequently revised in 1972, 1978 and 1991. Presently, there are 74 member states as part of the UPOV convention including regional associations like EU, OAPI and India has been an observer to the UPOV.

Plant variety protection through Plant Breeder's Rights was brought into major focus by the General Agreement on Tariffs and Trade (GATT), a multilateral instrument governing international trade. GATT negotiations in Uruguay Round led to the establishment of World Trade Organisation (WTO) in 1995. Article 27.3(b) of Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs) under WTO, provides that members shall provide for the protection of plant varieties, either by patents or by an effective *sui generis* system or by any combination thereof.

The Government of India enacted the *Protection of Plant Varieties and Farmers' Rights (PPV&FR) Act* in 2001 (53 of 2001) to provide for the establishment of an effective *sui generis* system for protection of plant varieties, the rights of farmers and plant breeders and to encourage the development of new plant varieties of economic importance.

PPV&FR Rules were notified on 12 September, 2003 and amended from time to time, thereafter. Subsequently, for the purposes of the Act, the Government of India having exercised the powers conferred under the section 3 (1) of this Act, established the

Protection of Plant Varieties and Farmers' Rights Authority on 11 November, 2005, vide Gazette notification S.O. 1588(E).

1.1 Objectives of the PPV&FR Act, 2001

Following are the objectives of the Act:

- To establish an effective system for protection of plant varieties, the rights of farmers and plant breeders and to encourage the development of new varieties of plants
- To recognize and protect the rights of the farmers in respect of their contribution made at any time in conserving, improving and making available plant genetic resources for the development of new plant varieties
- To protect plant breeders' rights to stimulate investment for research and development both in the public and private sector for development of new plant varieties
- To facilitate the growth of seed industry in the country that will ensure the availability of high quality seeds and planting material to the farmers

1.2 Salient Features of the Act

The Act is based on *sui generis* system and is unique in sense that it concurrently recognizes the rights of breeders, farmers, farming communities and researchers. It confers exclusive rights upon the breeder or his successor, his agent or licensee, to produce, sell, market, distribute, import or export of the registered variety. As far as farmers' rights are concerned, the Act recognizes a farmer as cultivator, conserver and breeder and provides that the farmers' variety can also be registered. Further, the Act provides for compulsory license of a registered variety, if the seeds/propagating material is not available to the public at a reasonable price or quantity. Any person or group of persons or any organization can also claim for benefit sharing, if the plant genetic material belonging to them is used in the development of a registered variety. The researchers are conferred the right to use any registered variety for conducting experiment or research and the use of a variety by any person as an initial source of variety for the purpose of creating the other varieties. India is a pioneer country where a national legislation has been enacted to establish and secure Farmers' Rights. The Act also recognizes the past, present and future contributions of the farming communities and provides an opportunity for the award to farming communities/farmers for their contributions in agro-biodiversity conservation.

1.3 PPV&FR Authority

The Authority is a body corporate, having perpetual succession and a common seal with the power to acquire, hold and dispose of movable and immovable properties and to contract, and shall by the said name sue and be sued. The head office of the Authority is at New Delhi and it is functioning from a leased space in the premise of the National Agricultural Science Centre Complex, Dev Prakash Shastri Marg, Pusa Campus, New Delhi. The Authority consists of Chairperson and **15 members** as on 31 March, 2016.

1.4 Plant Variety Registration

The PPV&FR Authority has finalized the distinctiveness, uniformity and stability (DUS) test guidelines for registration of 140 crop species covering cereals, pulses, millets, oilseeds, spices, vegetables, flowers, medicinal and aromatic plants and fibre crops. The Authority has issued 495 certificates of registration for plant varieties (under new, extant notified and farmers' variety category) during the reporting year 2016–17. To attract more applications and for the benefit of different stakeholders, the Authority regularly organizes/supports awareness and capacity building programmes.

The PPV&FR Authority has also established network of DUS test centres across the country under the Central Sector Scheme for the implementation of PPV&FR Act, 2001, to verify the claims of candidate varieties by applicants, maintenance breeding, multiplication of reference/example varieties/ the varieties notified under section 5 of the Seeds Act, 1966, and generation of database for varietal characteristics as per crop specific DUS (Distinctiveness, Uniformity and Stability) guidelines. In addition, DUS tests for the candidate varieties are being conducted at crop specific centres. The data recorded as per the DUS test guidelines is submitted by these centres to Authority for further analysis. The Authority, in consultation with the ICAR institutes and SAUs has identified potential crop species of economic importance and supports projects for the development of the DUS guidelines. The Authority has established its National Gene Bank, field gene banks across the country. It regularly publishes Plant Variety Journal of India and maintains the National Register of Plant Varieties at Headquarters and also its branch offices.

1.5 Plant Breeders' Rights

Breeders' Right is one of the pivotal provisions of this Act with far reaching implications in the context of Indian agriculture and global scenario. The breeder also enjoys provisional

protection of his/her variety against any abusive act committed by any third party during the period between filing of application for registration and the final decision taken by the Authority. Similarly, researcher's rights are also granted. However, for repeated use of a registered variety as an initial source of variety for the purpose of developing a new variety, the authorization of the breeder of the registered variety is necessary.

The plant variety protection as enshrined in the Act follows a broad principle of internationally recognized system of DUS and novelty for a new variety. Any person can apply for registration in any of the following:

- **New variety** of such genera and species as specified under section 29(2) of the Act.
- **Extant variety**
  - Notified under section 5 of Seeds Act, 1966,
  - Variety of common knowledge (VCK),
- **Farmers' variety**
  - Traditionally cultivated and evolved by the farmers in their fields,
  - Wild relative or landrace of a variety about which the farmers possess common knowledge.
- **Essentially derived variety (EDV)**

  A variety predominantly derived from an initial variety, or from a variety that itself is predominantly derived from such initial variety, while retaining the expression of the essential characteristics that result from the genotype or combination of genotypes of such initial variety

1.6 Farmers' Rights

The Act provides following rights to the farmers:

- *Right to register their varieties*: A farmer who has bred or developed a new variety is entitled for registration and other protection as a plant breeder under this Act.
- *Right on seed*: A farmer is entitled to save, use, sow, resow, exchange, share or sell his farm produce including seed of a variety protected under this Act; provided that the farmer is not entitled to sell branded seed of a variety protected under this Act.
- *Right for reward and recognition*: A farmer or community of farmers engaged in the conservation and improvement of plant genetic resources (landraces and wild relatives of economic plants) are entitled for the Plant Genome Saviour Award, Reward and

Recognition, provided their plant material has been used in development of varieties registrable under this Act.

- *Protection of innocent infringement*: If a farmer being infringed according section 65 of PPV&FR Act, 2001 can prove before court that he or she was not aware of the existence of such rights at the time of infringement; he or she will not be charged.
- *Fee Exemption*: A farmer or group of farmers are not liable to pay any fee payable for inspection of any document or for obtaining a copy of any decision or order or document under this Act. Farmers have the privilege of being completely exempted from payment of any kind of fees or other payments that are normally payable for variety registration; testing of varieties and other services rendered by the PPV&FRA; as well as for legal proceedings related to infringement or other cases in courts, tribunal etc.
- *Reasonable Seed Price*: Farmers have the right to access seed of registered varieties at a reasonable and remunerative price. When this condition is not met, the breeder's exclusive right over the variety can be revoked under the provision concerning compulsory licensing, and the breeder is obligated to license the seed production, distribution and sales of the variety to any competent person. Most of the laws for plant variety protection have provisions on compulsory licensing of protected varieties to ensure adequate seed supply to farmers.
- *Authorization of farmers' variety*: In the development of an essentially derived variety from a farmer's variety and its commercialization. The authorization should be given with the consent of the farmer or group of farmers who have contributed in the conservation or development of such a variety. Such a process can allow farmers to negotiate the terms of authorization with the breeders, which may include royalties, benefit-sharing etc.
- *Right for compensation*: When any propagating material of a variety registered under this Act has been sold to a farmer, the breeder of such variety should disclose the expected performance under given conditions. If the propagating material fails to provide such performance under such given conditions, the farmer can claim compensation before the Authority. The Authority would then notify the breeder of the variety the issue and after providing him an opportunity to file an opposition, may direct the breeder to pay compensation to the farmer as it deems fit.

The Farmers' Cell at the Authority looks after the IPR registration of farmers' varieties, conducts country-wide training-cum-awareness programmes, and identifies farmers and farmer communities for their contribution towards conserving germplasm and developing new varieties.

1.7 Registration of Varieties

An application for registration of a plant variety and its denomination can be made under the following categories:

- **New Variety:** On the date of filing of application for registration if the variety has been commercialized for period of less than one year then it is a new variety
- **Extant Variety:** Consist of the following categories namely:
  - **Extant variety notified under section 5 of Seeds Act, 1966:** Varieties notified under Section 5 of Seeds Act, 1966 are eligible for registration under this category
  - **Farmers' variety:** Traditionally cultivated and evolved by the farmers in their fields and includes wild relative or land race or a variety about which the farmers possess common knowledge
  - **Variety of Common Knowledge:** which are not notified under Section 5 of Seeds Act, 1966 and are in commercial chain for more than a year
- **Essentially Derived Variety:** A variety pre-dominantly derived from an initial variety and should fall either under new or extant category

1.8 Period of field-testing of varieties

The application is processed and the applicant is required to deposit DUS test, registration and any other fees, as may be required. After receipt of necessary fees and seeds and to an satisfactory examination of the application at the Plant Varieties Registry, the Registrar may sent the variety to crop specific centres for conducting DUS test. The period of DUS testing is as follows:

- **New Varieties:** Two similar crop season at two locations
- **Farmers' Variety and VCK:** One crop season at two locations
- **Extant variety notified under section 5 of Seeds Act, 1966:** No DUS testing is conducted but variety is processed by an EVRC Committee which recommends for registration

- **EDV:** DUS testing is not mandatory but field test is conducted to ascertain DUS criteria

After the receipt of DUS test result, the application is processed and distinctiveness is ascertained through DUS test and comparison across the database. If the claimed characters and character ascertained for distinctiveness in DUS test are different, the applicant is asked to amend the application. Subsequently, the passport data of the variety is published in the Plant Varieties Journal of India.

The application is advertised in Plant Variety Journal of India inviting opposition within a period of three months from the date of publications. If no opposition is filed or if opposition filed is rejected, the variety proceeds for registration. The period of protection is as follows**:**

1.9 Protection Period and Crops

A total of 140 crop species are presently eligible for protection (Annexure VII). The period of protection for field crops is of 15 years, whereas that of trees and vines is for 18 years. The extant varieties notified are given a protection for 15 years from date of notification under Seeds Act, 1966.

1.10 Rights conferred to the breeder

Registration gives exclusive rights to produce, sell, market, export or imports the variety along with its denomination. This right is subject to farmers' rights that farmers can use seeds of registered varieties in an unbranded manner.

1.11 Award/Rewards to Farmers'/Farming Communities

Section 45(2) of the Act reads with Rules 70 (2) (a) of PPV&FR Rules, 2003 provides for support and reward, to farmers, communities of farmers, particularly the tribal and rural communities engaged in conservation, improvement and preservation of genetic resources of economic plants and their wild relatives, particularly in areas identified as agro-biodiversity hotspots from National Gene Fund. To operationalize these provisions, Plant Genome Savior Community Award was instituted in 2009–10. A maximum of five such awards can be conferred annually. Along with this, ten farmers are conferred the Plant Genome Saviour Farmer Reward and fifteen farmers are conferred Plant Genome Saviour Farmer Recognition certificates. The details of the awards conferred are mentioned in Table

1. The selection of awardees is made by a committee of experts/ scientists headed by an eminent scientist.

Table 1: Details of the Plant Genome Savior awards, rewards and recognition

Award	Details	Application
Plant Genome Saviour Community Awards	Five farming communities are awarded each year. Each award includes a citation, a momento and Rs. 10 lakh.	Advertisement for these awards is published in the National dailies and on the Authority website: (http://www.plantauthority.gov.in/forms.htm) The applications should be forwarded through Chairperson or Secretary of the concerned Panchayat Committee or concerned District Agricultural Officer or Director of Research of concerned State Agriculture University or District Tribal Development Office
Plant Genome Saviour Farmers' Rewards	Ten farmers are rewarded every year. Each reward includes a citation, a momento and cash of Rs. 1.5 lakh.	
Plant Genome Saviour Farmers' Recognitions	Twenty farmers are rewarded every year. Each reward includes a citation, a momento and cash of Rs. 1 lakh.	

CHAPTER 2: PROGRESS OF PLANT VARIETIES REGISTRY

2.1. Publication of DUS Test Guidelines for Crop Species

In exercise of its powers, the Authority has published the guidelines in the Plant Variety Journal of India (PVJ) for conducting DUS test for the following crop species. These crop species represent cereals, spices, fruits and beverages. It is expected that the registration of these 140 crops will provide an opportunity for diversification of agriculture and may boost trade of these crops besides legal protection.

Table 2: List of DUS test guidelines of crop species published in PVJ during 2016–17:

S.no.	Crop Species		Month of publication in PVJ
1	Guava	*Psidium guajava L.*	April, 2016
2	Litchi	*Litchi chinensis* Sonn.	
3	Marigold	*Tagetes spp.*	May, 2016
4	Betelvine	*Piper betle* L.	June, 2016
5	Deodar	*Cedrus deodara* (Roxb.) G.Don	Oct, 2016
6	Chirpine	*Pinus roxburghii* Sargent	
7	Mulberry	*Morus spp.*	
8	Jasmine	*Jasminum auriculatum*. L. *Jasminum multiflorum* L. *Jasminum sambac* L.	
9	Buckwheat	*Fagopyrum esculentum*	Nov, 2016
		Fagopyrum tataricum	
10	Grain amaranth	*Amaranthus hypocondricus*	
		Amaranthus cruentus	
		Amaranthus caudatus	
		Amaranthus edulis	
11	Faba bean	*Vicia faba* L.	
12	Proso millet	*Panicum maliaceum* L.	
13	Kodo millet	*Paspalum scorbiculatum* L.	
14	Little millet	*Panicum sumatrense* Roth. Ex. Roemer And Schultes	
15	Banyard millet	*Echinocloa frumentaceae* (Roxb.) Link	
16	Elephant foot yam	*Amorphophallus paeoniifolius*	
17	Taro	*Colocasia esculenta*	
18	Giant Swamp Taro	*Cyrtosperma chamissionis/ C. merkusii*	
19	Jatropha	*Jatropha curcas* L.	
20	Orchid	*Paphiopedilum pfitz*	

2.2. Progress in number of applications received

During the year of 2016–17, applications seeking registration of plant varieties belonged to 90 diverse crops that include cereals, pulses, commercial crops, oilseeds, vegetables and fruits (Table 3

and 4). Highest numbers of applications were received for rice (1119) followed by maize (257), pigeonpea (161), black gram (122), wheat (103), brinjal (98), kodo millet (97), field pea (80), little millet (79), chilli (79), bottle gourd (70) and other crops as mentioned in Table 3 and 4. A detailed list describing the number of applications received and the trend of the applications being filed across the period of 2007–17 is given in the annexure for further reference.

Table 3: Number of applications received during the annual year 2016–17 categorized by crop group

Crop group	Number of applications received
Cereals	1895
Legumes	508
Oilseeds	245
Spices	221
Vegetables	455
Fruits	168
Flowers	29
Fibre Crops	28
Plantation crop	5
Sugar Crops	14
Trees	1
Grand Total	**3569**

Table 4: Crop-wise classification of applications received during the annual year 2016–17

Crop	Number of applications received
Acid Lime	15
Almond	1
Apple	6
Apricot	42
Bael	12
Banana	7
Barley	36
Barnyard Millet	33
Bell Pepper	1
Bitter Gourd	18
Black gram	122
Black Pepper	2
Bottle gourd	70
Brinjal	98
Cabbage	3
Carnation	1
Castor	9

Crop	Number of applications received
Cauliflower	16
Cherry	1
Chickpea	60
Chilli	79
Coconut	1
Coriander	38
Crysanthemum	8
Cucumber	23
Custard Apple	8
Dicoccum Wheat	2
Diploid Cotton	3
Durum Wheat	13
Fenugreek	8
Fieldpea	80
Finger Millet	43
Foxtail Millet	23
Garlic	17
Ginger	13
Gladiolus	6
Grapes	7
Green gram	40
Groundnut	32
Indian jujube (Ber)	6
Indian mustard (Karan Rai)	10
Indian Mustard (Sarso)	33
Isabgol	1
Jamun	4
Jasmine	1
Jute	2
Kidney bean	10
Kodo Millet	97
Lentil	34
Linseed	42
Little Millet	79
Maize	257
Mandarin	1
Mango	16
Marigold	4
Menthol Mint	1
Muskmelon	6
Neem	1
Nutmeg	15
Okra/Lady's Finger	47
Onion	12

Crop	Number of applications received
Orchid	2
Papaya	16
Peach	6
Pear	1
Pearl Millet	35
Pigeon Pea	161
Pomegranate	9
Potato	13
Pumpkin	49
Rapeseed (Gobhi Sarson)	9
Rapeseed (Toria)	23
Rice	1119
Ridge gourd	35
Rose	6
Sesame	60
Sorghum	56
Soybean	22
Spinach beet	1
Sugarcane	14
Sunflower	6
Sweet Orange	2
Tea	4
Tetraploid Cotton	23
Tomato	47
Turmeric	47
Vegetable Amaranth	11
Walnut	8
Watermelon	5
Wheat	103
Grand Total	**3569**

During 2016–17, the Authority received a total of 3569 applications of which 85% were filed by farmers (Fig. 1). Apart from the 3041 farmers' varieties, the public and private institutes submitted 230 applications of extant notified varieties, 221 applications of new varieties and 77 applications of varieties of common knowledge (Fig. 2).

- *Registration of new varieties and varieties of common knowledge*: The applications filed under New variety and VCK category were examined by the Plant Varieties Registry and clarification(s) were sought wherever necessary. A total of 221 NV and 77 VCK varieties were received in the year 2016–17. Preliminary examination of these files revealed that most of the clarification(s) mainly pertain to the proof of sale of the varieties, proof of legal acquirement of

parent material, details in technical questionnaire (grouping/ distinct, comparison with reference varieties). The Authority has been availing various fora to address these issues to make the breeders aware of the necessary details to further streamline and expedite the registration process in time bound manner.

- *Registration of extant notified varieties*: A total of 230 varieties notified under *Seeds Act*, 1966 were received at PPV&FRA during the year 2016–17. Of these, 188 files were presented to the Extant Notified Varieties Recommendation Committee (EVRC) that included 9 varieties filed from private organizations, and 179 varieties from 16 public institutes (ICAR and SAUs). Examination of these files revealed that most of the clarifications were related to the release proposal, date of sale of the varieties, proof of legal acquirement of parent material and details of distinct DUS characters compared to reference varieties.

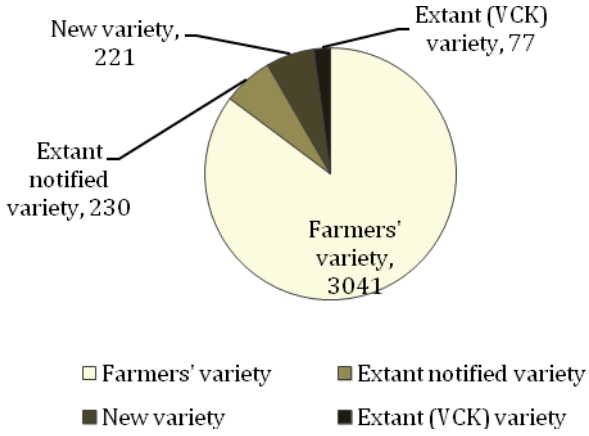
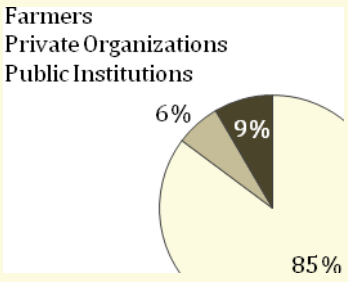


Fig. 1: Number of different applications received during the annual year 2016–17



Applicant	Number of applications received
Farmers	3041
Private Institutions	228
Public Organizations	300
Grand Total	**3569**

Fig. 2: Number of applications received during the annual year 2016–17 across different categories of applicant

In the last decade, the number of applications received annually has increased from 654 during 2007-08 to 3569 during 2016-17(Fig. 3). Also the plethora of crop species being registered has increased 12 species to 90 over the last ten years (Fig. 4).

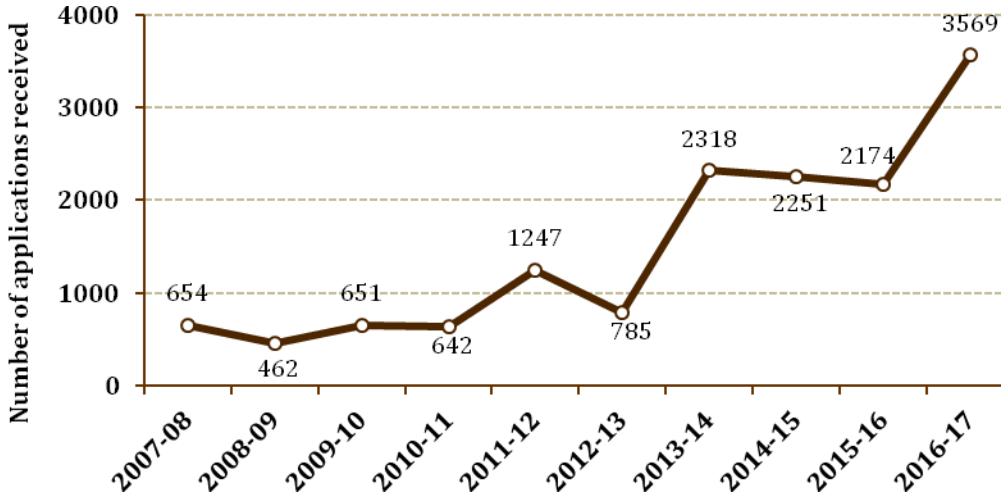


Fig 3: Number of applications received across the years 2007–17

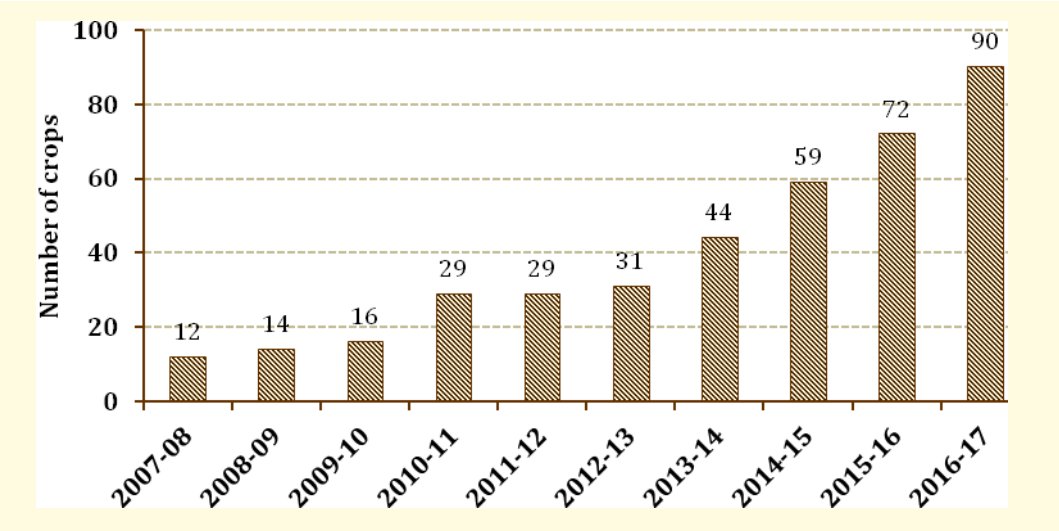


Fig 4: Number of crops whose applications were received across the years 2007–17

2.1. Progress in registration of varieties

In 2016–17, a total of 495 certificates of registration were issued. Of these, 288 belonged to farmers, 107 belonged to private organizations and 99 belonged to public organizations. Excluding the Farmers' varieties, 99 new varieties, 62 varieties of common knowledge and 46 extant notified varieties were registered. The highest number of certificates were issued for rice varieties (288), followed by varieties of tetraploid cotton (39), maize (33), wheat (19), okra (16), tomato (14),

diploid cotton (11), sorghum (7), soybean (6), barley (6), and other crops as mentioned in Annexure IX.

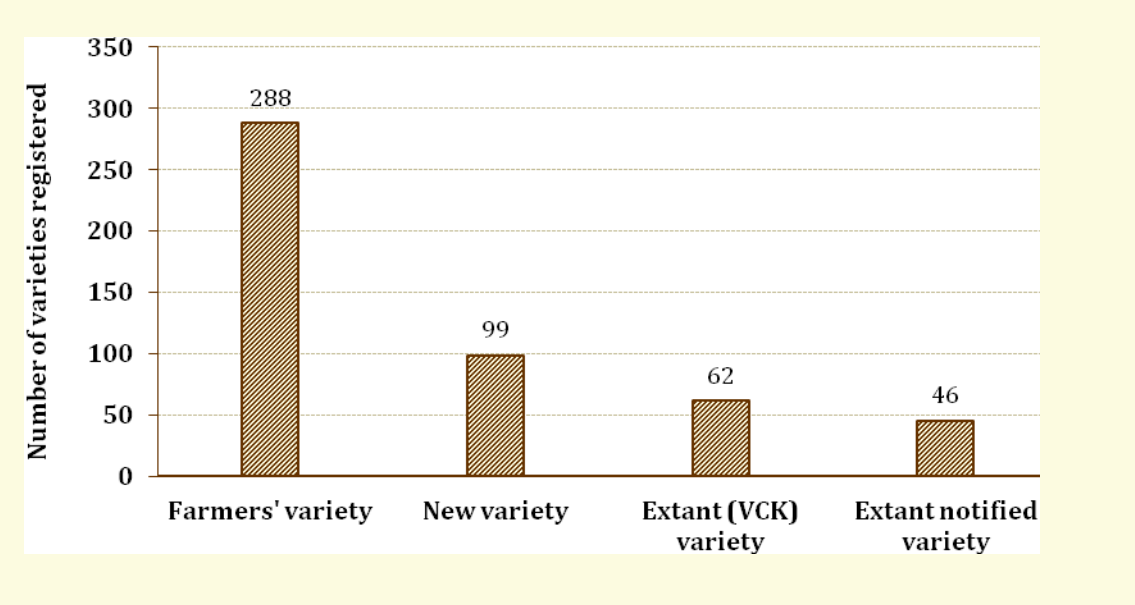


Fig. 5: Number of registration certificates issued during the annual year 2016–17

CHAPTER 3: DUS CENTRES

3.1 DUS centres

3.1.1 ICAR- Indian Institute of Rice Research, Hyderabad

ICAR-IIRR is the Nodal centre for testing in rice since 2007. Till date, the centre has applied for 57 varieties seeking registration under PPV&FR Act, 2001. During 2016–17, nearly 150 varieties were under maintenance. Details of DUS testing of rice varieties in the year2016–17:

Crops	New variety		VCK	FV
	1st year	2nd year		
Rice	11	84	06	91

Centre has conducted one training programme entitled "Enabling IP Protection for Plant Varieties (including farmers' varieties) through PPV&FRA" on 22 June, 2016.

3.1.2 ICAR-Indian Agricultural Reasearch Insitute (Regional Station), Karnal

ICAR-IARI Regional station is a co-nodal centre for testing rice varieties suitable for northern region of India. In the year 2016–17, 15 reference varieties and 23 *basmati* varieties were maintained and characterised during *Kharif* 2016. Number of varieties undergone DUS testing during 2016–17 are as follows:

Crops	New		VCK	FV
	1st year	2nd year		
Rice	02	03	Nil	01

3.1.3 Tamil Nadu Agricultural University, Coimbatore

Department of Seed Technology, TNAU is the co-nodal centre for rice and sunflower. The list of varieties tested during 2016–17 is as follows:

Crop	Varieties	Reference variety
Rice	GK 124, GK 107, GK 123, GK 122, GK 43, GK 5028, GK 121, GK 114, GK 125	IR 64, DRR dhan 38, Swarna, Mahsuri, MTU 1010
Sunflower	KSFH- 473, LG 52.01, LG 55.01, LG 54.01, GK 2018, GK 2021, GK 2008, GK 2009	KBSH-41, KBSH-42, KBSH-44, DRSH 1, PSH 569
	NSA-66, LGSF12060B, LGSF 12001B LGSF 12087B	CMS-234A, CMS-234B, CMS-17 A , CMS-17 B
	NSSR-308, NSSR -310, LGSF 12027R LGSF 12097R, LGSF 12055R	RHA-271, 6D-1, RHA-272

3.1.4 ICAR-National Rice Research Istitute, Cuttack

ICAR-NRRI is one of the nodal centre for testing rice under eastern region of India. The following varieties of rice were maintained and characterized by the center: Aditya, ASD 20, ASD 3, Basmati 386, Basmati-370, BPT 5204, Co 43, Co 47, CRMS 32 A, CSR 10, Danteswari, Durga, Hemavathi, Himalay-2, Himalay-741, HMT Sona, IET 8116, Jyothi, Kalinga III, Karjat-3, Mahamaya, MTU 1010, Narendra 359, NLR 30491, PA 6444, Pooja, PR 106, Prasanna, PTB 37, PTB 5, NLR 33358, PTB 53, PTB 7, RCM 5, Sarju-52, Savitri, Sudha, T-23, Tulasi, Utkalprabha, Vanaprabha, Vivek Dhan 62, VL Dhan 221, VL Dhan 81.

Details of DUS testing of rice varieties in the year2016–17:

Crops	New		VCK	FV
	1st year	2nd year		
Rice	9	64	6	135

3.1.5 Indira Gandhi Krishi Vishwavidyalaya, Raipur

IGKV is one of the co-nodal centres for testing and characterization of rice varieties suitable for central region of India. During 2016–17, nearly 28 varieties were tested along with 22 reference varieties. Nearly 542 varieties were under characterization during 2016–17. The centre conducted 10 training-cum-awareness in collaboration with KVKs at Ambikapur, Balrampur, Bijapur, Bilaspur, Dantewada, Dhamtari, Janjgeer, Kanker, Kawardha and Rajnandgaon during 2016–17.

3.1.6 ICAR- Indian Institute of Wheat and Barley Research, Karnal

ICAR-IIWBR, Karnal is the nodal centre for testing wheat and barley. Twenty-five candidate varieties of wheat including 12 farmers' varieties, 4 from private sector and 9 from public sector (new category) were tested for DUS against 54 reference varieties.

Details of DUS testing of rice varieties in the year2016–17:

Crops	New		VCK	FV
	1st year	2nd year		
Wheat	Colored Wheat (Blue), Colored Wheat (Blue)-2, Colored Wheat (Blue)-3, Colored Wheat (Black), Colored Wheat (Purple)	DBW 88, DBW 90, Ajeet 349, Eagle 135, Hi 1563, Bw 321, Narmada 14, Eagle 145	Nil	Mohit-Gold, Sonali-Kaw, Dehati Gehun Lalaka, Gehun Desi, Gehun Lal, Khilona-Br, Shekhar-1, Gehun Desi-2, Lamhrwan Gehun, Quadar Goal Gayhoon, Kathiya Desi Gehun, Gohome
Barley	-	ABI Voyager, Innovation, KWS Irina	RGT Planet, Zhana	Nangstakmo, Desi Jaii-1, Desi Jaie Sundhbala, Lal Barley, Aruna Barley, Rohi Lal Jaw-1

Key observations/suggestions of the monitoring team:

- DUS test of farmer varieties shall be conducted after its purification, if needed.
- GOHOME is an *aestivum* species not *durum* species as claimed.
- The farmer variety NANGSTAKMO was observed as mixture

Varieties maintained/characterized at the centre:

Crops	No. of varieties
Wheat	Released varieties *aestivum* = 264 Released varieties *Durum* & *Dicoccum* = 36 Released varieties before 1965 = 58 Example varieties = 119
Barley	Reference and example varieties = 95

3.1.7 ICAR-IARI, Regional Station, Indore

IARI Regional Station, Indore is a co-nodal centre for Bread wheat, Durum and Dicoccum crop species. The DUS trials of 2016-17 were conducted and maintained properly by taking all the needful precautions. The field data was recorded as per the guideline of DUS testing. Joint observations were made for all the descriptors given by the applicants in the field. Chairman of the DUS monitoring team Dr. J.P. Tandon, (Ex-ADG (FFC), ICAR, New Delhi along with Nodal officer, Dr. Arun Gupta, ICAR-IIWBR, Karnal and Dr. S. V. Sai Prasad, ICAR-IARI, RS, Indore, made detailed observations. The monitoring was conducted for total 71 varieties which include 14 candidate varieties and 38 reference varieties along with farmer's varieties which includes 9 second year entries and 10 reference varieties. The trials of 2016-17 were conducted and maintained properly by taking all the needful precautions. The field data was recorded as per the

guideline of DUS testing. The data of the DUS trails (2016-17) along with the reference varieties were forwarded to IIWBR, Karnal and PPV & FRA for final reporting & compilation of DUS testing in wheat.

Details of maintenance breeding:

Name of the species	No of varieties	Source (own released/ICAR/SAU)
Triticum sp.	130 (80 *aestivum*, 46 *durum* and 4 *dicocum*)	Supplied by IIWBR, Karnal

Observations were made for all the descriptors given by the applicants in the field. The conduct and management of the DUS trials was good & satisfactory.

- First trial: 52 entries (14 candidate varieties of which 7 in I st year, 7 in second year and 38 reference varieties) with 3 replications.
- Second trial: 19 entries (9 candidate farmer varieties (2nd year) and 10 reference varieties).

Varieties involved in evaluation for year 2016-17:

VCK	DBW 14, HUW 234, DBW 16, HD 2733, HPW 42, WH 1021, HI 1563, NW 2036, GW 11, HUW 510, NW 1076, DBW 90, WH 291, DPW 621-50, PBW 502, HD 3059, DBW 88, PBW 373, MACS 2496, PBW 343, Coloured Wheat Blue, Coloured Wheat Blue-2, Coloured Wheat Blue-3, PBW 343, Coloured Wheat Black, Coloured Wheat Purple, HD 2967, MP 1203, MP 3173, GW 496, Ajeet 349, AKW 1071, WH 711, HD 2987, BW 321, HD 1941, J-1-7, K 9351, DBW 39, Eagle 135, GW 366, HI 1500, HI 1544, Mohit Gold, HPW 147, K 8434, Sonali KW, NP 818, DL 153-2, Narmada -14, CBW 38, GW 10.
Farmers' varieties	HD 2932, UP 2554, Dehati Gehun Lalka, Sonak, Sonalika, Gehun Desi, PBW 12, Gehun Lal, PV 18, HS 490, Khilona BR, HD 2967, Shekhar 1, Lerma Raj, PBW 596, Lamhrwan Gehun (DBR), Quadra Goal Gayhoon, Gehun Desi 2, Lamhrwan Gehun

3.1.8 University of Agricultural Sciences (UAS), Dharwad

The details of DUS testing at UAS, Dharwad is as follows,

Crops	New		VCK	FV
	1st year entries	2nd year entries		
Cotton	05	72	03	
Soybean	03	-	-	02
Groundnut	01	-	-	05
Sesame	-	-	-	02

Key Observations of the Monitoring Team:

Cotton: Monitored by Dr. K. Rathinavel, Nodal officer DUS Project, CICR regional station Coimbatore along with DUS team Seed unit, UAS Dharwad. Representatives from private firms, Mr. Mahantesh from Nuziveedu seeds and Ms. Anuradha from Metahelix were part of the team.

Soybean: Monitored Dr. Mrinal Kuchlan, Nodal officer DUS Project, IISR, Indore along with DUS team Seed unit, UAS Dharwad.

The layout and crop management was according to DUS guidelines. Crop growth and expression of morphological characters was very good in all of the candidates, VCK and Farmers varieties. Overall trail maintenance, data recording and handling was highly appreciated by monitoring team.

Varieties under maintenance/characterized:

Crop	No. of varieties under maintenance breeding in 2016-17
Cotton	64
Soybean	05
Groundnut	12
Sesame	3

3.1.9 ICAR - Indian Institute of Maize Research, New Delhi

The maintenance of reference varieties, inbred lines of maize and also seed production of maize hybrids (single cross, three-way cross *etc.*) which are being used in DUS Testing require minimum isolation distance and also maintenance through selfing by using scientifically acceptable number of plants / population. In addition, the breeding group or the institute who/which has developed the genotypes, are the most appropriate / ideal to maintain the genetic integrity and purity of genotypes over the period of the time. Therefore, the AICRP centres / research institutes, who have developed the inbred lines and/or released the cultivars (OPVs/hybrids), have been given the responsibility of maintenance of the reference entries. The concerned person(s) or the research institute(s) or AICRP centre(s) have been requested at the end of current season to produce the required quantity of seed of reference varieties and submit the breeder seed of all reference entries which are being used in DUS Testing. The centres which have given this responsibility are CCSHAU, Uchani, Karnal; PAU, Ludhiana; MPKV, Kolhapur and ANGRAU, Hyderabad. The confirmation regarding production and submission of the genetically pure seed of reference varieties / genotypes has also been obtained from each of these centres. Further, the centres were also assured of necessary payment for the reference seed produced and submitted by them if required.

Details of DUS Testing:

Details	New Entries under Testing				VCK [one year testing]		FVs	OPVs		Total
	Inbred Lines		Hybrids							
	1st Yr	2nd Yr	1st Yr	2nd Yr	Inbred Lines	Hybrids		1st Yr	2nd Yr	
Public	-	-	3	5	-	-	-	-	2	10
Private	26	17	24	29	2	1	-	-	-	99

Farmers	-	-	-	-	-	-	16	-	-	16
Sub-Total	**26**	**17**	**27**	**34**	**2**	**1**	**16**	**-**	**2**	125
Total	**43**		**61**		**3**		**16**	**3**		**125**

Details of varieties registered/applications submitted:

Crop	No. of varieties notified by the centre since 1966	No. of varieties notified by the centre since 1999	No of applications filed				Certificates Issued
			Hybrids		OPVs		
			New	Extant	New	Extant	
Maize	246	141	42	44	12	36	104

Plan for 2017-18:

i. Processing of fresh applications as and when new varieties are released and notified.

ii. Persuasion of applications which are being processed if any query arises

3.1.10 ICAR-Indian Institute of Millets Research (formerly DSR), Hyderabad

Details of DUS testing of candidate varieties in 2016-17:

Crops	New		VCK	FV
	1st year entries	2nd year entries		
Kharif 2016	**12** (GK 4060, GK 4063, SYN-SR-DJ 2233, SYN-SR-MLR 0210, SYN-SR-MLB 0092, SYN-SR-STAR, SYN-SR-DAIRY GREEN, SYN-SR-MLSFR 0300, SYN-SR-MLSFR 0179, SYN-SR-MLB 0052, NICSSH 145 and NICSSH 723*)	**13** (279 B, 279 A, CSH 30, CB 33, CSV 27, CB 11, 415B, 415A, DGJ 022, GK 950, GK 952, GK 951, HTJH 3206)	-	**7**** (Nagavi Maldandi, Bedra, Chikni Lal (Loose Panicle), Mothi Mani Juwar, Lahan Mani Juwar, Mothi Safed Juwar and Chikni Lal Juwar)
Rabi 2016-17	**2** (SYN-SR-MLR 1172 and SYN-SR-DJ 4062)	-	-	**7****

(***Rabi* types, so again planted during *Rabi* 2016-17)

The overall crop growth and expression of morphological characters were very good in almost all of the candidate varieties; In some of the candidate varieties there are slight differences in the observed state and claimed state of the traits. As all Farmers' varieties are of *Rabi* type, they will be tested in the ensuing *Rabi* season.

Varieties under maintenance/characterized: 2077A, 2077B, 2219A, 2219B, 27A, 27B, 296A, 296B, IMS 9A, IMS 9B, AKMS 14A, AKMS 14B, 7A, 7B, 7A, RS 627, Afzapur local, AKR 150, APK 1, C 43, CO-S-28, CS 3541, CSV 12 (SPV 462), CSV 15, CSV 20, CSV 24SS, CSV 27, CSV 28, CSV 29R, CSV 7R, CSV 8R, DSV 5, GJ 40, M 35-1, Parbhani Moti, Phule Anuradha, P. Rohini, P. Suchitra, P. Uttara, PVK 400, PVK 801, PVK 809, RS 29, RS 585, SPV 2018, SSG 59-3, SSV 74, Swathi, ICSB 467 and Pant chari 6.

3.1.10.1 Workshop-cum-training on Awareness on Plant Variety Protection and Digitalization of DUS Characters in Agricultural Crops

A workshop-cum-training on awareness on plant variety protection and digitalization of DUS characters in agricultural crops was organized on 31st March 2017 at IIMR to facilitate the scientists, technical assistants, research scholars, skilled assistants to familiarize with the use of Field Book for collecting field related data especially the DUS characterization data. There were 100 participants from IIMR, NBPGR (RS), IIRR, IIOR and PJTSAU. Dr. AK Vyas, Assistant Director General (HRM) distributed the certificates during the valedictory function and addressed the participants. He requested all other ICAR institutes to organize such Digitalization training programme using the field book. He appreciated the efforts of IIMR in implementing the vision of Digital India into reality in collecting the field data using the mobile app without using the paper field book. This programme was sponsored by the Protection of Plant Varieties & Farmers' Rights Authority (PPV&FRA).

3.1.10.2 Applications filed with PPV&FRA:

No. of Var notified by the center Since 1966	No. of Var notified by the center Since 2001	No of applications filed			Certificates issued	Pending applications
		ENV	New	VCK		
281 (may include A/B/R lines, Hybrids, OPVs)	65	43	32	31	72	34

3.1.11 MPKV, Rahuri (Cotton)

Details of DUS testing of candidate varieties in 2016–17:

New		VCK	EDV & IV	RV
1st year	2nd year			
04	36	04	06	115

Key observations of the Monitoring team:

- The layout of experiment has been as per norms and maintenance of the trials was very good.
- The crop growth and expression of morphological characters are very good in all of the candidate varieties.
- Proper care has been taken to conduct the trials and plant protection.
- The data have been recorded as per the DUS test guidelines and data sheets are being maintained properly.
- The fields were weed free and the plants were healthy and capable of expressing all the morphological traits in all the plots.
- The expression of characteristics of each candidate variety was verified as per the performance of PPV&FRA.

- The overall performance, the crop growth, the method of conducting trial and recording of observations were excellent and encouraging.

Varieties under maintenance/characterized:

Crops	No. of varieties under maintenance breeding in 2016-17
Cotton	115 reference varieties received from Nodal officer, CICR, Coimbatore.

Applications filed with PPV&FRA

Crop	No of Var notified by the center Since 1966	No of Var notified by the center Since 2001	No of applications filed			Certificates issued	Pending applications
			Extant	Notified New	VCK		
Cotton	6	10	4	5	-	(Phule-492) (Phule-388) (Phule-688) (JAL-794) (Phule Dhanwantary) (Phule Anmol)	(RHH-0622) (RHC-0717) (RHCb-011)

3.1.12 ICAR-CICR, Nagpur

Details of DUS testing of candidate varieties in 2016-17:

Crops	New		VCK	EDV/IV	Date of monitoring
	1st year	2nd year			
Cotton *Gossypium hirsutum* *Gossypium barbadense* *Gossypium arboreum* *Gossypium herbaceum*	4	23	4	6+6	21/11/16

Varieties under maintenance/characterised:

Varieties characterized and number	Name of varieties characterized only for maintenance
G. hirsutum (46)	LRA5166,CNHO12,Anjali,Pratima,Suraj,Surabhi,Supriya, Sumangala,Sahana,Abhadita,Arogya,Narasimha,MCU5,MCU5VT,MCU12,MCU10,DHY286,BN1,AKH8828,AKH081, Khandwa2,NH545,NH615,JK4,GCot10,Gcot12,Gcot20,Gcot16,Gcot18,Ganganagarageti,JLH168,F846,F1054,F1378,F1861,RS875,RS2013,RS810,RST9,HS6,H1226,KC3,Deviraj,Kanchana,PKVRajat,RMPBS155,

G.arboreum (28)	GAK423, Gcot15, AKA7, C29, Veena, HD226, RG8, HD110115, Jawahar Tapti, RG18, AKA5,LD491, PA183, Raghavendra,AKA8401,Aravinda, LD327, HD107, LD210, Y1, Gcot19, JLA794, AKA8, LD694, HD321, HD324,PA255
G.herbaceum (1)	Jayadhar

3.1.13 CCS Hisar Agricultural University, Hisar

It is a co nodal centre for Cotton/Chickpea/Sorghum under the scheme of PPV&FRA.

Crops	New & VCK		EDV & IV
	1st year entries	2nd year entries	
Cotton	10+10 (Reference Varieties)	02+04 (Reference Varieties)	6
Chickpea	-	-	-
Sorghum	-	-	-

3.1.13.1 Key observations of the Monitoring team

Monitoring was done on dated 16.09.16 under the chairmanship of Dr. R.K. Chowdhuary, Former Project Director, DSR-ICAR, New Delhi. The monitoring team observed that the overall performance, the crop growth, the method of conducting trial and recording of observation are excellent and encouraging.

3.1.13.2 Applications filed with PPV&FRA

Crops	No. of Var. notified by the center Since 1966	No. of Var. notified by the center since 1999	No. of applications filed			Certificates issued	Pending applications
			Extant notified	New	VCK		
Pearl Millet	19	12	6	-	-	6	1
Toria	2	-	-	-	-	-	-
Yellow Sarson	-	1	-	1	-	1	-
Brown Sarson	1	-	-	-	-	-	-
Raya	2	5	2	3	-	3	2
Sesame	1	1	-	-	-	-	-
Taramira	1	-	-	-	-	-	-
Groundnut	1	-	-	-	-	-	-
Castor	1	-	-	-	-	-	-
Sunflower	-	1	-	-	-	-	-
Mungbean	6	6	1	2	-	1	2
Urdbean	1	1	-	1	-	-	1
Chickpea	14	5	1	-	-	1	-
Fieldpea	7	4	-	1	-	-	-
Pigeonpea	-	2	-	-	-	-	-

Lentil	-	3	-	-	-	-	-
Diploid cotton	Variety = 06 Hybrid = 01	Variety = 03 Hybrid = 01	04 (3 Varieties and 1 hybrid)	-	-	4	-
Tetraploid cotton	Variety = 11 Hybrid = 03	Variety = 05 Hybrid = 02	09 (7 Varieties and 2 hybrids)	-	-	8	-

3.1.14 PAU, RS, Bhatinda

Details of DUS testing of candidate varieties in 2016-17, if any:

Crops	VCK		EDVs
	1st year	2nd year	
Cotton	**Candidate varieties:-** NCS-904 Bt NCS-9002 Bt2 RCH 602 BG-II SVA-371 SVA-145 SVAGMS-47 KR-111 SWCH 4704 BGII BIO 54510 BIO 6165-2 BG II **Reference Varieties:-** Abadhita L 604 G. Cot 12 PKV Rajat JLH 168 MCU 10 MCU 5 AKA 7 Veena Jawahar tapti	**Candidate varieties:-** NC-5065 BG-I 54-SS-33 BGII **Reference Varieties:-** NH545 KANDWA2 Sahana Supriya	**EDVs:-** PCH-878 Bt2 PC-P 8011 Bt2 PC-P 251 Bt **IVs:-** PCH-401 Bt PC-P 8011 Bt PC-P 251

3.1.14.1 Key observations of the Monitoring team

- The layout and maintenance of the trial is very good. There was no germination in SVA 145, Sahana, Veena and MCU 5 and thus plant population was nil.
- The crop growth and expression of morphological characters are good in most of the candidate varieties.
- The data was recorded as per the DUS test guidelines.

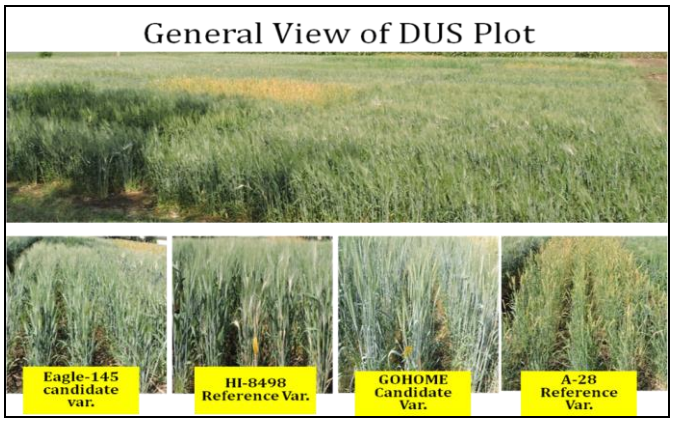
3.1.15 University of Agricultural Sciences (UAS), Dharwad

Twenty one durum wheat lines have been characterized for DUS characters at DUS testing centre Dharwad, Karnataka. Among the 22 entries, two candidate varieties namely Eagle-145 and GOHOME were tested against 19 reference varieties for 45 traits.

Quantifiable variation in various DUS characters was observed among the candidate and reference varieties, however, the candidate variety Eagle-145 found more identical with reference variety HI-8498 for the characterized DUS traits except for foliage colour, grain colour, Grain crease and grain hardiness. While, the other candidate entry GOHOME found identical with reference variety A-28 for all the traits studied except for growth habit, ear emergence, plant height, peduncle length, ear and peduncle waxiness, ear density, awns, glume related traits and grain hardiness and brush on hairs.

List of reference and candidate varieties tested:

Reference varieties			**Candidate varieties**
Total: 19			**Total: 2**
HI-8498	A-28	PDW-215	**Eagle-145** (2nd year)
HI-8663	AKDW 2997-16	PDW-274	**GOHOME** (1st year)
MACS-2694	BAXI 288-18	PDW-291	
MACS-2846	Bijaga Yellow	HI-8381	
Raj-6550	DWR-185	RAJ-6560	
WHD-943	DWR-1006		
MP-3173	PBW-34		



3.1.16 PDKV, Akola

Details of varieties under DUS testing are given in the following table:

Crops	**New**		**VCK**	**FV**
	1st year	**2nd year**		
Pigeonpea	-	03	-	16
Safflower	-	01	-	00

Varieties under maintenance/characterised:

Crops	Name or No. of varieties under maintenance breeding in 2016–17				
Pigeon pea (63)	Vamban-1	TAT-10	AK-101	UPAS-120	C-11
	GT-100	GS-1	MA-6	Manak	GAUT-00IE
	CO-6	LRG-38	MA-3	Paras	JA-4
	GT-101	TS-3	MAL-13	AL-201	T-15-15
	ICPL-8863	ICPL-85063	NDA-1	AL-15	GC-11-39
	TTB-7	BDN-2	Pusa-9	PUSA-992	CO-7
	AKT-8811	LRG-30	DA-11	PUSA-855	JKM- 189
	WRP-1	BSMR-736	Azad	PUSA-84	PKV-TARA
	JKM-7	PT-221	Amar	PUSA-33	PUSA-2002-02
	BSMR-853	BDN-708	Birsa Arhar-1	PUSA-991	ICPL-151
	ICPL-87119	CO-5	Bahar	PUSA-2001	ICPL-87
	GT-1	HY-3C	T-7		CORG-9701
Safflower (27)	A-1	JSF-1	Nira	NARI-NH-1	GMU-2369
	A-2	JSI-7	Mangira	NARI-H-15	NARI – 38
	A-300	JSI-73	Sharda	DSH-129	SSF - 658
	AKS-207	JSI-97	PBNS-12	MMS	
	Bhima	JSI-99	JLSF-414	C2829-5-3A-6	
	Girna	NARI-6	PBNS-40	MSV-10-1-5	

3.1.17 ICAR: AICRP-Chickpea, Indian Institute of Pulses Research(IIPR), Kanpur

Eight farmers' varieties Chana-1, Chana-15, Chana 2000, Kata Chana, Gopal Chana-2, Hara Chana, Anjani Chana and Boot-B were tested for DUS traits during 2016-17. Observations were recorded on 20 DUS traits as given in guidelines of DUS testing for chickpea. These included Stem: Anthocyanin colouration, Height of insertion of first flower, Days to 50% flowering, Number of flower per peduncle, Growth habit, Green colour intensity of foliage, Leaflet size, Leaf pattern: Flower colour, Stripes on standard, Peduncle length, Plant height, Pod size, Number of seed per pod, Seed colour, Seed size, Seed Shape, Seed testa texture, Seed ribbing, Seed type, Seed testa texture, Seed ribbing and Seed type. Besides 113 chickpea reference varieties were also maintained at ICAR-IIPR, Kanpur.

3.1.18 ICAR-AICRP-Pigeonpea, Indian Institute of Pulses Research, Kanpur

Details of DUS testing of candidate varieties in 2016-17:

1st year varieties	Lali Arhar, Manika Arhar, Pili Arhar, Dehati Arhar-2, Dehati Arhar Lal, Jamunia Rahri, Bhura Rahri, Lal Rahri, Dhoba Rahri, Arhar Chaiti-P, Desi Arhar-1, Arhar Desi-P, Rehe Arhar, Desi Arhar-D, Arhar-2, HJPA-12, HJPA-16, HJPA-15
2nd year	Arhar Alsi, Desi Arhar Begari, Arhar Ganpad, Arhar Manpur Pahadi, Local Arar,

varieties	Palki Arhar, Ram Arhar, Singhchoura Arhar, Arhar Suryakant, Bumba Tumur, Chaita Arhar, Mota Arhar Kartika, Pahadi Rahar, Chaitari Arhar, Karanja Tuar, Chotabali Arhar, Agahani, HJP-7
FV	Lali Arhar, Manika Arhar, Pili Arhar, Dehati Arhar-2, Dehati Arhar Lal, Jamunia Rahri, Bhura Rahri, Lal Rahri, Dhoba Rahri, Arhar Chaiti-P, Desi Arhar-1, Arhar Desi-P, Rehe Arhar, Desi Arhar-D, Arhar-2, HJPA-12, HJPA-16, HJPA-15

3.1.18.1 Varieties under maintenance/ characterised:

Name of varieties under maintenance breeding
Long Duration- NDA 1, Pusa 9, NDA 2, T-7, Amar, DA 11, MA 3, MAL 13, Bahar, MA 6, Azad, IPA 9F, IPA 203, IPA 8F, IPA 15F, IPA 16F, KPL 43, IPA 2012-1, KPL-44, Allahabad Local, Kudrat-3, Errama Chchakamti, Dholi Dwarf. Medium Duration- BDN 708, LRG 38, ICPL 85063, AK 101, TS 3, WRG 27, BRG 30, LRG 30, GS 1, WRG 53, GC 11-39, JA-4, AKP-1, JKM 7, CO 5, JKM 189, GT 1, TV 1, Vipula, Vamban-2, PT 221, AK 022, WRP 1, T 15-15, C 11, ICPL 332, TTB 7, CO 6, VBN-3, PRG-176, TJT 501, JKM 189. Early Duration- Pusa 855, ICP 84031, Pusa 2001, Pusa 84, AL 15, Pusa 33, TJT 501, GT 100, AL 201, Pusa 991, GT 101, ICPL 151, CORG 9701, TAT 10, ICPL 87, Pusa 992.

3.1.18.2 Applications filed with PPV& FRA:

Crops	No of Var notified by the center Since 1966	No of Var notified by the center Since 1999	No of applications filed			Certificates issued	Pending applications
			Extant Notified	New	VCK		
Pigeonpea	123	37	24	01	-	18	7

3.1.18.3 List of varieties registered by PPV&FRA

S.N.	Name of the varieties	Type of registration	Registration No
1.	CORG-9701	Extant	45 of 2012
2.	Malviya Vikash (MA-6)	Extant	46 of 2012
3.	Narendra Arhar-2 (NDA 98-1)	Extant	27 of 2012
4.	Malvia Vikalp (MA-3)	Extant	174 of 2012
5.	WRP -1	Extant	173 of 2012
6.	Jawahar Tur JKM -189	Extant	78 of 2011
7.	Pusa-991	Extant	23 of 2012
8.	Pusa-992	Extant	24 of 2012
9.	Vipula	Extant	130 of 2012
10.	GT-101	Extant	132 of 2012
11.	GTH-1 (SKNPCH-10)	Extant	46 of 2012
12.	Pusa 2001	Extant	29 of 2012
13.	Makviya Chamatkar (MAL-13)	Extant	26 of 2012
14.	BRG-1	Extant	28 of 2012
15.	Amol (BDN-708)	Extant	44 of 2012

16.	BSMR-853 (Vaishali)	Extant	47 of 2012
17.	VBN (Rg) 3	Extant	131 of 2012
18.	TT 401	Extant	16 of 2011
19	BIRSA ARHAR-1	Extant	Application under process
20.	NDA 99-6	Extant	
21.	GAUT 001(E) BANAS	Extant	
22.	BRG 2	Extant	
23.	PAU 881	Extant	
24.	AL 201	Extant	
25.	PHULE T-0012 (RAJESHWARI)	New Variety	

3.1.19 JNKVV, Jabalpur

It is a co-nodal centre for Linseed, Lentil and Field Pea. The mandate is as follows,

- Maintenance breeding and multiplication of reference/example varieties of Linseed, Lentil and Field pea
- Generation of database for DUS descriptors as per DUS guidelines of PPV and FRA and update INDUS database
- Maintenance of DUS infrastructures

The centre conducted one day training cum awareness programme at Department of Plant Breeding and Genetics, JNKVV, Jabalpur on March 17.

Number of varieties in DUS testing and characterization:

Crops	FV
Linseed	07
Lentil	11
Field pea	09

3.1.19.1 Linseed

- **Reference varieties of linseed based on expression of trait:**

Trait	Reference varieties
Time of flowering	Sharda,Shekhar and Parvati
Flower size of corolla	Sharda, R 552 and Neelam
Flower shape	R552, Surabhi and Meera
Flower colour	J 23, Garima, Padmani and Gaurav
Flower aestivation	Shekahr, Rashmi and R 552
Flower venation colour	Surabhi, Sheela, Jeevan and Neelam
Stamencolour	Gaurav and Kiran
Anther colour	Himalini, Laxmi 27 and Rashmi
Plant growth habit	T 397, ShubrhaandGaurav

Plant height	JLS 9, J 23andMeera
Capsule size	T 397, ShekahrandNeelam
Capsule dehiscence	Laxmi 27 and T 397
Seedcolour	Gaurav, Surabhi, Sweta, Neelam andLaxmi 27
Seed size	Surabhi, Garima andNeelam
Seed weigh	Surabhi, Garima andNeelam
Oil content	S 36, Garima andPadmani

- **Reference varieties of linseed maintained**

Reference varieties	Number	Name
Total	22	Garima, Gaurav, Himalini, J 23, Jeevan, JLS 9, Kiran, Laxmi 27, Meera, Neelam , Padmani, Parvati, R 552, Rashmi, S 36, Sharda, Sheela, Shekahr, Shubrha, Surabhi, Sweta and T 397
Maintained	21	Garima, Gaurav, Himalini, J 23, JLS 9, Kiran, Laxmi 27, Meera, Neelam, Padmani, Parvati, R 552, Rashmi, S 36, Sharda,Sheela, Shekhar, Shubrha, Surabhi, Sweta and T 397
Not maintained	01	Jeevan

- **Other varieties of linseed maintained at JNKVV, Jabalpur**

Reference varieties	Number	Name
Total	7	Deepika, Indira Alsi 29, Jawahar 1, J 17, JLT 215, Kartika, LCP 147

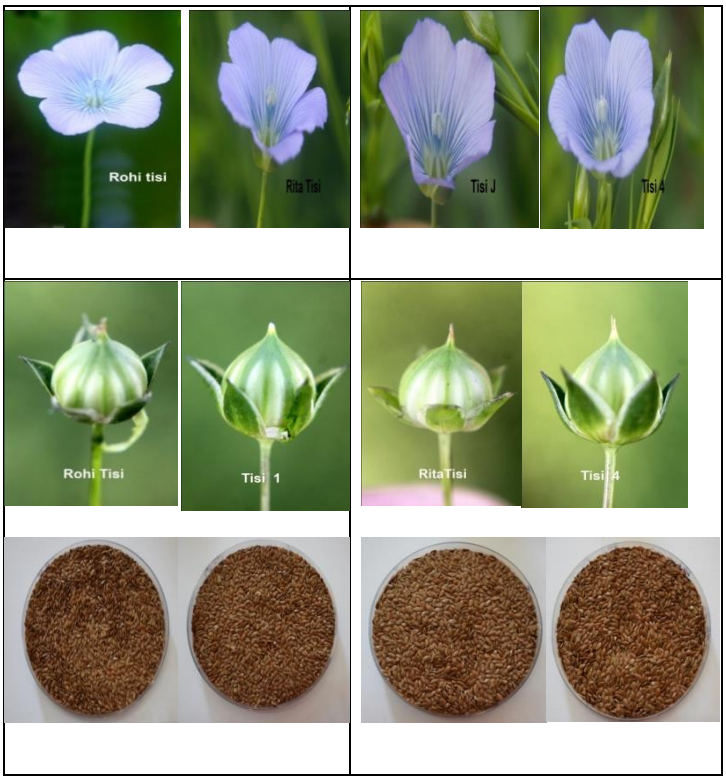
- **Farmer's varieties of linseed sown at JNKVV, Jabalpur :**

Sr	Reg. No.	Denomination
1.	2015/1197	Rohi Tisi
2.	2014/1828	Rita Tisi
3.	2015/280	Tisi J
4.	2015/263	Tisi 4
5.	2015/299	Deshi Tisi
6.	2015/1754	Raja
7.	2014/903	Tisi III

The seeds of reference variety, 7 other varieties and seven farmers varieties were sown on 11.11.2016 at Seed Breeding Farm, Department of Plant Breeding and Genetics, JNKVV, Jabalpur during *Rabi* 2016-17 in 5 rows each of 5m length with 30cm row to row distance under recommended package of practices to maintain the reference varieties as per National Test Guidelines in two replications. The germination and plant population were optimum with proper expression of distinguishing traits. The environmental conditions were favorable for normal growth. The expression of distinguishing traits of all the reference and other varieties were observed as Test Guidelines.

The germination of all the farmer's varieties was as normal as of reference varieties except Tisi III (15%). Tisi III expressed bushy plant habit.

- **Expression of Distinguishing Traits in Farmers' Varieties of Linseed:**



3.1.19.2 Lentil

All the 13 reference varieties in lentil are maintained at JNKVV, Jabalpur.

- **Reference varieties of lentil based on expression of trait:**

Sr.	Characteristics	Example Varieties
1.	Foliage: Intensity Of Green Colour	Vl1, Vl 103, Dpl 15, Dpl 62, Jl1, Jl3
2.	Stem: Anthocyanin Colouration	K75, Ndl1, Pl4, Pl 234
3.	Time Of Flowering	Dpl15, Dpl 62, Vl4, Vl 103
4.	Leaf: Pubescence	Subrita, Ranjan
5	Leaflet: Size	Vl1, Vl103, Dpl 15, Dpl 62, Pl5
6.	Plant: Growth Habit	Dpl 15, Ranjan, Dpl62
7.	Flower: Colour Of Standard	Pl4, K75
8.	Plant: Height	Dpl 15, Dpl 62
9	Pod: Anthocyanin Colouration	Dpl 15, Dpl 62, Asha
10.	Seed : Size (Weight Of 100 Seeds)	Pl406, Pl234, Dpl15, K75, Vl1, Vl4, Dpl62, Pl5
11	Seed: Coat Colour	Dpl15, K75, Vl1, Vl4
12	Seed: Testa Mottling	Pl406, K75
13	Cotyledon: Colour	Dpl 15, Dpl 62

- **Reference varieties of lentil maintained at JNKVV, Jabalpur:**

Reference varieties	Number	Name
Total	16	Asha, DPL 15, DPL 62, JL 1, JL 3, K 75, NDL 1, PL 234, PL 4, PL 5, PL 406, Ranjan, Subrita, VL 1, VL 4 and VL 103
Maintained	16	Asha, DPL 15, DPL 62, JL 1, JL 3, K 75, NDL 1, PL 234, PL 4, PL 5, PL 406, Ranjan, Subrita, VL 1, VL 4 and VL 103

- **Farmers varieties of lentil sown at JNKVV, Jabalpur:**

Sr	Reg. No.	Denomination
1.	2014/1824	Karuna Masoor
2.	2014/1822	Guddi Masoor
3.	2015/243	Massor 1
4.	2015/1214	Deshi 3
5.	2015/1267	Deshi Massor II
6.	2015/1269	Deshi Massor I
7.	2015/1220	Deshi 2
8.	2016/257	Masoor/ Masra
9.	2016/358	Masri-LO
10.	2016/1019	Nandi
11.	2016/1020	Saldahari

The seeds of reference and farmers' varieties were sown on 11.11.2016 at Seed Breeding Farm, Department of Plant Breeding and Genetics, JNKVV, Jabalpur during *Rabi* 2016-17 in 5 rows each of 5 m length with 30 cm row to row distance under recommended package of practices to maintain the reference varieties as per National Test Guidelines. The germination was good and plant population was optimum with proper expression of distinguishing traits except the two farmer varieties i.e. Deshi Masoor 1 and Masoor/ Masra. The environmental conditions were favorable for normal growth and expression of the traits.

- **Observation on Farmer's Varieties of Lentil:**

The sowing for 11 farmers' varieties was done on 11.11.2016. The seeds of Masoor/ Masra and Deshi Masoor 1 did not germinate. Other 9 reference varieties were observed to record the expression of distinguishing characteristics as per Test guidelines. In all nine farmers' varieties, the number of offtypes was meager and the populations were uniform based on grouping traits. Germination of all farmers' varieties was normal as reference varieties except Masoor/ Masra and Deshi Masoor 1.

3.1.19.3 Field pea

Reference varieties of field and vegetable pea based on expression of traits:

S. no.	Characteristics	Example varieties
1.	Stem: anthocyanin colouration	HFP 4, Rachna
2.	Foliage: colour	Rachna, HUP2, HUDP15, HFP8909, VL3, B22
3	Foliage: waxy bloom	HFP4, HFP8909, KPMR 400
4	Leaf: leaflets	HUDP15, HFP4, Rachna, IPF 99-25
5	Leaf: Axil colour	HUDP 15, Rachna, B22
6	Stipule: rabbit-eared stipules	DDR 23, B 22, Rachna, HUDP 15
7	Stipule: type	Rachna, DMR 7
8	Flower: Opening (days)	Arkel, NDVP 24,DDR 23, UDP 15, HFP 8909
9	Flower: Standard petal colour	HUDP15, HFP4, Bonneville, 22
10	Pod number/ axil	ArkaAjeet, HDP 15, Rachna
11.	Pod: curvature	Rachna, KFP 103
12.	Pod: shape of distal part	HFP 4, Rachna
13	Pod: intensity of green colour	VL 3,HFP 8909, DMR 7, Arkel, HUDP 15, IPFD 99-13
14	Plant: height (cm)	HFP4, KPMR 400, HUDP15, AP1, Rachna, KFP 103
15	Seed: shape	HFP4, Rachna
16.	Seed: surface	HUDP15, Rachna, Arkel, AP1
17	Seed: cotyledon colour	HUDP15, HFP 4 HFP990
18	Seed: weight of 1000 seeds (g)	B 22, Rachna, Jayanti
19.	Seed: testa mottling	HUDP 15, Rachna
20	Seed parchment	HUDP 15, Rachna

Number of varieties maintained:

Reference varieties	Number	Name
Total	20	AP 1, ArkaAjeet, Arkel, B 22, Bonneville, DDR 23, DMR 7, HFP 4 , HFP 8909, HFP9907, HUDP 15, HUP 2, IPF 99-25, IPFD 99-13, Jayanti, KFP 103, KPMR 400, NDVP 24, Rachna, VL 3
Maintained	14	Arka Ajeet, B 22, Arkel, Azad P 1, DDR 23, HFP 4, HFP 8909, HUDP 15, HUP 2, IPF 99-25, Jayanti, KPMR 400, Rachna, VL 3
Not maintained	06	Bonneville, HFP9907, NDVP 24, DMR 7, IPFD 99-13, KFP 103

Other varieties of Field pea maintained at JNKVV, Jabalpur

Other varieties	Number	Name
Total	14	VRP 5, JP 180, VRP 6, Pusa Pragati, GS 10, E 6, DDR 27, AP 31, AP 4, AP 3, AP 2, VRP 7, Ageta 6, JP 885

Farmer's varieties of fieldpea sown at JNKVV, Jabalpur

Sr	Reg. No.	Denominator
1	2015/1764	Khushi Karai
2	2015/1231	Gulti Matar
3	2015/245	Matar 25
4	2015/285	Deshi Matar 14
5	2015/1403	Botara
6	2016/1002	Gachh Dana
7	2016/1010	Kamala
8	2016/290	Makhayat Mubi Selection
9	2016/1696	NP 20

The seeds of 14 reference and 09 farmers' varieties were sown on 11.11.2016 at, JNKVV, Jabalpur during *Rabi* 2016-17 in 5 rows each of 5m length with 50 cms row to row distance under recommended package of practices as per Guideline. The germination and plant population were optimum except Gachh Dana and Kamala, with proper expression of distinguishing traits. The environmental conditions were favorable for normal growth and expression of the traits. In all, 09 farmers' varieties were sown to record the expression of distinguishing characteristics as per Test guidelines along with reference varieties. The sowing of farmers' varieties was on 11.11.2016. In all the farmers' varieties the number of off types was meager and the population was uniform based on grouping traits. All the farmer's varieties were expressed smooth seed surface except the NP 20 and large seed size recorded in farmers' variety Mukhayat Mubi Selection.

3.1.20 ICAR- VPKAS, Almora

ICAR-VPKAS is a co nodal centre since June 2002 with mandated crops, e.g, Maize, Soybean and Rajma. A list of crop species for maintenance breeding/charactersisation/DUS testing is given below.

Year	Crop Name	Number of lines/ varieties evaluated	No. of traits
2005	Maize	61 (20 inbreds, 11 hybrid, 30 composites)	33
	Soybean	78	20
2006	Soybean	83	20
	Maize	54 (30 inbreds, 14 hybrids, 30 composites)	31
2007	Soybean	11	20
	Maize	119 (60 inbreds,19 hybrids,40 composites)	31
2008	Soybean	89	20
2009	Soybean	90	20
	Maize	43 (12 hybrids, 10 composites, 21 inbreds)	30
2010	Soybean	90 (Seed multiplication)	-
	Maize	42 (12 hybrids, 9 composites and 21 inbreds)	30
2011	Soybean	90 (Seed multiplication)	
	Maize	44 (14 hybrids, 9 composites and 21 inbreds)	30
2012	Maize	41 (14 hybrids, 21 inbreds, 6 composites)	30
	Soybean	91 (Seed multiplication)	-
	Rajmash	4 (2 Farmers varieties)	22
2013	Maize	38 (17 inbreds, 15 hybrids, 6 composites)	30
	Soybean	91	Maintenance
	Rajmash	1	-
2014	Maize	40 (8 inbreds, 12 hybrids and 20 farmers varieties)	30
	Rajmash	3(one farmer variety with two reference varieties)	22
2015	Maize	5 (2 farmer variety with three reference varieties)	31
	Soybean	1 farmer variety	22
		23	Maintenance
	Rajmash	7 (4 farmer variety with three reference varieties)	22
		9	Maintenance
2016	Rajmash	4 (2 candidate + 2 references)	22
		11 reference varieties	Maintenance
	Soybean	25 reference varieties	Maintenance

- **Rajmash**: Two farmer's varieties *viz*., *Pulast Moth* & *Bethu* along with two reference varieties IPR-98-5 & HUR 15 were raised for grow out test and were characterized for 22 DUS traits as per national guidelines for the conduct of test for DUS on Kidney bean. Variety Bethu did not germinate. Monitoring of grow out test of rajmash, maintenance of soybean references was done by the Institute Monitoring Committee at the pod formation stage of the crop. The trial was found satisfactory.

- **No of varieties under maintenance:**

Crop Species	Source of Varieties	Name of the varieties
Soybean	ICAR	12 (DS 228, DS 97-12,Pusa 16, Pusa 20, Pusa 22, Pusa 24, Pusa 37, Pusa 40, NRC 2, NRC 7, NRC 12, NRC 37)
	Own	7 (VL S 1, VLS 2, VLS 21, VLS 47, VLS 59, VLS 63, VLS 65)
	Others (specify)	72 (ADT1, Alankar, Ankur, Birsa Soya 1, Bragg, CO 1, CO 3, CO Soya 2,Durga, Gujrat Soya 1, Gujrat Soya 2, Gaurav, Hara Soya, Hardee, Improved Pelican, Indira Soya 9, JS 2, JS 71-05, JS 75-46, JS 76-205, JS 79-81, JS 80-21, JS 90-41, JS 93-05, JS 95-60, JS 97-52, JS 335, KB 79, KHSB 2, Kalitur, Lee, LSB 1, MACS 13, MACS 57, MACS 58, MACS 124, MACS 450, MAUS 1, MAUS 2, MAUS 32, MAUS 47, MAUS 61, MAUS 61-2, MAUS 71, MAUS 81, Monetta, Palam Soya, PK 262, PK 308, PK 327, PK 471, PK 416, PK 472, PS 564, PS 1024, PS 1029, PS 1042, PS 1092, PS 1241, PS 1347,PS1368, Punjab 1, RAUS 5, Shilageet, Shivalik, SL 96, SL 295, SL 525, SL 688, TAMS 38, TAMS 98, Type 49)
Rajmash	ICAR	IVFB 1, Arka Anoop, Arka Komal, Suridha & PDR 14
	Own	VL Rajma 63 and VL Rajma 125
	Others	HUR 15, HUR 137, HUR 203 and HUR 35

List of varieties released by the centre/ Institute:

Released and Notified varieties from ICAR-VPKAS, Almora (SO3540E), dated 22nd November, 2016
VL Soya 77 (Soybean), VL *Bhat* 201 (Black Soybean), VL Dhan 7620 (Rice), VL Gehun 953 (Wheat), VL Sweet Corn 1 (Maize), VLB 94 (Barley), VL Mandua 348 (Finger millet)

3.1.21 ICAR-Central Research Institute for Jute and Allied Fibres, Barrackpore & CSRSJAF, Bud Bud, Burwan

CRIJAF and its research station at Bud bud is responsible for DUS testing and maintenance breeding for two species in Jute (*Corchorus olitorius* L. & *Corchorus capsularis* L.).

- Details of DUS testing is as follows:

Crops	New		FV	Total
	1st yr	2nd yr		
Jute *(Corchorus capsularis* L.)	JRCM 2	KJC 7	NA	02
Jute *(Corchorus olitorius* L)	JROM-1, NJ 7055, NJ 7010, NJ 7005, NJ 7050		NA	05
Species to be identified	NA	NA	Kamra Pat Cheka pat	02

- **Varieties under maintenance/characterized:**

Crops	Name or No of varieties under maintenance breeding
White jute *(Corchorus capsularis)* (18 no.)	D 154, JRC 321, JRC 212, JRC 7447, JRC 4444, UPC 94, Padma, KC 1, KTC 1, JRC 698, Bidhan Pat 1, Bidhan Pat 2, Bidhan Pat 3, JRC 80, JRC 517, JRC 532, Monalisa and JBC 5.
Tossa jute *(Corchorus olitorius)* (23 no.)	AAU-OJ-1, JBO-1 (Sudhangsu), JRO 2407 (Samapti), CO-58, JRO 204, IRA, JRO 632, JRO 3690, JRO 66, JRO 524, JRO 7835, JRO 878, JRO 8432, S-19, JRO 128, JRO 620, Chinsurah Green, Sudan Green, Tanganyika-1, JRO 2345, KOM 62, TJ 40 and Bidhan Rupali

The centres have filed several applications in Jute seeking plant variety protection and the details are as follows:

Crops	No of Var notified by the center Since 1966	No of Var notified by the center Since 1999	No of applications filed Extant			Certificates issued	Pending applications
			Notified	New	VCK		
White jute	3	8	10	4		9	1 (KJC 7)
Tossa jute	5	10	10	5	1	7	2 (Bidhan Rupali, JRO 2407)

3.1.22 ICAR-Indian Institute of Oilseeds Research, Hyderabad

The Indian Institute of Oilseeds Research is responsible for coordination and conduct of DUS testing for registration of oilseed crops *viz.* castor (*Ricinus communis* L.), sunflower (*Helianthus annuus* L.) and safflower (*Carthamus tinctorius* L.). During 2016-17, two farmers' varieties of castor were raised in *kharif* for generation of standard description whereas DUS trial was conducted for one farmer's variety of safflower. In sunflower, second year testing of 17 candidates was conducted during *rabi* 2016-17.A total of nine reference entries of castor (6) and sunflower (3) were maintained and multiplied. Two farmers variety of castor were sown on 9th August, 2016 and data was recorded for 30 DUS traits in accordance with the DUS test guidelines.

Crops	New		VCK	FV
	1st yr	2nd yr		
Castor	-	-	-	2
Sunflower	-	17	-	-
Safflower	-	-	-	1

During *rabi* 2016-17, three separate replicated trials of sunflower were conducted for a total of 17 candidates in second year of testing. The trials were sown on 18th November, 2016 in accordance

with the specified layout and there was good expression of all candidate entries with the required plant stand. The trials included 8 hybrid candidates with 5 reference entries, 5 R-lines candidates with 3 reference entries, 4 A/B line candidates with 4 reference entries. Observations were recorded for 30 traits as per DUS guidelines, other observations are in progress.Post harvest observations for sunflower DUS trials conducted during *rabi* 2015-16 consisting of hybrids (16), R-lines (10), A,B and other inbred lines (9) along with suitable reference entries were completed and data was digitized.

A trial consisting of one farmer's variety of safflower along with 2 reference entries was sown on 26th October, 2016 and data has been recorded for 25 DUS traits.

Sunflower characterization was done for fresh leaf and seed traits (3 each) for five reference entries to evaluate additional DUS traits.

- **Applications filed with PPV&FRA :**

Crops	No of applications filed			Certificates issued
	ENV	New	VCK	
Castor	3	1	2	4
Sunflower	8	-	-	8
Safflower	3	-	-	3

3.1.23 ICAR-Directorate of Rapeseed and Mustard Research, Bharatpur

During year 2016-17, a total of 19 candidate varieties have been tested under the categories of Farmers variety (16), New variety (1) and VCK (2). Under the category of farmers' variety, out of sixteen a total of nine varieties showed species variation and one variety did not germinate in the field. A total of 131 varieties had been maintained under different species of oilseed Brassica i.e. *Brassica juncea*(89), *Brassica rapa* var. brown sarson (02), *Brassica rapa* var. toria (15), *Brassica rapa* var. yellow sarson (12), *Brassica napus*(07), *Brassica carinata*(05), *Eruca sativa*(01).

- Varieties tested under DUS Testing during 2016-17

S.No.	Denomination	Proposed species	Actual species	Category
1	45 S 35	*B. juncea*	*B. juncea*	New
2	J10801FC	*B. juncea*	*B. juncea*	VCK
3	Mustard 5222	*B. juncea*	*B. juncea*	VCK
4	JATA RAI	*B. juncea*	*B. juncea*	FV
5	SUBHRA KUSUM	*B. juncea*	*B. rapavar yellow sarson*	FV
6	KHATO SARSON	*B. juncea*	*B. rapavartoria*	FV
7	LOTNI DESI	*B. juncea*	*B. rapavartoria*	FV
8	PILA SARSO DESI	*B. juncea*	*B. rapavar yellow sarson*	FV

9	PILA - M	*B. juncea*	*B. rapavar yellow sarson*	FV
10	LOTANI - M	*B. juncea*	*B. rapavartoria*	FV
11	PILA SARSO - 1	*B. juncea*	*B. rapavar yellow sarson*	FV
12	REHE PILA SARSO	*B. juncea*	*B. rapavar yellow sarson*	FV
13	BISA SARSON	*B. juncea*	*B. juncea*	FV
14	SADA DIPAK	*B. juncea*	No Germination	FV
15	PEELA LUTNI	Rapeseed	*B. tournefortii*	FV
16	LOTNI - K	*B. juncea*	*B. juncea*	FV
17	SHERU	*B. juncea*	*B. juncea*	FV
18	LODNI	*B. juncea*	*B. juncea*	FV
19	LOKNI	*B. juncea*	*B. juncea*	FV

3.1.24 ICAR-Indian Institute of Vegetable Research, Varanasi

IIVR, Varanasi is managing the DUS centre under 'Central Sector Scheme for Protection of Plant Varieties and Farmers' Rights Authority (DUS Testing of tomato, brinjal, okra, cauliflower, cabbage, vegetable pea, French bean, bottle gourd, bitter gourd, pumpkin and cucumber).

3.24.1 DUS Testing of vegetable crops in 2016-17:

Type of variety	New		VCK	FV	Total
	1st year	2nd year			
Okra	2	24	6	-	32
Brinjal	7	19	2	6	34
Cauliflower	4	17	1	8	30
Cabbage	7	2	-	-	9
Tomato	2	25	2	4	33
Bottle gourd	-	-	-	4	4
Bitter gourd	-	-	3	5	8
Cucumber	12	7	-	-	19
Pumpkin	-	-	-	1	1
Total	**34**	**94**	**14**	**28**	**170**

- **Key observations of the monitoring team:**
  - **Pumpkin**: Farmer variety *i.e.* Kohra No.1 was not fruited.
  - **Bottle gourd:** Seeds of Sadher Lau and Sarjana Lauki variety did not geminate whereas the fruiting was not observed in Lauki Chittidar. Population was not uniform in Gola variety.
  - **Bitter gourd:** Seeds of Deshi-B and Chhoto Karala variety did not geminate whereas the fruiting was not observed in Deshi-2

- **Cauliflower:** Seeds of Suman, Jaladhar, Jaladhar-3 and Bakalsa-C varieties did not geminate. Population was not uniform in Tha Animakhai Chabi and Ajitgarh Selection varieties.
- **Brinjal:** Seeds of Gol Kanta Makra variety did not geminate whereas population was not uniform in Kanta Baigan variety.

Crop	No. of reference variety	No. of morphological trait observed
Tomato	97	46
Brinjal	86	47
Okra	42	31
Cauliflower	04	28
Cabbage	03	28
Vegetable Pea	41	21
French Bean	25	22
Cucumber	25	34
Bitter gourd	26	31
Bottle gourd	31	31
Pumpkin	25	30
Total	405	

Varieties under maintenance/characterized:

Reference varieties of tomato, okra, brinjal, cauliflower, cabbage, vegetable pea, French bean, bottle gourd, bitter gourd, pumpkin, cucumber and pointed gourd were collected from different ICAR institute and SAUs. All the varieties of these crops were sown in randomized block design (R.B.D.) with 3 replications and are being maintained through sibing/selfing. The number of varieties of these crops maintained and their descriptors of morphological traits are being observed are presentated in the table.

Tomato: Ninty seven tomato reference varieties were maintained at ICAR-IIVR, Varanasi. These varieties were collected from various centres *i.e.* I.A.R.I., New Delhi, I.A.R.I., Regional Station, Katrain, I.I.V.R., Varanasi, B.C.K.V., Kalyani, C.S.A.U.A.&T. Kanpur, D.A.R.L., Pithoragadh, G.B.P.U.A.&T., Pantanagar, H.A.U., Hisar, H.A.R.P., Ranchi, I.I.H.R., Bangalore, J.A.U., Junagadh, K.A.U., Vellanikkara, N.D.U.A.&T., Faizabad, O.U.A.&T., Bhubaneswar, P.A.U., Ludhiana, T.N.A.U., Coimbatore, Y.S.P.U.H.F., Solan, MPKV, Rahuri, SKUAS&T, Jammu.

The varieties have been raised using the recommended cultural practices during the *Kharif* - *Rabi* season of 2016-17 with proper

maintenance programme. The off-types plants were rouged out and only true to type plants were selfed and seed extracted for maintenance.

Brinjal: Eighty six brinjal reference varieties collected from different centres were maintained. These varieties were collected from various centers *i.e.* I.A.R.I., New Delhi (10), I.I.V.R., Varanasi (7), A.N.G.R.U., Hyderabad (2), C.S.A.U.A.&T. Kanpur (7), J.A.U., Junagadh (3), G.B.P.U.A.&T., Pantanagar (1), H.A.R.P., Ranchi (8), I.I.H.R., Bangalore (9), J.N.K.V., Jabalpur (10), K.A.U., Vellanikkara (3), O.U.A.&T., Bhubaneswar (5), P.A.U., Ludhiana (4), P.D.K.V., Akola (1), R.A.U., Samastipur (1), T.N.A.U., Coimbatore (7), BCKV, Kalyani W.B. (1), CHES Bhubaneswar (1), HAU, Hissar (1), Nepal Agri. Res. Council, Nepal (1), Bangladesh (1), M.P.K.V., Rahuri (2), NEH, Barapani (1).

VARIETIES				
Annamalai	GOB-1	Pusa Ankur	Bhagyamati	Pragati
Arka Keshav	Green Long Cluster	Pusa Arup	BR-14	Punjab Barsati
Arka Kranti	Gulabi	Pusa Bindu	CH-1045	Punjab Moti
Arka Kushmakar	Hisar Shyamal	Pusa Kranti	CHBR-2	Punjab Nagina
Arka Nidhi	IBL-116-135	Pusa Purple Cluster	CO-1	Punjab Sadabar
Arka Nilkanth	JB-15	Pusa Purple Long	CO-2	Surya
Arka Sheel	JB-6	Pusa Shree	DBR-3	Kashi Prakash
Arka Shirish	JB-65	Pusa Shyamal	DBR-31	Swarna Sobha
Arka Shree	JB-67	Rajendra Baigan-2	DBR-8	Swarnamani
Aruna	JB-80	Ram Nagar Giant (O)	DRKNV-29	Sweta
Aushray	JBGR-1	Ram Nagar Giant (R)	GJB-2	TRB-9
Azad Brinjal-1	JBL-01	RCMBL-1	Swarna Ajay	Utkal Jyoti
Azad Brinjal-2	JBL-03-04	Ruchira	MDU-1	Utkal Keshari
Azad Brinjal-3	JBL-116-113	SB-1	Nurki	Utkal Madhuri
Azad Brinjal-4	Kashi Taru	Swarna Pratibha	Pant Rituraj	Utkal Tarini
Azad Kranti	KKM-1	Swarna Shree	PLR-1	Uttra
BCB-30	Manjari Gola	Swarna Shyamali	PR-5	Kalyanpur T-3

The crop was raised using the recommended cultural practices during the *Kharif –Rabi* season of 2016-17 with proper maintenance and selfing programme. The off-types were rouged out and only true to type plants were selfed and maintained for seed extraction.

Okra: Forty two okra varieties were collected from different centres and maintained as reference varieties for DUS Testing. These varieties were collected from various centers *i.e.* I.A.R.I., New Delhi (3), I.I.V.R., Varanasi (13), J.A.U. Junagadh (4), H.A.U., Hisar (5), M.P.K.V., Rahuri (2), P.A.U., Ludhiana (2), C.S.A.U.A.&T. Kanpur (5), R.A.U. Sabour (1), IIHR, Banglore (2), K.A.U., Vellanikkara (1), O.U.A.&T., Bhubaneswar (3), T.N.A.U., Coimbatore (1), N.D.U.A.&T., Faizabad (1).

VARIETIES		
Arka Abhay (IIHR-SEL-4)	HRB-55	Pusa Makhmali
Arka Anamika (IIHR-10)	JBS-2	Pusa Sawani
Azad Bhindi-1	Kashi Lalima	SB-2
Azad Bhindi-2	Kashi Leela (IIVR-11)	SB-8
Azad Bhindi-3	Kashi Satdhari	Sushthira (AE-286-1)
Azad Bhindi-4	Kashi Vardaan	Utkal Gaurav(BO-2)
BO-2	KS-442	Varsha Upahar
BO-13	NDT-10	VRO-3 (Kashi Mohini)
CO-2	NO.-136	VRO-4 (Kashi Mangali)
D-1-87-5	NO.315	VRO-5 (Kashi Vibhuti)
GJO-3	Pant A-4	VRO-6 (Kashi Pragati)
GAO-5	Parbhani Kranti	VROR-159
GO-3 (JNDOL-3-1)	Phule Utkarsh (GK-IV-3-3-3)	
Hisar Naveen (HRB-107-4)	Punjab Padmini	
HRB-231	Punjab-8	

The crop has been raised using the recommended cultural practices during the *Kharif* season of 2016 with proper maintenance and selfing programme. The off-types were rougged out and only true to type plants were selfed and seeds were extracted for maintenance.

Cauliflower: Four cauliflower varieties (Pusa Pausja, White Diamond, Pusa Shukti and Pusa Sarad) were collected from AICRP (VC) centres as reference varieties for DUS Testing. These varieties were collected from I.A.R.I., New Delhi (2), and I.A.R.I., Regional Station, Katrain (2).
The crop was raised using the recommended cultural practices during the winter season of 2016-17.The data were recorded as per the DUS guidelines.

Cabbage: Three reference varieties *i.e.* Pusa Ageti, Pusa Ageti (Tropical) and Kinner Red is collected from I.A.R.I., Regional Station, Katrain. The crop was raised using the recommended cultural practices during the winter season of 2016-17. The data were recorded as per the DUS guidelines.

Vegetable pea: Forty one vegetable pea varieties were collected from different centres and maintained as reference varieties for DUS testing. These varieties were collected from various centers *i.e.* I.A.R.I. (RS) Katrain (3), I.I.V.R., Varanasi (6), IIHR, Bangalore (3), D.A.R.L., Pathoragarh (1) N.D.U.A.&T., Faizabad (2), G.B.P.U.A.&T., Pantanagar (2), H.A.U., Hisar (2), H.A.R.P., Ranchi (2), P.A.U., Ludhiana (4), MPKV, Rahuri (1), Dr. YSPHU&F, Solan (1), V.P.K.A.S., Almora (10), C.S.A.U.A.&T. Kanpur (4).

VARIETIES			
AP -5	PB-88	IP -3	Vivek Matar -9
Arka ajeet	PH-1	KS 601	VL -8
Arka Kartik	Phule Priya	Lincon	VL-3
Arka Sampoona	Solan Nirog	MA-6	VL-Ageti Matar -7
Arkel	Swarna Amar	Mithi Phali	VL-Matar -6
Azad -3	Swarna Mukti	NDVP -10	VRP -22
Azad P-1	Vevek Matar 10	NDVP-250	VRP -6
Bonne Billa	Vivek Matar -11	Pant Matar -2	VRP -7
Dnpv -10	Vivek Matar -7	Pant Uphar	VRP -7
Hissar Harit	Vivek Matar -8	PB -89	VRPMR -9
VRPMR-11			

The crop was raised using the recommended cultural practices during the *Rabi* season of 2016-17. The off-types were being rougged out, true to type plants were maintained and seeds were extracted. Seeds were extracted from each variety and stored after drying and seed treatment.

French bean: Twenty five French bean varieties were maintained as reference varieties for DUS testing. These varieties were collected from various centers *i.e.* I.A.R.I., New Delhi (2), I.A.R.I., Regional Station, Katrain (3), I.I.V.R. Varanasi (2), Dr. YSPH&F, Solan (4), MPKV, Rahuri (1), B.H.U., Varanasi (2), C.S.A.U.A.&T., Kanpur (1), C.H.E.S., Ranchi (3), V.P.K.A.S., Almora (3), IIHR, Bangalore (3), IIPR, Kanpur (1)

Varieties (Bush Type)	Varieties (Pole Type)
Arka Anoop	HAFB-2
Arka Bold	HAFB-3
Arka Suvidha	Kentuchi Wonder
Azad Rajmah-1	Laxmi
Contender	Phule Suyesh
HUR-137	Pusa Hemlata
HUR-15	Pusa Himalya
IPR-96-4	RCMFB-1
Kashi Param	SVM-1
PDR-14	Swarnalata
Pusa Parvati	UHFB-30
Swarna Priya	
VL Bean-2	
VL Boni Bean-1	

The crop has been raised using the recommended cultural practices during the *Rabi* season of 2016-17 with proper maintenance. The off-types were roughed out , true to type plants were maintained and seeds were extracted for maintenance.

Pumpkin: Twenty five pumpkin varieties were collected from different centres and maintained as reference varieties. These varieties were collected from various centres *i.e* I.A.R.I., New Delhi, I.I.H.R., Bangalore, I.I.V.R., Varanasi, A.A.U., Anand, C.S.A.U.A.&T. Kanpur, HARP, Ranchi, PAU, Ludhiana, N.D.U.A.&T. Faizabad, K.A.U., Kerala and T.N.A.U., Coimbatore.

The followings varieties were raised during 2016:

VARIETIES	
BS -13-01	CO -01
SWARNA AMRIT	PUSA VIKASH
VRPK -222-2-1	NARENDRA UPKAR
NARENDRA AGRIM	PBUNJAB SAMRAT
VRPK -05-01	VR KOHRA
ANAND PUMPKIN	VRPK -09-01
PUSA VISHWAS	VRPK -07-01
KPS -1	CM-350
CO-2	VRPK -62
NARENDRA AMRIT	KASHI HARIT
HARP -04	ARKA CHANDAN
AZAD KADDU	CM-71
HARP-10	

The crop was raised using the recommended cultural practices during the summer, 2016 with proper maintenance and selfing programme. The off-types plants were rouged out and only true to type plants were maintained.

Bottle gourd: Thirty one bottle gourd varieties were collected from different centres and maintained as reference varieties for DUS testing. These varieties were collected from various centers: I.A.R.I., New Delhi (4), I.I.V.R., Varanasi (6), I.I.H.R., Bangalore (1), A.A.U., Anand (1), B.C.K.V., Kalyani W.B. (1), C.S.A.U.A.&T. Kanpur (2), SKUA&T, Jammu (2), H.A.U., Hisar (1), P.A.U., Ludhiana (2), G.B.P.U.A.&T., Pantnagar (2), N.D.U.A.&T, Faizabad (6), M.P.K.V., Rahuri (1), RAU, Samastipur (1) and T.N.A.U., Coimbatore (1).

The followings varieties have been raised during 2016:

Varieties		
ABG-1	NDBG-132	VR-1
Arka Bahar	NDBG-619	VR-2
CO-1	Pant Lauki-1	VRBG-136
GH-22	Pant Lauki-3	VRBG-6
Jora Botta	Punjab Komal	VRBG-7
Kalyanpur Long Green	Punjab Long	Samrat
Kashi Ganga	Pusa Naveen	JBG-50
KBGR-12	Pusa Samridhi	JBG-51
Narendra Dharidar	Pusa Sandesh	NDBG-10
Narendra Jyoti	Pusa Santusthi	
Narendra Rashmi	Rajendra chamtkar	

The crop was raised using the recommended cultural practices during the summer, 2016 and reference varieties were maintained through selfing. The off-types were roughed out and only true to type plants were maintained.

Bitter gourd: Twenty five bitter gourd varieties were collected from various centres and maintained as reference variety for DUS Testing. These varieties were collected from various centers i.e.; I.A.R.I., New Delhi (3), I.I.H.R., Bangalore (1), I.I.V.R., Varanasi (1), B.C.K.V., Kalyani W.B.(1), C.S.A.U.A.&T. Kanpur (2), K.A.U., Vellanikkara (1), N.D.U.A.&T, Faizabad (2), M.P.K.V., Rahuri (3), P.A.U., Ludhiana (1), Dr. YSPH&F, Solan (1), T.N.A.U., Coimbatore (1), HARP, Ranchi (2), G.B.P.U.A.&T., Pantnagar (2). The followings varieties have been raised during summer, 2016.

Varieties		
Arka Harit	Kashi Urvashi	Punjab-14
BBGS-09-01	Meghna-2	Pusa- Do-Mausami
CO-1	NDBT-7	Pusa Vishesh
DARL-43	NDBT-9	Sel-1

DBGS-37	Pant Karela-1	Sel-5
HABG-21	PBIG-02	Solan Hara
HABG-22	Phule green gold	VR-333
Hirkani	Phule Ujawala	
Kalyanpur Baramashi	Preethi (MC-84)	

The crop was raised using the recommended cultural practices during the Summer, 2016 with proper maintenance and selfing programme. The off-types plants were rouged out and only true to type plants were maintained for further use.

Cucumber: Twenty six cucumber varieties were collected from different centres and mainatained as reference varieties for DUS Testing. These varieties were collected from various centers i.e.; I.A.R.I., New Delhi (5), H.A.R.P., Ranchi (3), B.C.K.V., Kalyani (2), G.B.P.U.A.&T., Pantnagar (4), M.P.K.V., Rahuri (2), P.A.U., Ludhiana (1), Dr. YSPH&F, Solan (2), SKUA&T, Jammu (1), I.I.V.R., Varanasi (3), C.S.A.U.A.&T. Kanpur (2), AAU, Gujarat (1)

The followings varieties were raised during 2016:

Varieties		
Phule Shubhangi	JLG (Kabira)	DC-54
Punjab Naveen	Pant Khira-1	DC-78
Swarna Ageti	Cucumber Long Green	Seven Star
Swarna Poorna	PCUC-09	Dev Kamal
Swarna Sheetal	PCUC-10	Goa Local
Himangi	KTCS-07	Gujrat Cucumber Long
K-75	No-374	GCU-1
K-90	VRC-26	Pusa Uday
Kalyanpur Green	VR-101	

The crop was raised using the recommended cultural practices during the summer, 2016 with proper maintenance and selfing programme. The off-types were roughed out and true to type plants were maintained for further use.

The centre organized a Training cum Awareness on 25 March, 2017 with target beneficiaries among farmers, students, officers and staff of a local KVK. In total 125 participated in the programme where lectures were delivered by Dr. B. Singh (Diector, IIVR), Dr. A.B. Rai (Head, Crop Protection), Dr. Sudhakar Pandey (Principal Scientist), Dr. T. Chaubey (Principal Scientist), Dr. Shailesh Kumar Tiwari (Scientist).

3.24.2 Application filed during 2016-17:

Crops	Variety Name
Vegetable pea	Kashi Ageti (VRPE-25)
Okra	Kashi Vardhan (VRO-25)
Chilli	Kashi Surkh (CCH-2), Kashi Anmol (KA-2), Kashi Gaurav (VR-338)
Paprika	Kashi Sinduri (IVPBC-535)
Pumpkin	Kashi Harit (IVPK-226)
Muskmelon	Kashi Madhu (IVMM-03)
Tomato	Hashi Vishesh (H-86), Kashi Amrit (DVRT-1), Kashi Anupam (DVRT-2), Kashi Hemant (IIVR Sel-1), Kashi Sharad (IIVR Sel-2)
Brinjal	Kashi Sandesh (VRBHR-1), Kashi Taru (IVBL-9)
Bottle Gourd	Kashi Bahar (VRH-1), Kashi Ganga (DBBG-1)

3.1.25 ICAR-Indian Institute of Horticultural Research, Bengaluru

Division of Vegetable Sc, IIHR-ICAR is the co-nodal centre for vegetable crops Vegetable Amaranth, Palak, Ridge gourd, Tomato, Brinjal, Okra, Bottle gourd, Bitter gourd, Pumpkin and Cucumber, since the crop notification in these species was done.

3.1.25.1 Vegetable Amaranth, Palak and Ridge gourd:

During 2016-17, one Ridge gourd entry was sown for DUS Characterization and DUS monitoring during February, 2017.

List of reference varieties under maintenance:

Crops	No of varieties	Name of the reference varieties under maintenance breeding in 2016-17
Amaranth *(Amaranthus tricolor)*	**19**	Arka Suguna, Arka Samraksha, Arka Varna, Arka Arunima, IIHR-109-1, IC-551606, IC-551607, IC-551608, Pusa Kirti, Pusa Kiran, Pusa Lal Chaulai, Renusree, Canara Local, Co-1, Co-2, Co-3, Co-4, Co-5, RNA-1
Palak *(Beta vulgaris* var. *bangalensis)*	**5**	Arka Anupama, HS-23, Pusa Bharati, All Green, CO-1
Ridge Gourd *(Luffa acutangula)*	**9**	Arka Sujat, Arka Sumeet, Jaipur Long, Pusa Nasdar, Pusa Nutan, Co-1, Phule Sucheta, GARG-1, Deepthi

Center filed applications seeking plant variety protection for Arka Suguna and Arka Anupama.

3.1.25.2 Tomato, Brinjal, Okra, Bottle gourd, Bitter gourd, Pumpkin and Cucumber

Details of DUS testing of candidate varieties in 2016-17:

Crops	New		VCK	FV
	1st year	2nd year		
Tomato	02	25	02	04
Brinjal	07	21	02	05
Okra	02	31	06	-
Cucumber	03	19	12	-
Bitter Gourd	-	-	03	-

Tomato: 39 tomato varieties including 4 farmers' varieties and 06 reference varieties had been raised for conduct of DUS Test for 47 morphological characters as per DUS test guidelines for the year 2016-17. All the entries were characterized for DUS traits and monitoring of the DUS entries was conducted successfully under the chairmanship of Dr. N. Mohan, retd. Principal Scientist, Division of Vegetable crops, IIHR, Bengaluru on 13.01.2017. The representatives from three seed companies who had registered their entries with PPV & FRA for DUS testing participated in the meeting.

Brinjal: DUS testing was conducted for a total of 48 varieties including 5 farmers' varieties & 13 reference varieties for 47 morphological characters as per DUS test guidelines during the year 2016-17. Monitoring of the DUS entries was conducted successfully under the chairmanship of Dr. N. Mohan, retd. Principal Scientist, Division of Vegetable crops, IIHR, Bengaluru on 13.01.2017. The representatives from four seed companies who had registered their entries with PPV & FRA for DUS testing participated in the meeting.

Okra: forty nine okra entries were characterized for DUS traits and monitoring of the DUS entries was conducted successfully under the chairmanship of Dr. O. P. Dutta, Former Head, Division of Vegetable Crops, IIHR, Bengaluru on 02nd November 2016. Representatives of six companies had participated in the meeting.

Cucumber: Thirty four cucumber entries were characterized for DUS traits and monitoring of the DUS entries was conducted successfully under the chairmanship of Dr. A.T. Sadashiva, Head & Principal Scientist, Division of Vegetable crops, IIHR, Bengaluru on 7th May 2016. Representatives of two companies had participated in the meeting.

Bitter gourd: Three bitter gourd entries were characterized for DUS traits and monitoring of the DUS Entries was conducted successfully under the chairmanship of Dr.

O. P. Dutta, Former Head, Division of Vegetable Crops & renowned Cucurbit Breeder of the country on 28th April, 2016.

Private companies were satisfied with the crop and performance of DUS monitoring and suggested to have a DUS descriptor wherein all the observation to be recorded should be provided in detailed description along with scale, so that observation recorded by different individuals will have uniformity.

Varieties under maintenance/characterized:

Crops	No of varieties under maintenance breeding in 2016-17
Tomato	28 (IIHR released -8, ICAR-9 and SAU-11)
Brinjal	34 (IIHR released -7, ICAR-19 and SAU-15)
Okra	19 (IIHR released -2, 17- Others (ICAR+SAU)
Cucumber	12 Others (ICAR+SAU)
Pumpkin	11 (IIHR released – 1, 10 – Others (ICAR+SAU)
Bottle Gourd	18 (IIHR released – 1, 17 – Others (ICAR-6+SAU-11)
Bitter Gourd	16 (IIHR released – 1, 15 – Others (ICAR-4+SAU-11)

No. of varieties/applications files with PPV&FRA.

Crops	No of Var notified by the center Since 1966	No of Var notified by the center Since 1999	No of applications filed		
			ENV	New	VCK
Tomato	1	6	-	1	-
Brinjal	4	3	-	-	-
Okra		2	-	-	-
Pumpkin	1	-	-	-	-
Bitter gourd	1	-	-	-	-
Bottle gourd	1	-	-	-	-

3.1.25.3 Chilli, Bell pepper & Paprika (*Capsicum annuum* L.)

IIVR, Divn of Vegetable Science is also maintaining a DUS centre for *Capsicum sp.*

No. of variety undergone maintenance breeding / characterization are as follows:

Name of the species	No of varieties	Source(own released/ICAR/SAU)
Capsicum annuum L.	95	IIHR released, ICAR & SAU

No. of varieties undergone DUS testing in FY 2016-17:

Crops	New		VCK	FV	Total
	1st yr.	2nd yr.			
Chilli	47	-	62	4	113

- 113 candidate varieties which includes 47 new and 62 VCK Extant varieties, all of private seed industry were morphologically characterized for 55 traits along with 22 reference varieties during the period
- Ninety-five reference varieties of chilli, bell pepper and paprika have been maintained
- A German Delegation from Federal Plant Variety Office visited the trial plots with PPV&FRA officials in May 2016.
- Crop was monitored for two days i.e. from 21st to 22nd Oct 2016 under the chairmanship of Dr O. P. Datta, Fmr Head, Divn of Veg Sc, IIHR

- The data thus collected are being tabulated as per the formats supplied by PPV&FRA
- Applications for four new and four VCK have been filed for registration during the period

New / VCK / Extant notified / farmers' variety:

Crops	Variety notified under Seeds Act, 1966	Application filed for registration
Chilli	Arka Suphal, Arka Lohit Arka Meghana, Arka Harita	Arka Suphal, Arka Lohit, Arka Meghana, Arka Harita
	-	IHR 3287 (A & B lines), IHR 3289 Arka Sweta, IHR 3285 (A & B lines)

3.1.26 ICAR-IARI, RS, Katrain

The center is a co-nodal centre for DUS Testing in Cabbage and Cauliflower under Mid late group. During the year 2016-17, a DUS testing trial comprising of 2 candidate varieties of cabbage, viz., Charlie and Checkmate, along with 3 reference varieties *viz*., Golden Acre, Pusa Mukta and Pusa Cabbage-1 (KGMR-1) was conducted during the month of August for their testing during second year. DUS Monitoring was conducted in the month of Dec 2016. Besides other notified varieties viz., Pusa Drum Head, Pusa Ageti, Pride of India, Pride of Asia, MR-1, Red Rock Mammoth, 83-1, Kinner Red, 6A and C-121 were maintained and seeds multiplied.

Notified varieties of cauliflower viz., Pusa Snowball-1, Pusa Snowball K-1, Pusa Snowball K-25, Snowball-16 and Pusa Himjyoti were purified and maintained.

- **Details of applications filed with PPV&FRA:**

Crops	No. of Vars. notified by the center Since 1966	No. of Vars. notified by the center Since 2001	No. of applications filed			Certificates issued
			Extant Notified	New	VCK	
Cabbage	4	1	1	-	-	1
Cauliflower	5	1	1	-	-	-
Tomato	5	-				
Brinjal	2	-				
Cucumber	1	-				
Bell pepper and Paprika	4	-				
Onion	1	-				
Okra	2	-				
Watermelon	1	-				
French Bean	4	-				

3.1.27 AICRP (Floriculture) unit at MPKV, Agril College Campus, Ganeshkhind, Pune

- Detail of DUS testing of candidate varieties in 2016-17:

Crop	New	VCK	FV
	1st yr		
Rose	2 (Private sector variety)	2 (Private sector variety)	-
China Aster	Nil	Nil	-

- Varieties under maintenance/ characterized:

Crops	Name or No. of varieties under maintenance breeding
Rose	Reference Variety: First Red , Bonair , Taj Mahal, Bhagati
China Aster	Reference Variety: 4 var. from IIHR + 4 var. of NARP, Pune

3.1.28 ICAR-NRC Orchids, Pakyong, Sikkim

ICAR-NRC Orchids is a Nodal officer with mandated species, e.g., *Cymbidium*, *Dendrobium*, *Vanda*, *Phalaenopsis*, *Cattleya*, *Oncidium*, *Paphiopedilum* & *Mokara*. Centre developed uniform and unique guidelines on orchids at species level and included colour photographs of important characters in DUS Test Guidelines.

Crops	No of var/interspecific hybrids being maintained
Cymbidium	25
Dendrobium	12

Vanda	15
Phalaenopsis	30
Cattleya	9
Oncidium	30
Paphiopedilum	10
Mokara	7

In collaboration with ICAR-NRCO 'KISSAN MELA 2017' a Training cum Awareness Program on "*Protection of Plant Varieties and Farmer's Rights Act*" was conducted under DUS Project on 11th March, 2017 at Conference Hall, ICAR-NRC for Orchids, Pakyong, Sikkim. In this program, 100 participants comprising of 25 delegates, 50 farmers and 25 science students attended.

- **Applications filed with PPV&FRA:**

Crops	No of applications filed		
	ENV	New	VCK
Orchids	NA	NA	6

Plan for 2017-18:

- Maintenance and multiplication of Reference Varieties of Cymbidium, Dendrobium, Vanda, Phalaenopsis, Cattleya, Oncidium, Paphiopedilum and *Mokara*
- Development of DUS Test Guidelines of Mokara orchids
- DUS Testing of candidate varieties subjected to the receipt of plant materials of the notified species (*Cymbidium, Dendrobium, Vanda, Phalaenopsis, Cattleya, Oncidium* and *Paphiopedilum*)

3.1.29 ICAR-CITH, Srinagar

ICAR-CITH, Srinagar is the Nodal centre for Pome and Stone fruits, e.g., Walnut, Almond, Apple, Pear, Peach, Plum, Apricot, Cherry & Strawberry.

Crops	No. of varieties under maintenance breeding
Walnut	92
Almond	28
Apple	80
Pear	21
Peach	30
Plum	25
Apricot	17
Cherry &	10
Strawberry	107

List of reference varieties/genotypes maintained at ICAR-CITH, Srinagar:

Reference varieties of apple			
Coe Red Fuji	EC-539451	Top Red	EC- 539452
Granny Smith	King Hasicus	Tydeman,s Early Worcester	Wealthy Apple

Spartan	AAS/GP/BSP/13	Benoni	Indo
Vista Bella	AAS/GP/BSP/09	Pink Lady	Keseri
Fuji	Chanpora Selection	Hardiman	EC- 38735
Starkrimson	EC- 83683	Laxtone Fortune	MC-Spur
Mollies Delicious	EC- 539449	Prima	Florina
Cooper-IV	AAS/GP/BSP/04	Summerred	Anna
American Apirouge	EC-539457	Rich-a-Red	Mai Gold H-15
Silver Spur	Starkrimson Gold	Scarlet Gala	Wilson Red June
Golden Delicious	Jonica	Michal	Vance Delicious
Firdous	Early MC-Intosh	June Eating	Antonovka
Red Fuji	EC-539446	Red Baron	*M. floribunda*
Gold Spur	Mayan	Lal Ambri	EC- 239451
Red Chief	EC-539450	Ambri	Jonathan
Shireen	Tallisare	Winter Commercial	EC-539447
Oregon Spur	Lemon Guard	Skyline Supreme	EC-539448
Royal Delicious	Black Ben Davis	Green Sleeves	EC-539453

Reference varieties of pear			
Battira Giffard		Max Red Bartlette	
Pyasua Behapa		Severenta	
Doyenne-du-Comice		Coscia-C	
Santya Braskage		Coscia-F	
Red Bartett		Bihe	
Hayward		Red Max	
Gent Drouard		Max Red	
William Bartlett		Beurr'e Hardy	
Starkrimson		Conference	
Z.H.Copoceace		Jargonelle	
Kashmiri Nakh		--	
Red Gold	Star Summer Gold	Rome Beauty	*Malus baccata*
Red Delicious	Starking Delicious	Well Spur	*M. floribunda*

Reference varieties of peach/nectarine		
Peshawari	Paradeluxe	South Land
Queta	Early Red June	NG-2
Flordasum	Kanto-5	July Elberta
Fertalia	Glohaven	Shan-e-Punjab
Vance Massouri	Cresthaven	Snow Crest
Silver King	Red Globe	Vance Marble
Early Grande	Fantasia	CITH Sel -3
CITH Sel -2	Snowqueen	Mayfire
CITH Sel -1	Elberta	Fire prince
Suncrest	K-27791	NG-1

Reference varieties of plum		
Queen Inn	Burbank	Red plum
Kubio plum	Black Amber	Monarch
Mithley	Black Plum	Kubio-26
Krassivica	Grand Duke	Santa Rosa
Prune	Beauty	Black Beaut
Kanto -5	Mariposa	President Plum
AU-Rosa	Tarrol	Italian Plum
Greengage	Red Beaut	
AU-Cherry	Frontier	

Cherry Varieties	
Bigarrean Napolean	Stella
Bigarrean Noir Grosso	Makhmali
Bing	Lapinus
Awal Number	Sweet Heart
Lambert	Van

Apricot reference Varieties		
Balcota	Chinese Apricot	Fairmedcester
Harcot	Tilton Apricot	Viva Gold
Erani	Tokpopa Nimu	Afghani
New Castle	Australian	Communis Holy
Turkey	Nari	Communis
Heartly	Rival Apricot	

Reference varieties of walnut			
Opex caulchery	CITH-W-55	CITH-W-17	CITH-W-78
Cheinovo	CITH-W-56	CITH-W-18	CITH-W-79
Tuttle	CITH-W-57	CITH-W-19	CITH-W-80
Franqueette	CITH-W-58	CITH-W-22	CITH-W-81
Nugget	CITH-W-59	CITH-W-23	CITH-W-82
Hamdan	CITH-W-60	CITH-W-24	CITH-W-83
Suleiman	CITH-W-61	CITH-W-25	CITH-W-84
CITH-W-1	CITH-W-62	CITH-W-26	CITH-W-85
CITH-W-2	CITH-W-63	CITH-W-27	CITH-W-86
CITH-W-3	CITH-W-64	CITH-W-28	CITH-W-87
CITH-W-4	CITH-W-65	CITH-W-31	CITH-W-48
CITH-W-5	CITH-W-66	CITH-W-32	CITH-W-49
CITH-W-6	CITH-W-67	CITH-W-33	CITH-W-50
CITH-W-7	CITH-W-68	CITH-W-34	CITHW-51
CITH-W-8	CITH-W-69	CITH-W-35	CITH-W-52
CITH-W-9	CITH-W-70	CITH-W-40	CITH-W-53
CITH-W-10	CITH-W-71	CITH-W-41	CITH-W-45
CITH-W-11	CITH-W-72	CITH-W-42	CITH-W-46
CITH-W-12	CITH-W-73	CITH-W-43	CITH-W-47
CITH-W-13	CITH-W-74	CITH-W-44	CITH-W-54

CITH-W-14	CITH-W-75	CITH-W-16	CITH-W-77
CITH-W-15	CITH-W-76	-----	------

Reference varieties of almond	
IXL	CITH-ALMOND-9
Merced	CITH-ALMOND-10
Non-Peril	CITH-ALMOND-11
Primorskij	CITH-ALMOND-12
Pranyaj	CITH-ALMOND-13
California Paper Shell	CITH-ALMOND-14
Drake	CITH-ALMOND-15
Waris	CITH-ALMOND-16
Makhdoom	CITH-ALMOND-17
Shalimar	CITH-ALMOND-18
CITH-ALMOND -1	CITH-ALMOND-5
CITH-ALMOND-2	CITH-ALMOND-6
CITH-ALMOND-3	CITH-ALMOND-7
CITH-ALMOND-4	CITH-ALMOND-8

Strawberry Reference varieties			
Dil Pasand	CH-40	EC-439587	IC319137
Red cross	Selection –No-5	EC-362601	IC319117
Larson	IC-319133	IC319139	EC571812
Camma Rosa	Swiss-2	Sweet Heart	IC319147
Elasta	IC319096	IC319143	IC319123
Anthea	IC319098	Tiyoga	Cefra
Fiana	IC319101	IC319107	Sweet Chalit
Banglora	IC319105	Mostodam	Caufectura
Douglus	Lucunda	IC319153	
Majestic	IC319115	IC318915	
Phenomenal	IC319113	Rear Guard	
Shastha	IC318915	IC340594	
Black More	Sheet Master	IC340596	
Heera	Julicot Local	Tc-Ec	
Brighten	IC319135	EC-102642	
Howard	IC319138	EC-571813	
Missionary	EC-431388	IC319131	
Kimberley	EC-362602	EC-319105	
Tilmok	IC-319132	CH-111	
Bellrubi	EC-362589	IC319141	
Red Guard	CH-32	Red Coat	
Dana	JF- 2	North West	
Lesson	Perenial	IC319147	
Mecherachor	IC319103	IC319149	
Rear Guard -52	IC319107	Wild	
Swiss	IC319111	Wild Local	
Selva	IC319117	IC319174	

Royal Round	IC318916	Cataskell
Torry	IC318936	Florida
Red Ground	Addie	EC439586
Katrain sweet	Mechawanj	Julecoat Local
Chandler	IC319136	EC- 22355
Senga sengana	EC-439590	EC971812
		EC-439591

Applications filed with PPV&FRA:

Crops	No of applications filed
Walnut	05
Apple	01

Plan for 2017-18:

- DUS testing of new entries (candidate varieties)
- Filling of applications with PPV & FRA for registration of walnut, cherry and apricot varieties
- Maintenance of reference varieties at national gene bank ICAR-CITH, Srinagar.
- Characterization of reference varieties for checking the stability of traits.
- Awareness and training on PPV & FRA and Registration of farmers varieties to the farmers
- Publication of Monogram

3.1.30 ICAR- NRC Grapes, Pune

- **Maintenance of reference varieties:**

Total 61 reference varieties grafted on dogridge rootstock were trained on Y trellises. Among these, 14 varieties reached to fruiting stage during 2016-17. All varieties were observed for vegetative traits. List of reference varieties are as below: Ambe Seedless, Angoor Kalan, Arka Kanchan, Arka Shweta, Arkavati, B 69, Beauty Seedless, Black Champa, Black Round, Cabernet Sauvignon, Catawba, Centennial, Champanel, Chardonnay, Chasselas Blanc (WHITE SWEET), Cheema Sahebi, Christmas Rose, Cinsaut, Concord, Convent Large Blanc, Crimson Seedless, Delight, Diamond Jubilee, Fantasy Seedless, Flame Seedless, Golden Queen, Grenache Noir, Gulabi, Isabella, Italia, Jaos Belyi, Katta Kurgan, Kishmish Chernyi, Kishmish Rozovis, Manjri Naveen, Marro Seedless, Merbein Seedless, Mourvedre, NRCG –A8-3, Pearl of Csaba, Perlette, Pinot Noir, Pusa Urvashi, Red Globe, Red Muscat, Red Prince, Riesling, RR Seedless, Rubi Red, Sauvignon Blanc, Sharad Seedless, Shiraz, Sirius, Sonaka, Spin Sahebi, Superior Seedless, Thompson Seedless, Ugni Blanc, *Vitis Flexousas*, Walthom Cross

- **Maintenance of rootstock plants:**

The planted rootstocks were raised by regular cultural practices such as fertilization, irrigation, weeding, training etc. The rootstocks were trimmed by retaining two healthy shoots for in-situ grafting of the candidate variety for its DUS testing.

Name and number of varieties under maintenance breeding
Varieties under characterised: 08 Nos.: Jodhpur-1 to Jodhpur 8
Banarasi Karaka, Banarasi Pewandi, Chhuhara, Chhuhara Bawal, Dharki No.1, Gola, Gularvasi, Illaichi, Jogia, Kaithali, Kala Gola, Kathaphal, Kismis, Lakhan, Mehrun, Mundia, Narma, Reshmi, Safeda Rohtak, Safeda Selection, Sanaur-5, Seb, Tikadi, Umran, ZG-3

A workshop on "*Guidelines for DUS Testing and Variety Registration in Grapes*" was organized at ICAR-National Research Centre for Grapes, Pune on 26th October 2016 under the Chairmanship of Dr. S. D. Sawant, Director, ICAR-NRC for Grapes, Pune. About 26, persons comprising of grape growers, scientists and research fellows etc. were participated in the program. During the programme, the technical descriptions about importance of variety registration, about PPV&FR Authority, registration processes, importance of DUS and guidelines for DUS testing were distributed to the growers in local language (Marathi) for ease in understanding the systematic documentation and to facilitate the registration process of the variety.

3.1.31 ICAR-CIAH, Bikaner (Watermelon and Muskmelon)

DUS testing of 06 VCKs of watermelon was undertaken during summer season of 2016 at ICAR-CIAH, Bikaner. In addition, varietal maintenance of 09 reference varieties of watermelon and 13 of muskmelon were also undertaken.

- **Watermelon varieties undergone DUS testing**

Varieties	VCK
NWH-801, NWH-802, NFS-606, NFS-607, NFS-608, NFS-609	06

- **Varieties maintained during 2016-17:**

Crops	Name of varieties maintained
Watermelon {*Citrullus lanatus* (Thunb.) Mansf.}	Charleston Grey, Asahi Yamato, Arka Manik, Sugar Baby, Durgapura Lal, Durgapura Kesar, AHW-19, AHW-65 and Thar Manak.
Muskmelon (*Cucumis melo* L.)	Arka Jeet, Arka Rajhans, MHY-3, MHY-5, RM-43, RM-50, Durgapura Madhu, Kashi Madhu, Pusa Madhuras, GMM-3, Punjab Sunehri and Hara Madhu.

ICAR-CIAH, Bikaner (Ber)

ICAR-Central Institute for Arid Horticulture, Bikaner is also a co-nodal centre for Indian jujube (*Ber*) DUS testing.

- Varieties under maintenance/characterised:

The centre collected nearly 25 Ber varieties/landraces from various Institutes a cros India. Some of these include popular varieties like Chhuhara, Gola, Umran; selections e.g. Safeda Selection. Ber is an important minor fruit species suitable for arid region. The list for the varieties under maintianance breeding is as follows.

Name of varieties	Source of planting material	Name of varieties	Source of planting material
Chhuhara	CAZRI, Jodhpur	Kaithali	FRS, Bahadurgarh
Banarasi Karaka		Kala Gola	CCSHAU, Hisar
Banarasi Pawandi		Katha Phal	FRS, Bahadurgarh
Chhuhara Bawal	IARI, New Delhi	Kismis	IARI, New Delhi
Dharki No.1	MPKV, Rahuri	Lakhan	IARI, New Delhi
Gola	CAZRI, Jodhpur	Mehrun	MPKV, Rahuri
Gularvasi	CSSRI, Karnal	Mundia	CAZRI, Jodhpur
Illaichi	CAZRI, Jodhpur	Narma	CCSHAU, Hisar
Jogia		Sanur-5	CAZRI, Jodhpur
Reshmi		Seo	
Safeda Rohtak	CCSHAU, Hisar	Tikadi	
Safeda Selection	CCSHAU, Hisar		
ZG-3	CAZRI, Jodhpur	Umran	

Diversity in Ber varieties:

S. No.	Variety	Growth habit	Leaf shape	Nature of leaf base	Leaf length (cm)	Branch Thorniness	Fruit shape	Pulp: TSS: Acid ratio
1	Jodhpur-1	Semi-erect	Obovate	Acute	8.9	Medium	round	31.60
2	Jodhpur-2	Semi-erect	Oval	Oblique	9.8	Medium	round	36.19
3	Jodhpur-3	Erect	Obovate	Acute	8.1	High	round	28.24
4	Jodhpur-4	Erect	Obovate	Acute	11	High	round	29.02
5	Jodhpur-5	Semi-erect	Oval	Oblique	8.5	Medium	oval	35.65
6	Jodhpur-6	Spreading	Oval	Round	9.2	Medium	oval	30.37
7	Jodhpur-7	Semi-erect	Obovate	Acute	9.6	Medium	oval	29.06
8	Jodhpur-8	Semi-erect	Oval	Oblique	7.9	Medium	oval	38.18

Foliage characteristics of Ber varieties:

S. No.	Variety	Foliage characteristics						
		Nature of leaf apex	Nature of leaf base	Leaf length (cm)	Leaf width (cm)	Leaf curving	Leaf shape	Density of leaf pubescence on lower surface
1	Chhuhara	Obtuse	Broad	7.21	7.56	Present	Oval	Densely tomentose
2	Gola	Obtuse	Broad	7.85	7.54	Present	Oval	Densely tomentose
3	Illaichi	Obtuse	Broad	6.97	6.88	Present	Oval	Sparsely tomentose
4	Jogia	Acute	Broad	7.40	6.97	Absent	Cordate	Sparse tomentose
5	Mehrun	Acute	Broad	5.73	5.25	Absent	Cordate	Densely tomentose
6	Umran	Obtuse	Broad	8.82	7.76	Present	Oval	Sparsely tomentose
7	Chhuhara Bawal	Acute	Broad	8.81	8.39	Present	Cordate	Sparsely tomentose
8	Banarasi Karaka	Obtuse	Broad	9.52	6.49	Present	Oval	Sparsely tomentose
9	Banarasi Pawandi	Obtuse	Broad	8.79	7.16	Present	Oval	Densely tomentose
10	Dharki No.1	Acute	Broad	6.86	5.57	Absent	Ovate	Densely tomentose
11	Gularvasi	Obtuse	Broad	9.25	6.78	Present	Oval	Sparsely tomentose
12	Kaithli	Obtuse	Broad	10.31	7.49	Present	Cordate	Densely tomentose
13	Kala Gola	Obtuse	Broad	5.44	6.11	Absent	Cordate	Densely tomentose
14	Katha Phal	Obtuse	Broad	8.88	7.62	Present	Cordate	Densely tomentose
15	Kismis	Broad	Acute	8.83	5.45	Absent	Obovate	Densely tomentose
16	Lakhan	Obtuse	Broad	7.37	7.96	Absent	Oval	Sparsely tomentose
17	Mundia	Obtuse	Broad	9.34	7.57	Present	Oval	Densely tomentose
18	Narma	Obtuse	Broad	8.46	7.12	Present	Oval	Sparsely tomentose
19	Reshmi	Obtuse	Broad	8.25	6.01	Present	Oval	Sparsely tomentose
20	Safeda Rohatak	Obtuse	Broad	5.97	5.07	Absent	Ovate	Densely tomentose
21	Safeda Selection	Obtuse	Broad	8.17	5.83	Absent	Oval	Densely tomentose
22	Sanur-5	Obtuse	Broad	6.96	5.62	Absent	Cordate	Sparsely tomentose
23	Seo	Acute	Broad	7.06	6.77	Absent	Cordate	Densely tomentose
24	Tikdi	Obtuse	Broad	6.85	5.81	Absent	Cordate	Smooth
25	ZG-3	Obtuse	Broad	6.76	6.29	Absent	Oval	Sparsely tomentose

3.1.32 CIMAP, Lucknow

DUS Centre for Medicinal and Aromatic Plants at CSIR-Central Institute of Medicinal and Aromatic Plants (CSIR-CIMAP), Lucknow, has 4 mandated crops, Menthol mint *(Mentha arvensis),* Perwinkle *(Catharanthus roseus),* Damask rose *(Rosa damascena*), Brahmi *(Bacopa monnieri*).

- **Details of DUS testing of candidate varieties in 2016-17:**

Crops	New	
	1st year entries	2nd year entries
Mentha arvensis	-	One (CIM-Kranti)

- **Varieties under maintenance/Characterized:**

Crops	Name or Number of varieties under maintenance breeding	
	Number	Names
Manthol mint *(Mentha arvensis)*	10	Kosi, MAS-1, Kalka, Shivalik, Gomti, Himalaya, Sakashm, Kushal, CIMAP Saryu, CIM Kranti
Periwinkle *(Catharanthus roseus)*	3	Dhawal, Nirmal, Prabal
Damask rose *(Rosa damascena)*	4	Ranisahiba, Noorjahan, Aligarh, Kanouj
Brahmi *(Bacopa monnieri)*	2	CIM-Jagriti, Subodhak

Applications filed with PPV&FRA:

Crops	No of Var notified by the center Since 1966	No of Var notified by the center Since 2001	No of applications filed		
			ENV	New	VCK
Manthol mint *(Mentha arvensis)*	11	5	1 (CIM-Kranti)	-	-
Periwinkle *(Catharanthus roseus)*	3	3	-	-	-
Damask rose *(Rosa damascena)*	2	2	-	-	-
Brahmi *(Bacopa monnieri)*	2	2	-	-	-

Menthol mint variety CIM-Kranti has been put in DUS trial at two locations, CSIR-CIMAP, Lucknow and CIMAP Research Centre, Pantnagar.

3.1.33 ICAR-CPCRI, Kasargod

ICAR-CPCRI is the nodal center for coconut (*Cocos nucifera* L.).

- **No. of variety undergone maintenance breeding:**

Name of the species	No of varieties	Source(own released/ICAR/SAU)
Coconut	11	ICAR-CPCRI

About 20 seed nuts of reference/released/extant varieties, viz; Chowghat Orange Dwarf, West Coast Tall, Chowghat Green Dwarf, Malayan Yellow Dwarf, Malayan Orange Dwarf, Gangabondam Green Dwarf, Kalparaksha, Kalpa Dhenu, Kalpa Pratibha, Kalpa Mitra, Chandra Kalpa, Kera Chandra, Kalpa Tharu, were sown in polybags for generation of seedlings for DUS testing. Time taken for germination and seedling growth characters were recorded.

Germplasm accessions and released varieties planted during 2013 at different spacing (4m x 4m and 6m x 6m), were maintained for recording growth characters for characterisation and

generation of DUS descriptor data. Juvenile growth characters (Palm height, Girth, Total leaf length, Length of petiole, Length of leaf bearing portion, Leaflet count, Leaflet length, Leaflet breadth, Number of leaves in produced in year) were recorded. Analysis of variance indicated significant differences between the treatments, for some of the characters. Palm height, length of petiole, length of leaf bearing portion and total leaf length were significantly higher in Kalpa Mitra and lower in Chowghat Orange Dwarf. Chandra Kalpa was found to be have more leaflets and also longer leaflets among the varieties studied, while significantly broader leaflets was recorded in Kalpa Dhenu. Number of leaves produced in one year also showed significant variation, with higher leaf production in Chowghat Orange Dwarf and significantly lower leaf production in West Coast Tall. Variation was observed in growth characters between the two spacings with leaf length and plant height being higher in closer spacing of 4 m x 4 m, while leaf breadth, leaf production and leaflet breadth was higher in the 6 m x 6 m spacing. During the current year, flower initiation was recorded in Kalparaksha, Kalpa Pratibha, Kalpa Mitra, Chandra Kalpa, Kera Chandra, Kera Sankara, and Kalpatharu. (36-39 months after planting).

DUS characters with respect to inflorescence and fruit characters were recorded in seven reference varieties towards development of database. Plant collar girth among the 11 varieties ranged from 10.5 cm (WCT) to 16 cm (Kera Chandra) but the group indicated are in guidelines for the conduct of test for DUS on coconut, (low(<8), Medium (8-12), High(>12)) indicating the need for reclassification of old states, note and example variety for this traits.

- **Applications filed for registration**

Crop	Category	Status
Coconut	Extant Notified	6 - Certificates issued
Coconut	Farmer	10- Pending
Coconut	Extant VCK	5- Recommended for Onsite Testing 2-Pending
Coconut	New	1-Pending
Coconut	Extant	2-Pending

- **New / VCK / Extant notified / farmers' variety:**

Crops	Variety notified under Seeds Act, 1966 (since 1992)	Application filed for registration	Certificate issued
Kalpa Sankara	Yes	Yes	Certificate issued
Kalpa Mitra	Yes	Yes	Certificate issued
Kalpa Dhenu	Yes	Yes	Certificate issued
Kalpasree	Yes	Yes	Certificate issued
Kalparaksha	Yes	Yes	Certificate issued

Kalpa Pratibha	Yes	Yes	Certificate issued
Eathamozhy Tall Coconut	No	Yes	No
Nanirang Maimi	No	Yes	No
Narikol	No	Yes	No
Deejay Yellow Dwarf	No	Yes	No
Shinduri	No	Yes	No
Maghi	No	Yes	No
Kalpa Haritha	No	Yes	No
Kalpa Surya	No	Yes	No
Kalpa Jyothi	No	Yes	No
Kerachandra	No	Yes	No
Kalpa Samrudhi	No	Yes	No
Edava Long Fiber Coconut	No	Yes	No
T x D (Mahuva)	No	Yes	No
Banawali	No	Yes	No
Pratap	No	Yes	No
Konkan Bhatye Coconut Hybrid-1	No	Yes	No
Deshi	No	Yes	No
Ramganga	No	Yes	No
Nariyal	No	Yes	No

3.1.34 IFGTB-ICFRE, Coimbatore

- **Activities:**
  - Maintenance of already established germplasm bank
  - Observation in germplasm bank
  - Identification of land for establishment of germplasm bank in the DUS centre.
  - Collection of example varieties, propagation and establishment of germplasm bank at DUS centre
  - Preparation of plan for DUS testing
  - Development of Clone x DUS characters matrix

Activity	Time Schedule
Maintenance of already established germplasm bank	Continuous
Observation in germplasm bank at Thuvarakuruchi, Salem, Coimbatore and Ariyalur	Jan- March 2018
Collection of example varieties, propagation and establishment of germplasm bank at DUS centre	Continuous
Observation on DUS characters in Germplasm bank	Every alternate months
Development of Clone x DUS characters matrix	March 2018

3.1.35.1 Eucalyptus DUS centre: The Germplasm banks established at Coimbatore and Thuvarakuruchi have been maintained. About 20 clones in Coimbatore and 33 clones in Thuvarakuruchi have been planted. The germplasm has been assembled with 6 trees in three replications as per the DUS test testing guidelines. DUS characters have been recorded from all the reference collections. The DUS characters were also recorded in the clonal collections established at Salem, Tamil Nadu.

The reference varieties of Eucalyptus have been planted in *In-situ* Vegetative Multiplication Garden (VMG) at IFGTB propagation complex for immediate multiplication as and when DUS testing has to be carried out. One application for registration of IFGTB-EC6 has been submitted by Institute of Forest Genetics and Tree Breeding, Coimbatore. Follow up activities for registration of the above variety is being carried out.

3.1.35.2 Casuarina DUS Centre: Casuarina DUS Centre has assembled around 100 clones of *Casuarina equisetifolia*, *C. junghuhniana* and their hybrids in Forest Campus, Coimbatore which constitute the example clones used for developing DUS testing guidelines for Casuarina. This reference germplasm collection is periodically maintained for expression of all characters mentioned as descriptors in the guidelines. Characters are assessed annually in at least four trees of a clone for developing Clone Vs DUS character matrix. A separate block of 25 trees for the clone IFGTB-CJ-9 has been established and being periodically assessed for which application for registration has been filed.

3.1.35.3 Registration of New Varieties

During the year under reporting, five applications have been submitted for registration of varieties by the Institute of Forest Genetics and Tree Breeding, Coimbatore. This is in addition to one application submitted during 2015 for which DUS testing process is underway. On-site evaluation of DUS characters will be conducted for the six applications during the flowering season so that both vegetative and reproductive characters are evaluated.

3.1.36 ICAR-Sugarcane Breeding Institute (SBI), Coimbatore

- **Maintenance breeding**

One hundred and eighty six reference collections of tropical sugarcane varieties were planted at DUS Centre, Coimbatore centre during March, 2016. Each entry was planted in a single row of 6m length and with a row to row distance of 0.9m. In addition, the planting material of the variety CoVSI 9805 received from VSI, Pune and four Farmers' Varieties (FV) namely DESI- I, DESI-II, Kudrat Ka Karishma and Kaptan Basti from SBI-RC, Karnal were raised in polybags and transplanted in field for maintenance. All varieties were maintained free of pests and diseases. DUS Reference varieties (189) have been planted during second week of February, 2017 for maintenance during 2017-18.

No. of variety undergone maintenance breeding / characterization:

Name of the species	No. of varieties	Source (own released/ICAR/SAU)
Sugarcane	186	own released/ICAR/SAU

No. of varieties undergone DUS testing in FY 2016-17:

Crops	New		Total
	1st yr	2nd yr	
	-	3	3
Total	-	3	3

During 2016-17, the second year of DUS testing was completed based on 27 morphological descriptors at the age of 240, 300 and 360 days (20 canes each) for the three test varieties namely Co 0403, Co 06030 and Co 06027 along with reference varieties namely CoA 7602, CoA 90081, CoC 671, CoM 6806, Co 94008, Co 85004 and Co 86032. The observations indicated that, the candidate varieties were distinct from each other and also from the existing reference varieties and the population of these varieties was uniform.

3.1.37 ICAR-Sugarcane Breeding Institute Research Centre, Agali

Details of DUS testing of candidate varieties during 2016-17:

Crops	New		FV	Date of monitoring
	1st year	2nd year		
Sugarcane (*Saccharum* L.)	Nil	Co 06027, Co 06030, Co 0403	Shiddhgiri-1234 Dhyaneswar-16	16.3.2016

Progress made during the FY 2016-17:

- **Maintenance breeding**: 189 tropical sugarcane varieties were maintained in field at ICAR SBI Research Centre, Agali.
- **Conduct of DUS test for farmers' variety and new variety**: Second year DUS test for 3 candidate varieties (Co 0403, Co 06027, Co 06030) and 2 farmers' varieties (Dhyaneswar-16 and Shiddhgiri-1234) were conducted. The new varieties Co 0403, Co 06027 and Co 06030 were distinct from the existing reference varieties whereas the Farmers' varieties were not distinct from the already released / existing varieties. Shiddhgiri-1234 resembled to Co 92005 while Dhyaneshwar-16 resembled to Co 86032.

Applications filed with PPV & FRA:

Crops	No of Var notified by the center Since 1966	No of Var notified by the center Since 2001	No of applications filed by ICAR-SBI Coimbatore			Certificates issued
			Extant Notified	New	VCK	
Sugarcane	73	54	22	6	-	25

Plan of work for the year 2017-18:

- To multiply seed canes of 2 farmers' varieties received from Manipur during May 2017 for next year DUS testing.
- To conduct DUS test for 3 sugarcane varieties (Farmers' varieties) received for DUS test during Mar 2017.
- To multiply as well to maintain189 tropical sugarcane varieties (reference collection) in disease free condition in field.
- To verify DUS traits of reference varieties and to update IINDUS database of sugarcane reference collections.

Name and No of reference varieties maintained at ICAR-SBI Research Centre, Agali

Variety series	No. of Var	Name of the reference variety
Co varieties	99	Co 243, Co 244, Co 281, Co 285, Co 290, Co 301, Co 313, Co 331, Co 356, Co 385, Co 393, Co 395, Co 419, Co 449, Co 453, Co 475, Co 508, Co 513, Co 527, Co 617, Co 622, Co 658, Co 678, Co 740, Co 775, Co 785, Co 798, Co 853, Co 951, Co 975, Co 997, Co 1007, Co 1101, Co 1148, Co 1169, Co 1253, Co 1305, Co 1307, Co 62033, Co 62175, Co 62197, Co 62198, Co 6304, Co 6415, Co 6806, Co 6907, Co 7201, Co 7202, Co 7204, Co 7218, Co 7219, Co 7224, Co 7314, Co 7318, Co 7508, Co 7527, Co 7704, Co 7706, Co 7717, Co 7805, Co 7807, Co 8011, Co 8013, Co 8014, Co 8021, Co 8208, Co 8304, Co 8338, Co 8347, Co 8371, Co 85002, Co 85004, Co 85019, Co

		86010, Co 86011, Co 86032, Co 86249, Co 87025, Co 87044, Co 87263, Co 87268, Co 87271, Co 89029, Co 91002, Co 91010, Co 92005, Co 92020, Co 94008, Co 94012, Co 97009, Co 97015, Co 99004, Co 99006, Co 2001-13, Co 2001-15, Co 0218, Co 0403, Co 06027 and Co 06030.
CoA varieties	23	CoA 7602, CoA 7701, CoA 8013, CoA 8201, CoA 8401, CoA 8402, CoA 88081 (84A125), CoA 89081 (81A99), CoA 89082 (83A30), CoA 89085 (85A261), CoA 90081 (87A380), CoA 92081 (87A298), CoA 92082 (86A146), CoA 93081 (88A189), CoA 93082 (88A162), CoA 94081 (87A397), CoA 95081 (90A272), CoA 96081 (92A123), CoA 99082 (93A145), CoA 01082, CoA 03081, CoA 04081 and 93A 21.
CoC varieties	14	CoC 671, CoC 771, CoC 772, CoC 773, CoC 8001, CoC 8201, CoC 85061, CoC 86062, CoC 90063, CoC 92061, CoC 98061, CoC 99061, CoC 01061 and CoC (SC) 22
CoG varieties	2	CoG 93076 and CoG (SC) 5
CoJaw varieties	3	CoJaw 70, CoJaw 270 and CoJn 86141
CoM varieties	5	CoM 6806, CoM 7219, CoM 7712, CoM 88121, CoM 0265
CoN varieties	6	CoN 85134, CoN 91132, CoN 95132, CoN 03131, CoN 05071, CoN 05072
CoR varieties	8	CoR 8001, CoR 9301 (85R186), 83R 23, 97 R 129, 97R 383, 97R 401, 98R 272, 98R 278
CoSi varieties	3	CoSi 776, CoSi (SC) 6, CoSi 86071
CoSnk varieties	4	CoSnk 0344, CoSnk 0361, CoSnk 03754, CoSnk 05103
CoT varieties	5	CoT 8201, Madhumathi, Madhuri, Madhurima, Thirumadhuram
CoV varieties	16	CoV 89101 (81V48), CoV 92101 (82V12), CoV 92102 (83V15), CoV 92103 (83V288), CoV 94101 (86V96), CoV 94102 (89V74), CoV 95101 (91V83), CoV 03101, CoV 03102, CoV 05356, 93V 297, 97V 97, 2000V 59, 2000V 160, 2002V 48, 2003V46.
Others	1	PoJ 2878

3.1.38 ICAR-Sugarcane Breeding Institute Regional Centre, Karnal

ICAR- Sugarcane Breeding Institute Regional Centre, Karnal is one of the co-nodal centre for sub tropical sugarcane. Brief work is described as follows,

- **DUS testing of two candidate varieties**: Second year DUS test for two new sugarcane varieties *viz*., Co 05011 and Co 0237 was conducted at ICAR-SBI Regional Centre, Karnal along with eight reference varieties (Co 6425, Co 1158, CoS 767, CoS 91230, CoS 443, CoS 93259, CoS 95255 and CoSe 95436). A total of one hundred and sixty settlings derived from single bud setts of each varieties were transplanted into RBD design with two replications in the DUS testing field on 03.05 2016. The plot size of 4 Rows x 6 m length x 0.9 m row to row spacing. Observations on twenty seven morphological traits were recorded from the candidate as well as reference varieties. The result of 2nd year trial shows that the candidate varieties i.e. Co 05011 and Co 0237 were distinct from each other as well as from the reference varieties and the population of

these varieties was uniform in both the years. The claimed /essential characters recorded from these entries had shown stable performance in second year as well.

- **DUS Testing of Farmer's varieties:**

  Desi-I: The polybags raised settlings were transplanted at 0.9m x 6m x 4 Rows in two plots. All the twenty seven DUS descriptors were recorded from the variety. DUS testing of this variety will be done as soon as reference varieties are decided.

  Desi–II: The polybags raised settlings were transplanted at 0.9m x 6m x 4 Rows in two plots. Observation at Karnal Centre revealed that this clone is of tropical nature. Hence, in consultation with the PPV&FR Authority the multiplied seed materials of *Desi-ii* were sent to ICAR-SBI Coimbatore for testing under tropical condition.

  KKK *(Khudara ka karishma*): The polybags raised settlings were transplanted at 0.9m x 6m x 4 Rows in two plots. This clone bears three buds in each node(s) contrary to one bud in other varieties. The persistence of this trait (3 bud) was observed in the subsequent vegetative propagation. However, as suggested by the Authority seed cane multiplied at this Centre was sent to ICAR-SBI Coimbatore for further confirmation on the distinctiveness of this variety.

  Kaptan Basti: The material of this variety was received on 26.4.2016. The settlings were planted in polybags. Seed cane of four reference varieties *viz*. Bo 130, CoS 94270, CoS 96258, CoPant 96219 were planted in polybags for multiplication. DUS trial for this variety will be undertaken during 2017-18 sugarcane season.

- **Maintenance of reference collection of sugarcane varieties**: One hundred and twenty six subtropical sugarcane reference varieties was maintained in two row plots and in disease free condition at ICAR-SBI-RC, Karnal. Photographs of reference varieties were taken as part of on digitization of DUS reference varieties.

Name of the species	No of varieties	Source (own released/ICAR/SAU)
Saccharum hybrid (Sugarcane)	126	*SAU & Research stations' release*: BO series-17 varieties; CoP series-5; CoB series-1; CoBln series 9; CoH series 8; CoJ series 5; CoPb seies 1; CoLk series 3; CoPant series 8; CoS series 36; CoSe series 9; UP series 4 varieties. *ICAR & Own release*: Co series-21 varieties.

3.1.39 ICAR- Indian Institute of Sugarcane Research, Lucknow

- **Maintenance of reference collection of sugarcane varieties:**

One hundred and forty four reference varieties of sugarcane were maintained in DUS field during 2016-2017.This reference collection includes all the identified, released and notified varieties from CVRC, varieties released from states and clones from Advanced Varietal Trials of AICRP(S). Characters are being recorded on new inclusions in reference collection as per the DUS Testing guidelines. Reference collection new crop was planted in the field for maintenance during crop season 2017-18.

- **DUS Testing Trial**

Two clones Co 0237 and Co 05011 along with 7 most similar varieties from reference collection (Co 1158, Co 6425, CoS 443, CoS 95255, CoS 767, CoSe 95436 and CoS 93259) were planted following DUS Testing Guidelines during March 2016 for the second year. Recommended package of practices were followed. Observations were recorded as per guidelines. Data will be compiled for both the centre and will be submitted at the earliest. Dr R R Hanchinal, Chairperson and Dr Ravi Prakash, Registrar monitored the DUS trial.

- New Candidate Varieties: Two sugarcane varieties CoN 05071 and CoN 07072 were received from Navsari Agriculture University, Gujrat, however these clones and centre falls under Tropical Region. Concerned Centre was suggested to supply seed of these varieties to SBI, Coimbatore for DUS Test,
- Farmers' varieties testing: Two farmer sugarcane clones Deshi No 1and Deshi No.2 were received during 2014. Poly-bag raised seedlings were transplanted at 0.9 m x 6 m plot in four rows in two plots. Seedling were transplanted at a distance of 60 cm. Recommended package of practices were applied. Despite all possible care, growth of Deshi No. 1 was not up to the mark, proper cane formation did not take place (cane did not grow up to 100 cm) and at later stage, crop was observed to be apparently affected by wilt disease. Gradually entire crop was wilted/ dried. The performance of Deshi No. 2 was relatively better. Preliminary observations suggest this clone is very close to some *S. officinarum* clones of tropical origin.
- Fusen: During the year another clone Fusen was received and poly-bag seedlings were raised. Out of 128 single buds received only 12 buds sprouted. The poly-bag seedlings were transplanted in the field. Most of the plants dried during the grand growth phase. This clone was multiplied this year also and was planted in the field.

- Kudrat ka Karisma: This clone was received during March 2017 from SBI RC Karnal. Poly bag raised seedlings were planted in the field for multiplication and evaluation.
- Kaptan Basti: The planting material of the clone was received in April 2016. The clone was multiplied and will be tested/ characterized during 2017-18.

3.1.40 AICRP on Small millets, GKVK, Bengaluru

AICRP on Small Millets, ICAR, GKVK, Bengaluru is responsible for 4 small millet crop species, e.g., Finger/Foxtail/Little/Barnyard Millet.

Details of DUS testing of candidate varieties in 2016-17:

Crops	FV
Finger millet	2
Foxtail millet	7

During *Kharif* 2016 season, the centre received two finger millet and seven foxtail millet test entries for DUS characterization. In finger millet, centre received two entries namely Jhibra and Amrit. These entries were sown in three replications in RCBD along with 77 finger millet reference entries. Observations on qualitative and quantitative traits are recorded. Both pigmented and pigmented panicle types in Amrit entry, open type and semi compact type panicles in Jhibra entry. The center harvested seeds separately from these entries and made as four entries and sown in summer 2017 for evaluation in three replications in RCBD.

In foxtail millet, seven entries were received for characterization namely Chhamar, Chhahar, Panchami, K-15, Sephuk, Juneshe and Sheyam. These entries were sown in three replications for characterization in RCBD along with 29 reference foxtail millet entries. Among these, one entry namely K-15 has not germinated and remaining entries were germinated but exposed to shootfly attack and unable to conduct the trial properly. However, center harvested the seeds from these entries and again sown in summer 2017 for multiplication and will evaluate these entries in *Kharif* 2017.

Varieties under maintenance/characterized:

Crops	No of varieties under maintenance breeding
Finger millet	77 Reference varieties
Foxtail millet	29 Reference varieties

Plan for 2017-18:

i. Evaluation of 2 and 7 farmer's varieties of Finger millet and Foxtail millet, respectively.
ii. Maintenance of 77 and 29 finger millet and foxtail millet reference varieties.

iii. Characterization of one finger millet and 2 foxtail millet varieties that are in Advance Varietal trials of the project.

From 2017-18, the DUS testing will be done at Bengaluru and Athiandal Centres of the project for Finger millet and Foxtail millet during this year and for all the six crops from next year.

3.1.41 ICAR-Central Potato Research Institute, Shimla

Potato DUS testing: Characterization of nine exotic varieties viz., Colamba, Heraclea, Navigator, Farida, Ivory Russet (Mahindra Ltd.) and FL3137, FL2108, FL2221, FL2215 (Pepsico Ltd.) and, Badami alu, Pakri alu and Aber Chaibi (farmer's variety) were done along with the respective reference varieties viz., Kufri Pukhraj, Kufri Jyoti, Lady Rosetta, Atlantic, Santana and Kufri Chipsona-3 for floral, vegetative and tuber characters at CPRI, Shimla, CPRS, Jaladhar and CPRIC, Modipuram.

New(1st yr trial)	VCK	FV
Colamba, Heraclea, Navigator, Farida, Ivory Russet of Mahindra Ltd.	FL3137, FL2108, FL2221, FL2215 of Pepsico	Aber Chaibi, Badami alu, Pakri alu

Submission of DUS testing report and grant of protection: Details of two years data on DUS testing of 9 exotic varieties Kastelli, Panamera, Lucinda, Taurus, CRISPS4ALL, Sagitta, Memphis, Evora and HZD 01-58 of Mahindra Ltd. and 2 CPRI varieties Kufri Garima and Kufri Gaurav for registration in *New variety* has been submitted to PPVFRA, New Delhi and registration certificates of Kufri Garima and Kufri Gaurav have been issued.

Maintenance of reference Germplasm: Two hundred thirteen accessions *viz.,* forty-nine CPRI varieties, twenty-nine UPOV varieties, twenty exotic varieties, eight state varieties and one hundred seven indigenous collections are being maintained *in vitro* at germplasm repository of CPRI Shimla. At CPRI Campus, Modipuram, forty-nine CPRI released potato varieties and sixty-two reference varieties were maintained in tuber form in field conditions.

Plan for 2017-18:

a) Second year trial of 5 exotic varieties for floral, vegetative and tuber characters viz., Colamba, Heraclea, Navigator, Farida, Ivory Russet of Mahindra Ltd. filed for protection in New group
b) First year trail for floral traits of 4 exotic varieties (FL3137, FL2108, FL2221, FL2215) of Pepsico for protection under VCK category.
c) Grow out test of FV Aber Chaibi

3.1.42 ICAR- Junagadh Agricultural University, Jamnagar

Castor DUS testing centre at JAU Pearl Millet Research Station, Jamnagar is the co-nodal centre for Castor (*Ricinus communis* L.) DUS testing. Details of DUS testing of candidate varieties in 2016-17 are as follows:

Dr K. K. Dhedhi had given a lecture on "Role of Protection of Plant Variety & Farmers` Rights" delivered to 110 trainees in a training programme on "Awareness-cum-training on Protection of Plant Variety & Farmers` Rights" which was organized by KVK, JAU, Jamnagar on behalf of PPV & FRA on 1st March, 2016. The centre also publishes several articles/papers related to PPV&FRA and filed applications seeking plant variety protection. List of varieties submitted for plant variety registration are as follows:

Crops	No of Var notified by the center Since 1966	No of Var notified by the center Since 1999	No of applications filed			Certificates issued
			Extant Notified	New	VCK	
Bajra	22	12	11	-	-	10

3.1.43 ICAR- Indian Institute of Pulses Research Kanpur (AICRP on MULLaRP)

MULLaRP, IIPR, Kanpur has four mandated crop species, e.g., Mungbean, Urdbean, Lentil, Rajmash and Pea. Details for DUS testing of candidate varieties in 2016-17:

List of applications filed for Plant variety protection

Crops	FV
Castor	Dehati, Dehati-2

List of varieties under maintenance breeding at MULLaRP

S. no.	IIHR Acc No.	Local/Common Name	S. no.	IIHR Acc No.	Local/Common Name
1	IIHR BV 10	Sangli Kapoori	21	IIHR BV 46	Calcutta Bangla
2	IIHR BV 23	Banavalli	22	IIHR BV 47	Swarna Kapoori
3	IIHR BV 24	Halisahar Sanchi	23	IIHR BV 48	Maghai
4	IIHR BV 25	Karapaku	24	IIHR BV 49	Bangla Ganmala
5	IIHR BV 26	Bangla (M.P)	25	IIHR BV 52	Hirehalli Local
6	IIHR BV 27	Ghanagette	26	IIHR BV 53	Mysore Local
7	IIHR BV 28	Gachi Pan	27	IIHR BV 54	Harishpur Bangla
8	IIHR BV 30	Ramtek Bangla	28	IIHR BV 55	Birkoli
9	IIHR BV 32	Bangla Nagaram	29	IIHR BV 56	Balipan
10	IIHR BV 33	Godi Bangla	30	IIHR BV 58	CARI-6
11	IIHR BV 34	Nov Bangla	31	IIHR BV 59	CARI-2
12	IIHR BV 35	Bangla(U.P)	32	IIHR BV 63	Desi Pan
13	IIHR BV 36	Black Leaf	33	IIHR BV 65	Dhoba Bangla

14	IIHR BV 37	Sirugamani 1	34	IIHR BV 67	Andaman 1
15	IIHR BV 40	Malvi (MP)	35	IIHR BV 68	Andaman 2
16	IIHR BV 41	Bangla Mandsore	36	IIHR BV 71	Vellaikodi
17	IIHR BV 42	Simurali Babna	37	IIHR BV 76	
18	IIHR BV 43	Simurali Babna Local	38	IIHR BV 95	Gujarat Local
19	IIHR BV 44	Kali Bangla	39	IIHR BV 96	
20	IIHR BV 45	Khasi Pan	40	IIHR BV 96-1	

Crop Species	Name of the varietie
Green gram [*Vigna radiata* (L.) Wilczek]	**Total Number of reference varieties : 67** PDM 54, PDM 139, Pant M 1, Pant M 2, Pant M 4, Pusa 105, OBGG 52, Pusa 9531, Pusa Baisakhi, PS 16, Pusa 9072, Pusa Ratna, Pratap, RMG 62, RMG 268, RMG 344, Sujata, Salimar M 1, Sona, SML 32, SML 134, SML 668, TARM 1, TARM 2, TARM 18, T 44, Vamban 1, Asha, AKM 8803, AKM 9911, BM 4, BPMR 145, BDN 2, CO 4, OUM 11-5, Dhauli, Ganga 1, GM 3, GM 4, HUM 1, HUM 2. HUM 6, HUM 12, IPM 99-125, JM 721, K 851, Lam M 2, LGG 407, LGG 450, ML 5, ML 131, ML 267, ML 613, ML 818, MGG 295, MH 96-1, MUM 2, NDM 1, IPM 02-3, KM 2, HUM 16, PKVAKM 4, Pairy Moong, BM 2002-1, BM 2003-1
Black gram [*Vigna mungo* (L.) Hepper]	**Total Number of reference varieties : 28** Azad U 2, LBG 645, LBG 685, Manikya, Mash 1, Naveen, NDU 1, Pant U 30, Shekhar U 1, Shekhar U 2, Shekhar U 3, Sarla, TU 94-2, TPU 4, Uttara (IPU 94-1), WBU 108, UG 338, LBG 20, Mash 414, UG 1008, Pant U 40, IPU 2-43, GU 1, RUG-10, UG 218, Mash 4-4,NUL-7, Pant U-19, LBG-623, T-9, LBG-123, Indira-1, KU 96-7, Him Mash-1, KUG-479, PDU-1, LBG-709, TAU-1, LBG-752, Vamban-7,LBG-787, PU-31
Lentil (*Lens culinaris*)	**TOATL NO OF REFERANCE VARIETY 36** DPL-62,DPL-15,IPL-81,IPL-315,IPL-406,NDL-1, PL -4, PL-5,PL-24,PL-63,PL-234,PL-406,PL-639,PL-77-12,L-4076,LL-56,LL-147, LL-699,L-4147,LH-84-8,VL-1,VL-4,VL-103,VL-126,VL-507, WBL-77,JL-1,JL-3,K-75,KLS-218,HUL 7, ASHA, RANJAN, SUBRITA, BARABHIA LOCAL (RUST SES.),S.SI.S.
Pea (*Pisum sativum*)	**TOATL NO OF REFERANCE VARIETY 54** ARKEL,AZAD P-1,AZAD P-2, AZAD P-3,AZAD P-4,AZAD P-5,AZAD P-31,AGETA-6,DDR-23,DDR-27,VRP-3,VRP-5,VRP-6,VRP-7,VRP-22.DDR-44, HUDP-15, HFP-4, HFP-529, HFP-8909, IPFD-99-13,I PFD-1-10, IPFD-6-3,J AYANTI, KPMR-144-1, KPMR-400, KPMR-522,IFP-48,PG-3,PANT P-14,SWATI,VL-3.B-22,DMR-7,HUP-2,IM-9101,IPF-99-25,IPF-4-9,IPF-5-19,IPF-4-26,JM-6,JP-885,KFP-103,PANT P-5,RACHNA,TRCP-8,VL-1,VL-42,VL-45,VL-46,HFP-9426HFP-9907
Rajmash (*phaseolus vulgaris*)	**TOTAL NO OF REFERANCE VARIETY 13** HUR-15,ARKAKOMAL,PDR-14,IPR-98-5,SHRIDHA,ARKA ANOOP, PR-98-3-1HUR-137,IVFB-1,HUR-203,ARKABOLD,HPR-35, GUJRAT RAJMASH.

Indian Institute of Horticultural Research, Bangalore (Betelvine)

The centre is implementing a DUS project, *Formulation and Validation of DUS Testing Guidelines for Betelvine (Piper betle L.)* and developed DUS test guidelines for the species. It is maintaining 40 reference varieties. In addition to DUS traits identified, it is necessary to evaluate essential oil content and anatomical traits for proper classification of the lines.

DUS traits were tested for two farmers' garden in Hirehalli (Garden1) and Devarasahalli (Garden 2) in Tumkur district under open system of cultivation. A total of seventeen traits were proposed under DUS guidelines under open system of cultivation. These traits are recorded both in research station and farmers gardens on Hirehalli Local accession.

The traits were recorded as explained in draft guidelines on experimental station and onsite in farmers' fields. Betelvine in the farmers' gardens was raised with spacing of 2.7 x 2.7m under areca nut support and the traits recorded in the farmers' gardens were tabulated. Data on the majority of the traits could be recorded in the farmers garden except the five floral traits *i.e.,* inflorescence length (cm) and number of inflorescence/plagiotropic shoots, inflorescence length. These could not be recorded as there are not many inflorescences to record the data and this will need repeated visits to the farmers' field during flowering time. The study shows in the studied gardens, the DUS traits proposed and recorded in experimental station are matching with the onsite recorded data under open conditions under areca nut support. The data on flowering traits could not be recorded in one visit and probably needs frequent visits to check the flowering and also to record the data on the different floral traits. However the above conclusions from the preliminary study need to be confirmed with the number gardens onsite data under both areca nut and Sesbania support. Similar studies are also needed in closed conditions also.

3.1.44 Division of Vegetable Science, IARI, New Delhi

It is a co nodal centre for DUS Testing in Bottle gourd, Bitter gourd, Pumpkin, Cucumber and Ridge gourd. Brief Technical progress is as follows:

Crops	New		VCK	FV
	1st year	2nd year		
Bottle Gourd	1 (FV)	1 (VCK 8 (FV)	NBBH-48	Ganesh Lauki, Lawa, Shyamli, Sambhari, Lauki-Lo, Shee, Valki Lao, Ghoti Lao, Spam Lauki
Bitter Gourd	2(FV)	2 (FV)	-	Ram Karela, Palki Karela,Metha Karela, Achkaba

Pumpkin	5 (FV)	6 (FV)	-	Gol Kumhada Thakur, Kaware Kumhada, Rakhiya Kumhada,Laxmi Kumhada, Palki Kumhada, Gach Mithu, Bibi Kumrao, Kohra, Valki Kumrao, Falguni, Bhadri
Cucumber	NIl	8 (FV)	-	Puspa, Barsa Hooghly, HymontryHoogly ,Papiya, Baropata, Deshi Green, Kumar*, Ram Gopal*
Ridge Gourd	Nil	1 (VCK)	NBBH-744	-

*Reported as snap melon varieties based on the field evaluation

Varieties under maintenance/characterized:

CROPS	Name or No of varieties under maintenance breeding in 2016-17
Bottle Gourd	ABG-1, ArkaBahar, JBG-51, Kalyanpur Long Green, Kashi Ganga KBGR-12, NarendraDharidar, NarendraJyoti, NarendraRashmi, NDBG-132, NDBG-619,Pant Lauki-1, Pant Lauki-3, Punjab Komal, Punjab Long, Pusa Naveen, PusaSamridhi, PusaSandesh, VRBG-136, VRBG-7
Bitter Gourd	Arkaharit, Co-1, HABG-21,HABG-22, Hirkani, KalyanpurBaramasi, KashiUrvashi, Meghna 2, NDBT-7, NDBT-9, Pant Karela-1, Phule Green Gold, PhuleUjwala, Preethi, Punjab-14, Pusa Do Mausami, PusaVishesh, Selection-5, Selection-1
Cucumber	Himangi, Kalyanpur green, Pant Kheera-1, Phuleshubhangi, Punjab Naveen, SwarnAgeti, SwarnPurna, VR-101, PusaBarkha, SwarnSheetal
Pumpkin	Arkachandan, Co-2, Kashiharit, KPS-1, NarendraAgrim, NarendraAmrit, Punjab Samrat, PusaVikas, PusaVishwas, Sooraj, VRPK-222-2-1
Ridge Gourd	ArkaSujat, ArkaSumeet, Co-1,Garg1, Jaipur long, PhuleSucheta, PusaNasdar, PusaNutan

3.1.45 IARI, New Delhi (Bougainvillea)

DUS Centre on Bougainvillea is a co nodal centre at Divn of Floriculture and Landscaping, IARI, New Delhi is a co nodal centre. Three new cultivars of bougainvillea *Dr. P.V. Sane, Leah Nagpal* and *Geoffrey Nagpal* have been identified at IARI repository during 2015. These cultivars are under evaluation process as per the descriptor.

Some of the key features of theses cultivars are as follows:

Brief details			
Denomination	**Dr. P. V. Sane**	**Geoffrey Nagpal**	**Leah Nagpal**
Year of introduction	2015	2015	2015
Origin/Parent	Bud sport of Dr. R.R. Pal	Bud sport of Manila Hybrid	Seedling of Verna Nagpal

Main Characteristics			
Plant Habit	Erect	Erect	Erect
Thorn Type	Straight	Straight	Small and Erect
Leaves	Variegated	Light green broad leaves with glabrous texture	Light green small leaves with glabrous texture, elliptic shape
Bract	Ovate	Large	Ovate
Recommended for (Uses)	Pot Culture and standards	Shrubs and Pot culture	Pot Culture and Shrubs

3.1.46 ICAR-DGR, Groundnut, Junagadh

DUS testing have been conducted in Kharif season in 2016 under DUS Project for the testing of the six groundnut candidate varieties received from PPV & FRA, New Delhi "Western Vardan, Desi Mungfali 2, Hara Mungfali, Desi Mungfali Lal, Desi Lal and Desi Chiniya". All the six candidate varieties were sown under DUS Project along with eight reference varieties in three replications in kharif season with the spacing of 45 cm x 15 cm in Virginia types and 45 x 10 cm in case of Spanish bunch and Valencia types as per DUS test guidelines.

Budhram Badam-1	Gulabi	Budhram Badam-1	Gulabi
			
Budhram Bada	Gulabi	Budhram Badam 1	Gulabi
			
Budhram Badam 1	Gulabi	Somnath (Vr)	Mh 4 (Val)
			

Among the candidate varieties seeds (kernels) of Desi Chiniya (115 g pod; 215 kernels); Desi Lal (140 g pod; 335 kernels); Hara Mungfali (335 g pod; 620 kernels); and Western Vardan (300 g pod; 690 kernels) were lesser than the prescribed norms of 720 seeds. The final plant stand in these candidate varieties were: 384 in Western Vardan; 326 in Desi Mungfali 2; 490 in Hara Mungfali; 12 in Desi Mungfali Lal; 197 in Desi Lal; and 98 in Desi Chiniya which were again very low. Following reference varieties have been utilized for DUS test experimental trial conducted at this directorate and one set of the same reference varieties has been supplied to co-Nodal centre i.e UAS Dharwad: Spanish Bunch: GG 2 and SG 84 (4-rows each); Valencia: Kopergaon 3 and Gangapuri (4 rows each); Virginia Bunch: GG 20 and BAU 13 (6 rows each); Virginia Runner: Punjab 1 and Somnath (6 rows each). All the recommended practices have been followed to raise a successful crop. Observations have been recorded at appropriate growth stages. This includes 13 qualitative 5 quantitative descriptor traits. All the replicated data recorded are being processed to compile in the format given by PPV&FRA, New Delhi under DUS Test guidelines. In addition, about five DUS reference varieties have also been multiplied for seed enhancement.

3.1.47 IIHR-ICAR

Divison of Fruit Science, ICAR- Indian Institute of Horticultural Research is a co nodal centre for Mango DUS test. Salient details are as follows:

A total of 30 germplasms are being maintained in the DUS Plot, IIHR, Hessaraghatta. Centre collected and multiplied 12 mango varieties from Malavalli (Mr. Mohamad Ghani Khan) and same will be planted in DUS plot for evaluation. During the period under report the inflorescence characteristics viz., time of flowering, inflorescence length, inflorescence diameter, inflorescence ratio, and anthocyanins coloration of axis and branches were recorded for 60 accessions as per the DUS guidelines. The evaluation for morphological and fruit characters was carried out for 40 varieties as per the DUS guidelines in IIHR germplasm.

Crops	New		Farmers Varieties
	1st year	2nd year	
Mango	15	10	10
Total	15	10	10

3.1.48 ICAR-CCRI, Nagpur

ICAR-Central Citrus Research Institute, Nagpur is the Nodal centre for DUS testing. On-site DUS testing for first season were completed for registration of 3 citrus new varieties (NRCC Nagpur Mandarin Seedless- 4, NRCC Acid Lime-7 and NRCC Acid Lime-8) of citrus with PPV&FRA, Govt. of India. DUS

characters were recorded for all varieties along with control and validated by experts visited the field time to time. All varieties were characterized as per DUS characters finalised by PPV&FRA.

3.1.49 ICAR-DoGR, Pune

This is a Nodal centre for DUS testing in Onion and Garlic. During 2016-17, following progress was achieved:

DUS Testing	5 farmers' varieties: Nidwi Lakra, Kiran Oraon, Krishnadev, Ramu, Laal-21 were under testing	Monitoring was done on 18th Feb and 18th March, 2017
Maintenance Breeding	46 Rabi and 10 Kharif varieties of Onion	
	20 varieties of Garlic	

The centre submitted applications of Onion and Garlic seeking plant variety protection and details are as follows:

Crops	**No of var notified by the centre till date**	**No of var notified by the centre since 1999**	**No of applications filed**			**Certificates issued**
			ENV	**New**	**VCK**	
Onion	7	7	6	2	1	3
Garlic	1	1	1	-	1	1

3.1.50 Indian Institute of Soybean Research-ICAR, Indore

ICAR-Indian Institute of Soybean Research, is a Nodal Centre of DUS Testing for soybean, maintained 115 released and notified soybean varieties released from ICAR Institutes and State Agricultural Universities. Centre tested three new varieties Eagle 61, Eagle 71 and Eagle 81 from private agency and three farmers' varieties (Arjun, Pandrinath and Bekang Fansing) during *kharif* 2016.

Soybean is highly photo and thermo sensitive crop. The climate during kharif-2016 was favourable at Indore and characters were expressed properly. In addition to the states of characters of soybean published in the guidelines there is ample scope to increase states of DUS characters in seed hilum colour, leaf shape and pod pubescence. Leaf shape is classified into 3 states, viz., pointed ovate, rounded ovate and lanceolate but in some varieties leaf shape is not exactly lanceolate and such varieties can be grouped in "Triangular leaf shape" which is also recognized in UPOV. The pod pubescence can be re-categorized into three – Pod Pubescence: present, Pod Pubescence: Low intensity (Pubescence) and Pod Pubescence: Absent. In case of seed hilum colour, there are four states. Intensity of brown colour in hilum varies into light brown and dark brown colour. Therefore, Seed hilum colour: Brown can be reclassified as Light Brown and Dark brown.

Details of DUS testing in 2016-17:

Crops	New		VCK	FV	Total
	1st yr	2nd yr			
Soybean	3		-	3	6

Maintenance Breeding: A total of 115 soybean varieties are under maintenance breeding during 2016–17.

Details of varieties applied for plant variety registration:

Crops	No. of Var notified by the center Since 1966	No. of Var notified by the center Since 1999	No. of applications filed under Extant Notified category	Certificates issued
Soybean	5	2	2	2

3.1.51 Directorate of Medicinal and Aromatic Plants Research, Anand

Directorate of Medicinal and Aromatic Plants Research, Anand is implementing a project "Development of DUS Guidelines and Strengthening of DUS Test Centres for Laboratory and Field Facilities, Digitalization and Training in Medicinal, Aromatic and Seed Spices". Brief progress on the maintenance of reference varieties of Kalmegh (*Plantago ovata*) are given below: The guidelines for Kalmegh DUS testing were notified by the authority and published in Plant variety Journal (Vol. 10, No. 01) in January 15, 2016. The major characteristics finalized were leaf colour (light green, green or dark green), leaf lamina shape (lanceolate, elliptical, ovate/ ovate lanceolate/ elliptical); leaf lamina length (short, long), leaf lamina breadth (narrow, medium, broad); stem shoot apex(tender leaf grouped at apex, tender leaf not grouped at apex), leaf lamina (inwardly closed or outwardly curved); leaf lamina surface (smooth, wrinkled); stem branching pattern (erect, spreading); anthesis pattern (early, medium and late); spikelet type (flower buds closely arranged or distantly arranged); plant main axis growth habit (erect or prostrate); stem internode length (short, long); plant canopy shape (columnar, bushy/globular, pyramidal); plant

Plate 2

height (short, medium, tall); leaf andrographolide content (low, medium, high). Accordingly following example varieties were identified:

Example varieties	Characteristics
DMAPR AP 1	Leaf: lamina shape: Ovate /Ovate- elliptical / Ovate – lanceolate; Leaf: Lamina: Breadth: Broad; Leaf : Lamina: Length: Long; Stem :Shoot apex Tender leaves not grouped at apex (rosette)
DMAPR AP 2	Leaf: Lamina: Breadth: Medium; Stem :Shoot apex Tender leaves not grouped at apex (rosette); Leaf lamina: Surface: Wrinkled; Plant: Height :Medium (50-70 cm)
DMAPR AP3	Leaf: Lamina: Colour: Dark green :(RHS colour chart Green Group- 137N A, B); Leaf: lamina shape: lanceolate; Leaf: Lamina: Breadth :Narrow (Breadth <1.5 cm); Plant: Main Axis Growth habit: Prostrate
DMAPR AP 4	Plant canopy: Shape : Bushy/Globular
DMAPR AP 6	Leaf: lamina shape: lanceolate; Leaf : Lamina: Length: short Leaf: Lamina: Breadth Narrow (Breadth <1.5 cm); Anthesis Pattern: Medium (Anthesis initiation 70-100 Days after transplanting); Inflorescence (Panicle): Rachis type (Arrangement of flower buds on rachis) Flower buds closely arranged (Dense rachis); Stem internode: Length Short (Internode length <3 cm)
DMAPR 10	Plant canopy: Shape : Pyramidal
DMAPR AP15	Leaf: Lamina curvature: Inwardly curved (incurved)
DMAPR AP16	Leaf: Lamina curvature : Outwardly curved (reflexed)
DMAPR AP 19	Leaf: Colour : Light green (RHS colour chart Yellow Green Group- 146 A, B); Leaf: lamina shape: Ovate /Ovate- elliptical / Ovate – lanceolate; Stem :Shoot apex : Tender leaves grouped at apex (rosette); Stem: Branching pattern : Erect; Plant: Main Axis Growth habit : Erect; Plant canopy: Shape : Columnar; Plant height: Medium (50- 70 cm); Leaf: Andrographolide ($C_{20}H_{30}O_{5)}$ content % on dry weight basis :High
DMAPR AP 21	Plant: Main Axis Growth habit : Prostrate
DMAPR AP 22	Stem: Branching pattern : Spreading; Stem internode: Length: Long
DMAPR AP 24	Leaf: lamina shape: Ovate /Ovate- elliptical / Ovate – lanceolate; Leaf: Lamina: Breadth: Broad (>2.5 cm)
DMAPR AP 27	Leaf : Lamina: Length: Short ; Leaf: Lamina: Breadth: medium;
DMAPR AP 37	Leaf: Lamina surface: Smooth; Anthesis Pattern : Early [Anthesis initiation <70Days after transplanting] Inflorescence (Panicle): Rachis type (Arrangement of flower buds on rachis) Flower buds distantly arranged (Long rachis)
DMAPR AP 45	Leaf: Andrographolide ($C_{20}H_{30}O_{5)}$ content % on dry weight basis: Low

DMAPR AP 46	Plant canopy: Shape : Pyramidal
DMAPR AP 48	Leaf: lamina shape: elliptical
DMAPR AP 51	Plant: Height: Tall (> 70 cm)
DMAPR AP 56	Plant: Height: Short (<50 cm)
DMAPR AP57	Plant canopy: Shape : Pyramidal
DMAPR AP 61	Leaf: Lamina: Colour: Green (RHS colour chart Green Group- 137 A, B); Plant canopy: Bushy/Globular; Anthesis Pattern : Late (Anthesis initiation > 100 Days after transplanting)
DMAPR AP 68	Leaf: lamina shape: lanceolate; Leaf: Andrographolide ($C_{20}H_{30}O_{5)}$ content % on dry weight basis : Medium
AK 1	Plant: Height : Tall (> 70 cm)

Maintenance of reference varieties of Isabgol (*Plantago ovata)*

In December 2016, eleven reference varieties of Isabgol (*Plantago ovata) i.e.* DMAPR PO1, DMAPR PO2, DMAPR PO3, DMAPR PO4, DMAPR PO5, DMAPR PO6, DMAPR PO7, DMAPR PO8, DMAPR PO9, DMAPR PO10 and DMAPR PO11 of Isabgol were sown for maintenance.

3.2 Field Gene Banks

While many of the crop species mentioned previously are maintioned by DUS centres from orthodox seeds for some species are perennial in nature and are manitioned through vegetative reproduction Authority established National Gene Bank under the guidance of NBPGR, it also established Field Gene Bank(s) at four different agro-giographical regions, e.g., Ranchi, Mashobra, Dapoli and Jodhpur. Brief progress of these centres is as follows:

3.2.1 Regional Horticultural Research and Training Station of Dr Y.S. Parmar University of Horticulture and Forestry at Mashobra, Shimla (HP).

The centre has established a Field Gene Bank for Temperate Fruits at RHRTS, Mashobra near Shimla.

Brief objectives are as follows:

- Maintenance of variety collection and maintenance breeding blocks of temperate fruits-apple, pear and sweet cherry.
- Morphological characterization of varieties from the DUS point of view.
- Collection of prominent farmers' varieties.

Varieties being maintained at the station are as follows:

Crop	Number of variety in maintenance breeding blocks	Number of variety in variety collection blocks
Apple	266	114
Pear	77	31
Cherry	46	21

The centre has added the following varieties during FY 2016-17 as per the following

Maintenance breeding block

Crop	Name of variety	Source
Apple	Winesap Virginia	RHR&TS, Mashobra
	Stark Spur Golden	RHR&TS, Mashobra
	Race CR	RHR&TS, Mashobra
	New Fan	RHR&TS, Mashobra
	Fuji	RHR&TS, Mashobra
	Dorset Golden	YSPUH&F, Nauni
Pear	Packham's Triumph	Pvt Orchard, Rohru
	Beurre Bosc	Pvt Orchard, Rohru

Variety Collection Block

Crop	Name of variety	Source
Apple	Red Velox	Vita Fruit, Italy
	Redlum Gala	Vita Fruit, Italy
	Challanger	YSPUH&F, Nauni, Solan
	Valley Spur	YSPUH&F, Nauni, Solan
	Fullford gala	YSPUH&F, Nauni, Soplan
	Ace Spur	YSPUH&F, Nauni, Solan
Pear	Stark Winter Bartlett	Pvt Orchard Kotkhai, Shimla
	Packham's Triumph	Pvt Orchard, , Rohru,Shimla
		THRS, Kotkhai, Shimla
		Pvt Orchard, Sheelghat, Shimla
	Conference	Pvt Orchard, Kotkhai, Shimla
		Pvt Orchard, Sheelghat, Shimla
		GBPUA & T, Hill Campus, Ranichauri
	Concord	GBPUA & T, Hill Campus, Ranichauri
		Pvt Orchard, Kotkhai, Shimla
		Pvt Orchard, Kotkhai, Shimla
	Red Sensation	RHRS, Bajaura, Kullu
	Abate Fetel	Pvt Orchard, Kotkhai , Shimla
		SKAUST, Srinagar
	Beurre Bosc	Pvt Orchard, , Rohru, Shimla
	Carmen	SKAUST, Srinagar
	Canal Red	Pvt Orchard, Kotkhai , Shimla

Characterisation of apple, pear and Cherry for vegetative and fruiting characters:

Progress of Work in 2016–17

- In maintenance breeding block of apple six varieties of apple– Winesap Virginia, Stark Spur Golden, Race CR, New Fan, Fuji, Dorset Golden were added from different two sources and in pear two varieties–Packham's Triumph and Beurre Bosc were added from private orchard.
- In variety collection block, six varieties of apple were added– Red Velox and Redlum Gala were added from Vita Fruit Nursery, Italy; and Challanger, Valley Spur, Fullford Gala and Ace Spur were added from YSPUH&F, Nauni, Solan. In reference block of pear nine varieties–Stark Winter Bartlett, Packham's Triumph, Conference, Concord, Red Sensation, Abate Fetel, Beurre Bosc, Carmen and Canal Red were added from seven different sources.
- Apple: During the year, data was recorded for vegetative parameters (one year old shoot: thickness, one year old shoot: intermodal length, one year old shoot: no. of lenticels, one year old shoot: Colour on sunny side and one year old shoot: Pubescence on shoot) in the reference block of apple whereas, data for fruit characters viz; fruit weight, fruit size (length and diameter), length/ diameter ratio, shape, ribbing, length of sepal, crowning at calyx end, bloom of skin, greasiness, ground colour, relative area of over colour, intensity of over colour, hue of over colour, pattern of over colour, area of russet around stalk attachment, area of russet on check, area of russet around eye basin, number of lenticels, length of stalk, thickness of stalk, depth of stalk, width of stalk cavity, size of eye, depth of eye cavity, colour of flesh and aperture of locules was carried out from the samples collected from the germplasm block of the station.

  Apple flower colour at balloon stage:

Northern Sinap: Yellowish Pink Ruby John: Light Pink Shreen: White

- During the year (2016) data was recorded for vegetative parameters (one year old shoot: thickness, one year old shoot: internodal length, one year old shoot: no. of lenticels, one year old shoot: Colour on sunny side and one year old shoot: Pubescence on shoot, leaf blade: length, leaf blade: width, leaf blade; ratio length/width).

- Pear: Data was recorded for vegetative parameter (Tree: vigour, Tree: branching Tree: habit, One year old shoot; growth, One year old shoot: Length of internodes) and in cherry data was

recorded for Tree: vigour, Tree: habit, Tree: branching, One year old shoot: length and one year old shoot: thickness.

3.2.2 BAU, Ranchi

It is implementing a Field Gene Bank project "Maintenance of live repository for fruit trees and medicinal plant varieties under *in situ* collection for eastern india ecosystem". Forty-three mango varieties are being maintained in field gene bank.

Under citrus, acid lime, Mosambi and Nagpur mandarin have been collected from NRC, Nagpur and Khasi Mandarin from ICAR – Barapani Shillong.

Name of accession(Citrus)	Source of collection
Khasi Mandarin	ICAR- NEH, Barapani, Shillong
Nagpur Mandarin	ICAR – CCRI Nagpur
Sweet orange	
Acid lime	
Acid lime	
Nagpur Mandarin	
Nagpur mausambi	
Kagzi Kalan	BAU Ranchi

In mango, following accessions/varieties were collected:

Name of mango variety	Origin	Source of collection (scion)		
		ICAR	BAU	Others
Amrapali	IARI, New Delhi	Karnal	ZRS Chianki, Deptt. of Hort., KVK Dhanbad	-
Mallika	IARI, New Delhi	Karnal	ZRS Chianki, Deptt. of Hort., KVK Dhanbad	-
Langra	Varanasi, UP	-	Deptt. of Hort., KVK Dhanbad	BAC Sabour
Dashehari	Lucknow, UP	-	ZRS Chianki, KVK Dhanbad	-
Himsagar	BCKV, W. Bengal	-	ZRS Chianki	BAC Sabour
Fazali	Sabour, Bihar, W. Bengal	-	ZRS Chianki Deptt. of Hort.	-
Sunder Langra	Sabour, Bihar	-	ZRS Chianki	BAC Sabour
Prabhashankar	Sabour, Bihar	-	Deptt. of Hort. ZRS Chianki	-
Mahmood Bahar	Sabour, Bihar	-	ZRS Chianki	-
Alfazali	Sabour, Bihar	HARP Plandu	-	-
Chausa	RRS, Saharanpur UP	-	ZRS Chianki	BAC Sabour

Zardalu	Murshidabad, W. Bengal	-	Deptt. of Hort.	BAC Sabour
Kishanbhog	Sabour, Bhagalpur, Bihar	-	-	BAC Sabour
Mithua	Sabour, Bhagalpur, Bihar	-	-	BAC Sabour
Sepiya	Sabour, Bhagalpur, Bihar	-	ZRS Chianki Deptt. of Hort.	-
Sukul	Sabour, Bihar	HARP Plandu	-	-
Lucknow Safeda	CISH, Lucknow, UP	HARP Plandu	-	-
Banraj	Barodra, Gujarat	HARP Plandu	-	-
Gaurjit	Shohratvarh, Basti UP	HARP Plandu	-	-
Totapari	South India (AP)	HARP Plandu	-	BAC Sabour
Safed Malehabad	CISH, Lucknow, UP	HARP Plandu	-	-
Alphanso	Ratnagiri (Maharshtra)	-	ZRS Chianki, Deptt. of Hort.	-
Royal Special	IIHR, Bangalore		ZRS Chianki	
Jambhar			ZRS Chianki	
Rani Pasand			ZRS Chianki	
Langra Maldah			ZRS Chianki	
Arka Neelkiran			Deptt. of Hort.	
Sanwari			ZRS Chianki	
Ketki		HARP Plandu	Deptt. of Hort.	
Elaichi		HARP Plandu	-	-
Benjeer	Saharanpur, UP	HARP Plandu	-	-
Ratna		HARP Plandu	-	-
Rumani	South India	HARP Plandu	-	-
Taimuria	UP	HARP Plandu	-	-
Dudhiya Malda		-	ZRS Chianki	-
Dudhiya		-	-	BAC Sabour
Pusa Surya	IARI, New Delhi	IARI	-	-
Arka Nilkiran	IIHR, Bangalore	HARP Plandu	-	-
Pairi	Ratnagiri (Maharashtra)	HARP Plandu	-	-
Mumbai		HARP	ZRS Chianki	-

		Plandu		
Gulab Khas		-	Deptt. of Hort., ZRS Chianki	-
Kumar Pahar		-	ZRS Chianki	BAC Sabour
Chitranjan			Regional office (23.2.13) PPV&FR, Ranchi	

3.2.3 BBSKKV, Dapoli, Maharashtra

The University is managaing a project, viz.,' Collection, Maintenance, Evaluation and Development of Descriptors of Fruits, Plantation Crops and Tree Spices through live repository'

Mandated crop species: Mango, Citrus, Turmeric, Banana, Black pepper, Cardamom, Jackfruit and Nutmeg

3.2.3.1 Varieties under maintenance/Characterised

Crop	No. of varieties/ Ecotypes under maintenance	Crop	No. of varieties/ Ecotypes under maintenance
Mango	36	Banana	30+8
Turmeric	13 Ecotypes	Nutmeg	1 Variety (3 Plants)
	31 Varieties	Jackfruit	2 Variety (14 Plants)
Cardamom	5	Farmers' varieties	160
Citrus	4 Species	Black pepper	6
Kachai Lemon	1		



3.2.3.2 Collected and conserved the following material in Field Gene Bank

Name of species	No. of germplasm collected	Source
Mango	20 Varieties	RFRS Mango Research Station Vengurla, Department of Horticulture, Dapoli. CES Wakwali, Shri. Bhushan Padmakar Nabar, Math, Vengurle
Mango	280 Plants	CES, Wakawli

Banana	30 Varieties	NRC, Tamil Nadu
Citrus	3 Varieties	National Research Centre for citrus, Nagpur
Cardamom	9 Varieties	Cardamom Research Station Appangala and Indian Cardamom Research Institute, Myladumpara
Turmeric	38 Varieties	Dr. Ashok Chiwate, Agri. Research Station Digras Sangli, Indian institute of Spices Research Farm, Peruvannamuzhi, Shri Sanjay Jadhav, Badlapur, Maharashtra
Ginger	4 Varieties	Dr. Ashok Chiwate, Koregaon, Maharashtra, Agri. Research Station Digras Sangli, Shri. Shripad Digamane, Sangli, & Shri. Santosh Darekar, Borgaon, Satara.
Black Paper	15 Varieties	Paper Research Station Panniyur & Indian Institute of Spices Research Farm, Peruvannamuzhi

3.2.3.3 Received and conserved the following material in Field Gene Bank

Name of species	No. of germplasms received	Source
Banana	8 Varieties	Sri Vijayan, President, Chengalikodan Banana Growers Association Erumaprtty, Thrissur, Kerala
Kachai Lemon	10 Plants	Manipur Centre, Imphal
Jackfruit	2 Varieties	PPV & FR Authority, New Delhi.
Chilli	15 gm	Central Costal Agri. Research Institute, Goa
Turmeric	2 Varieties	Punjab Agri. University Ludhiana
Planting Material	160 Plants	IPR Cell, Kerala Agricultural University, Kerala
Yam	5 Varieties	Shaji. N. M. Arattuthara wayanad, Kerala

3.2.3.4 Nominated varieties for registration maintained in Field Gene Bank

Name of species	Nominated name	Source
Rice	Sarvat	Shri. Parshuram Ramji Lambe, Vadi Jaitapur, Khed, Ratnagiri
Rice	Tichin	Shri. Balkrishna Kanu Daul, Dapoli, Ratnagiri
Rice	Wada Kolam	Shri. Sanjeev Prabhakar Samel, Panvel, Raigad
Rice	Thombe	Shri. Dattaram Tukaram Yelamkar, Dapoli, Ratnagiri.
Coconut	Konkan Bhatye Coconut Hybrid-1	Regional Coconut Research Station, Bhatye, Ratnagiri

3.2.4 National Gene Bank, NBPGR Old Campus, New Delhi

The National Gene Bank of PPV&FR Authority was established at the old Campus of National Bureau of Plant Genetic Resources (NBPGR), Pusa, New Delhi. PPV&FR Authority is managing the rented facility for safe custody under Medium term storage. The working of medium term facility is being monitored by the technical experts of NBPGR. The temperature of medium term storage is maintained at ±4°C and the relative humidity has been adjusted to 35%. The relative humidity and

temperature of the medium-term storage (MTS) module and the DUS test repository are recorded everyday by the electrician and major problems, if any, are brought to the notice of technical personnel at NBPGR. Technical help was offered time to time to the Authority official for packaging, sealing and processing the variety samples for DUS test. True ("orthodox") seeds of registered varieties under the medium-term storage conditions and the seed samples for varieties undergoing DUS test/grow out test are being stored. The mandated activities are significantly different in comparison to any *ex-situ* germplasm bank such as storage under medium term, seed handling, re-packaging, dispatch for field-testing at DUS test centers required for plant variety protection, evaluation of seed quality parameters etc. and the legal necessities are to be followed. The seeds stored for registered varieties can also be utilized for resolving dispute settlement, compulsory licensing and other such issues as deemed fit under the requirements of the Act.

3.2.4.1 Medium Term Storage of seeds of registered varieties

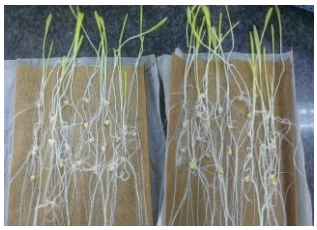
Seed samples of 2270 varieties notified under section 5 of the Seeds Act, 1966 are being kept in seed cabinets designed specifically for seed storage. These are being kept under controlled climatic conditions at 4^0C temperature with 30±5% relative humidity to ensure that their viability is maintained for longer duration. The seed samples of registered varieties are stored up to the period of protection and viability is checked at prescribed intervals as per crop specific standards and requirement. A total of 5855 seed samples of various categories of varieties were arranged shelf-wise and crop-wise in DUS test repository. Total gene bank holdings as on 31.3.2017 are as follows:

S. N.	Crops	DUS Test Repository (STS)					Medium Term Storage					GRAND TOTAL
		(Candidate varieties for DUS test kept at 22^0C)					(4 C)					(A+B)
		SEED RECEIVED A					CERTIFICATE ISSUED B					
		New	VCK +EDV	Farmer	Extant Notified	Total (A)	New	VCK +EDV	Farmer	Extant Notified	Total (B)	
1	Bread Wheat	20	1	42	15	78	21	5	10	113	149	227
2	Brinjal	114	119	61	4	298	1			10	11	309
3	Cabbage	17	1			18				1	1	19
4	Castor	5	3	2		10	2	1		4	7	17
5	Cauliflower	40	11	10		61				3	3	64
6	Chickpea		1	26	4	31	2		2	40	44	75
7	Cotton	382	244 160	1	10	797	61	65+1		79	206	1003

8	French Bean		1	3		4						4
9	Pea	3	2	20		25				27	27	52
10	Green Gram	5		22	1	28		1		30	31	59
11	Groundnut	3		12	1	16				33	33	49
12	Jute	7	1	4		12	6			11	17	29
13	Lentil			35	1	36				11	11	47
14	Linseed			23	2	25				5	5	30
15	Maize	240	35	82	7	364	91	44	6	74	215	579
16	Mustard	11	8	39	1	59	2	11	2	49	64	123
17	Okra	64	44	9	4	121	6	5		13	24	145
18	Onion	1	11	4	1	17				6	6	23
19	Pearl Millet	136	24	3	6	169	29	30		49	108	277
20	Pigeon Pea	16	2	52	1	71	5	2	3	20	30	101
21	Rapeseed			7		7			5	12	17	24
22	Rice	249	36	2072	26	2383	82	39	1028	159	1308	3691
23	Safflower	1	1	1	1	4				6	6	10
24	Sesame		1	23	2	26				5	5	31
25	*Small Cardamom								5	1	6	6
26	Sorghum	56	9	18	2	85	53	36	4	36	129	214
27	Soybean	4		4	5	13	1	1		27	29	42
28	Sunflower	63	8			71	28	16		9	53	124
29	Tomato	106	80	10	4	200		13		8	21	221
30	Urdbean	2	1	39	2	44			1	16	17	61
31	Ginger			4		4						4
32	*Sugarcane			3		3	4			38	42	45
33	*Potato			4		4	2	2		13	17	21
34	*Rose							1			1	1
35	Kidney Bean			11		11		2		8	10	21
36	Corriander	1		9		10						10
37	Garlic			9		9				5	5	14
38	Turmeric			2		2				2	2	4
39	Bitter Gourd	4	19	11	2	36						36
40	Pumpkin			18		18				2	2	20
41	Bottle Gourd	3	8	16	1	28				2	2	30
42	Cucumber	7	15	8		30				1	1	31

43	**Coconut**									**6**	**6**	**6**
44	**Barley**	**3**	**6**	**8**	**3**	**20**				**6**	**6**	**26**
45	**Fenugreek**			**5**		**5**						**5**
46	**Watermellon**	**4**	**6**			**10**						**10**
47	**Muskmelon**	**4**				**4**				**2**	**2**	**6**
48	**Finger Millet**	**2**		**4**	**4**	**10**				**2**	**2**	**12**
49	**Foxtail Millet**			**7**		**7**						**7**
50	**Chilli**	**64**	**93**	**8**	**11**	**176**				**2**	**2**	**178**
51	**Ridge Gourd**	**1**			**1**	**2**						**2**
52	**Vegetable Amaranth**				**1**	**1**						**1**
53	**Spinach Beet**				**1**	**1**						**1**
54	**Little Millet**				**1**	**1**						**1**
55	**Isabgol**			**1**		**1**						**1**
56	**Black Pepper**								**3**		**3**	**3**
	TOTAL	**1638**	**950**	**2752**	**125**	**5466**	**396**	**275**	**1069**	**946**	**2686**	**8152**

3.2.4.2 Registered Varieties monitored for germination and moisture content



Seeds samples of 219 registered varieties stored in the Genebank (MTS) of PPV&FRA were tested after 5 years of their storage for cereals and legumes and 3 years for oil seeds.

Crops	**No. of varieties monitored during the FY 2016-17**	**Germination Range**	**Moisture range**
Maize	41	22-100	9.1-14.1
Rice	39	68-100	5.0-12.4
Pearl Millet	19	10-76	7.1-9.6
Sorghum	17	0-98	8.8-13.4
Pigeon pea	15	68-94	6.7-12.0
lentil	1	100	7.8
Urd	2	56-64	7.8-8.3
Ground Nut	9	0-100	4.1-17
Sunflower	29	74-100	4.6-8.8
Indian Mustard	22	90-100	5.8-7.97
Gobhi sarson	1	94	7.97
Brown sarson	1	90	7.76
soyabean	4	80-92	10.2-12.3

castor	2	88-94	5.99-6.2
linseed	2	66-78	5.7-7.3
sesame	3	58-98	5.2-9.5
chickpea	5	98-100	8.5-10.1
Bread Wheat	2	98-100	9.56-11.7
Cotton tetraploid	5	0-92	8.5-12

3.2.4.3 Short Term storage of seeds of varieties under DUS testing

Conducting of DUS test(s) as oer the statutory provisions are as under:

- Two years and at two locations for varieties under new category:
- One year at two locations for varieties of common knowledge (VCK); and farmers' varieties;

The applicant is required to submit quantities of seeds as per crop specific standards along with registration and DUS test fee for new and VCK category. For farmers' varieties, the applicant is also required to submit the prescribed quantities of seeds and farmers are not required to pay any fee for DUS testing/grow out test.

Seed sample of new varieties (1638), VCK & EDVs (950), extant notified (125) farmers' varieties (2752) are being maintained under short term storage as on 31/3/2017. Representative seed samples are sent to DUS test centres and rest of the samples are kept for contingency. The seed packets are stored at 22^0C till the process of grant of registration is over. However, once a candidate variety is eligible for grant of registration certificate, applicants are advised to supply fresh seed samples for storage under medium term condition.

3.2.4.4 Seed Standards

Applicants are required to submit seeds sealed in triple layer aluminum foil pouch(s) of prescribed size with proper labeling as under:

- Denomination of candidate variety
- Application acknowledgement number as allotted by the plant varieties registry
- Category/(new/extant/VCK/farmers'etc)
- Year of harvest
- Seed quality parameter (moisture %, germination % and physical purity %)

The entire seed lot shall be equally divided in ten (for new varieties) or five(for farmers' varieties/VCK) or two(notified under the Seeds Act, 1966) seed packets/ pouched. Seed lots must adhere to the prescribed standards as per the crop specific DUS guidelines. An illustrative list for seed standards for some of the major crops are given hereunder:

S. No	Crop	Date of Notification	Seed Requirement Candidate /Parental line Hybrid (each) in gm unless otherwise mentioned		Germination %	Moisture %	Physical Purity %	Tentative Season – Months for seed submission for DUS testing	Prescribed size of seed packets (mm)
1	Rice (*Oryza sativa* L.)	11/1/2006	3000	1500	80	11-12%	98	*Kharif* –March-Apr	230x300
2	Bread Wheat (*Triticum aestivum* L.)		3000	1500	95	8-9%	98	*Rabi*-Aug	230x300
3	Maize (*Zea mays* L.)		3000	1500	80(inbred/SCH)90(var/DCH)	8-10%	98	*Kharif*-Mar-AprRabi- Aug	230x300
4	Sorghum (*Sorghum bicolor* (L.) Moench)		3000	1500	80(inbred/ SCH) 90(var/DCH)	10-12%	98	*Kharif*- March Rabi-Aug	230x300
5	Pearl Millet (*Pennisetum glaucum* (L.) R.Br.)		1000	500	80(inbred/ SCH) 90(var/DCH)	10-12%	98	*Kharif*-March	165x220
6	Chickpea (*Cicer arietinum* L.)		2000(desi) 3000(kabuli)	n.a.	80	8-9%	98	*Rabi*-Aug	230x300
7	Green Gram (*Vigna radiata* (L.) Wilczek)		1000	n.a.	80	8-9%	98	*Kharif* -March	230x300
8	Black Gram (*Vigna mungo* (L.) Hepper)		1000	n.a.	80	8-9%	98	*Kharif*-March	165x220
9	Field Pea (*Pisum sativum* L.)		2000	n.a.	80	8-9%	98	*Rabi*-Aug	230x300
10	Kidney Bean (*Phaseolus vulgaris* L.)		3000	n.a.	80	8-9%	98	June-July	230x300
11	Lentil (*Lens culinaris* Medik)		1000	n.a.	80	8-9%	98	*Rabi*-Aug	230x300
12	Pigonpea (*Cajanus cajan* (L.)		2000	1500	80	8-9%	98	*Kharif*-Mar	230x300

	Millsp.)								
13	Cotton (*Gossypium hirsutum* L.)	*12/31/2007*	2000	1000	75	10	98	*Kharif*- North- Feb Peninsular- South-May	230x300
14	Cotton (*G. barbadense* L.)		2000	1000	75	10	98	*Kharif*- North- Feb Peninsular- South-May	
15	Cotton (*G. arboreum* L.)		1500	750	75	10	98		
16	Cotton (*G. herbaceum* L.)		1500	750	75	10	98		
17	Jute (*Corchorus capsularis* L.)		1000	500	85	9	97	Pre-Kharif-early Jan	165x220
18	Jute (*Corchorus olitorius* L.)		1000	500	85	9	97	Pre-Kharif-early Jan	
19	Sugarcane (*Saccharum* L.)	7/27/2009	400 single bud sett	-					
20	Ginger (*Zingiber officinale* Rosc.)		5000 (5.0 kg (clean and wholesum rhizome of 25-30 g each of 150 pieces))	-					
21	Turmeric (*Curumma longa* L.)		6 kg (clean and whole sum fresh rhizome with 35-40% moisture content)	-		35-40			
22	Indian Mustard (*Brassica juncea* L. Czern & Coss)	4/30/2010	500	250					
23	Karan rai (Brassica carinata A Braun)		500	250					
24	Rapeseed-		500	250	85	8	98	Aug-Sept	165x100

	Mustard (*Brassica rapa* L.)								
25	Gobhi sarson (*Brassica napus* L.)		500	250					
26	Groundnut (*Arachis hypogaea* L.)		3000(Spanish & Valencia) 8000(kernel) for Virginia bunch and runner type	1500 4000	80	9	98	*Kharif*: May-June Rabi:Aug-Sep	300x450
27	Soybean (*Glycine max* (L.) Merrill)		3000	---	70	9	98	Apr-May	230x300
28	Sunflower (*Helianthus annuus* L.)		3000	2000	70	9	98	July-Aug	230x300
29	Safflower (*Carthamus tinctorius* L.)		3000	1500	80	9	98	June-July	230x300
30	Castor (*Ricinus communis* L.)		6000	2500	70	10	98	April-May	300x450
31	Sesamum (*Sesamum indicum* L.)		500	250	80	9	97	April -May	165x100
32	Linseed (*Linum usitatissimum* L.)		500	250	85	9	98	Jul-Aug	165x100
33	Black pepper (*Piper nigrum* L.)		40 Root Cutting	-					
34	Small cardamom (*Elettaria cardamomom* Maton)		50 Suckers	-					
35	Tomato (*Lycopersion lycopersicum* (L.) Karsten ex. Farw.)	12/2/2010	15(open field) 8 (Greenhouse)	same	85	8	98	April- May	165x100
36	Brinjal (*Solanum melongena* L.)		15(open)	15(open)	85	8	98	April- May	165x100

37	Okra (*Abelmoschus esculentus* (L.) Moench.)		200	-					
38	Cauliflower (*Brassica oleracea* L.var. botrytis)		15	15	*	*	*	April- May	165x100
39	Cabbage (*Brassica oleracea* L. var capitata)		15	15	*	*	*	April- May	165x100
40	Potato (*Solanum tuberosum* L.)		300 Fully matured tubers (Tuber size should be 3.5-5.0 cm)	-					
41	Onion (*Allium cepa* L.)		100 1200 bulblet (multiplier) 50 bulbs(MS lines)	50	70	*	*	As per respective sowing seasons	
42	Garlic (*Allium sativum* L.)		2000 viable clove	--	*	*	*	Aug-Sep	-
43	Rose (*Rosa spp.*(other than R.damascena))		9 grafted/budded plants	-					
44	Chrysanthemum (*Chrysanthemum spp.)*		100 two node terminal rooted cutting taken from mother plant	-					
45	Mango (*Mangifera indica* L.)		14 grafted plant	-					
46	Duram wheat (*Triticum durum* Desf.)	8/18/2011	3000	1500	95	8-9%	98		
47	Dicoccum wheat		3000	1500	95	8-9%	98		

	(*Triticum dicoccum* L.)								
48	Other *Triticum* sp		3000	1500	95	8-9%	98	Same as wheat	230x300
49	Isabgol (*Plantago ovata* Forsk)		250	-	95	8-9%	98		
50	Menthol mint (*Mentha arvensis* L.)		5 Kg clean and wholesome sukers (underground stolons) 10-15 cm long	-					
51	Damask Rose (*Rosa damascena* Mill)		100 Cutting	-					
52	Periwinkle (*Catharanthus roseus* L.)		10 gm	-					
53	Brahmi (*Bacopa monnieri* L.Pennell)		500 Cutting (clean and wholesome vegetative parts 10-15 cm long)	-	85%	8	98		
54	Coconut (*Cocos nucifera* L.)		30 number of one year old seedlings raised in polybag containing standard potting mixture	-					
55	Orchids (*Cymbidium Sw.*)	3/27/2012	20 plants (10 for each Centre) with at least two	-					

			pseudobulbs and one back-bulb. Age 3-4 years						
56	Orchids (*Dendrobium Sw.*)		20 plants (10 for each Centre) with at least two shoots. Age 2-3 years	-					
57	Orchids (*Vanda jones* ex R. Br.)		20 plants, Age 2-3 year	-					
58	Pomegranate (*Punica granatum* L)	4/15/2014	one year old 10 propagules raised thrugh air layered/plants rooted stem cutting (multiplied from the same tree) or tissue culture raised plants, etc. for each location.	-					
59	Orchid (*Cattleya Lindl.*)		20 plants two or three year old with at least two shoots	-					
60	Orchid (*Phalaenopsis Blume*)		20 flowering size plants	-					
61	Casurina (*Casurina*		50 rooted cutting (	-					

	equisetifolia L.)		at least three month old measuring minimum 20 cm from collar to apical tip with a well developed root system)						
62	Casurina (*Casurina junghuhniana* Miq.)			-					
63	Bitter gourd (*Momordica charantia* L.)		300 gm or 1500 no	-	80	8	98	April	230x300
64	Bottle gourd (*Lagenaria siceraria* (Mol.) Standl.)		250 gm or 1500 no	-	80	8	98	April	230x300
65	Cucumber (*Cucumis sativus* L.)		50 gm or 1500 no	-	80	8	98	April	230x300
66	Pumpkin (*Cucurbita moschata* Duch. ex Poir.)		200 gm or 1500 no	-	80	8	98	April	230x300
67	Barley (*Hordeum vulgare* L.)		1500	1000	95	8	98	Aug-Sep	230x300
68	Coriander (*Coriandrum sativum* L.)		250	-	80	8-9%	98	Aug-Sep	165x100
69	Fenugreek (*Trigonella foenum graecum* L.)		250	-	80	8-9%	98	Aug-Sep	165x100
70	Almond (*Prunus dulcis* (Mill.) D.A. Webb)		10 grafted or budded plants	-					
71	Apple (*Malus domestica* Borkh)		6 grafted or budded plants	-					
72	Pear (*Pyrus communis* L.)		6 grafted or	-					

			budded plants						
73	Apricot (*Prunus armeniaca* L.)		10 grafted or budded plants	-					
74	Cherry (*Prunus avium* L.)		10 grafted or budded plants	-					
75	Walnut (*Juglans regia* L.)		10 grafted or budded plants	-					
76	Grapes (*Vitis spp.*)		12 grafted plants(one yr old) for each location	-					
77	Indian jujube (Ber) (*Ziziphus mauritiana* Lamk.)		7 plants for each DUS centre(minimum age 3 months)	-					
78	Eucalyptus (*Eucalyptus camaldulensis* Dehnh.)		60 rooted plant (plant should be in 250 cc root trainer)having minimum age of 6 months	-					
79	Eucalyptus (*Eucalyptus tereticornis* Sm.)			-					
80	Tea (*Camellia sinensis*)	10/16/2014	75 Plants (15-18 inches height), young plant having pencil thick stem with their own root	-					
81	Tea (*C. assamica*)			-					
82	Tea (*C. assamica* ssp lasiocalyx.)			-					

83	Acid Lime (*Citrus aurantifolia* Swingle)		10 plants for each DUS centre. Age above six months	-					
84	Mandarin (*Citrus reticulata* Blanco)		10 plants for each DUS centre. Age above six months	-					
85	Sweet Orange (*Citrus sinensis* (L.) Osbeck)		10 plants for each DUS centre. Age above six months	-					
86	Bougainvillea (*Bougainville a Comm.* Ex Juss.)		10 Well rooted and establishe d plant	-					
87	Banana (*Musa spp*.)		40 Uniform tissue cultured plant in one submissio n per location	-					
88	Orchid (Oncidium sw.)		20 Plants 2-3 year old with at least two pseudobu lbs/shoot s	-					
89	Canna (*Canna* L.)	1/21/2015	20 young plants or 20 matured rhizomes	-					
90	Gladioulus (*Gladioulus* L.)		30 Corms (4 - 4.5 cm in diameter)	-					

91	Muskmelon (*Cucumis melo* L.)		100 gm seed for open field cultivation	-	80	8	98		
92	Watermelon (*Citrullus Lanatus* (Thunb.) Mansf.)		150 gm seed for open field cultivation	-	80	8	98		
93	Jasmine (*Jasminum auriculatum*. L.)		20 rooted plant	-					
94	Tuberose (*Polianthes tuberosa* L)		75 Bulbs of more than 2 cm (diameter at broadest point) weighing 25-30 gm	-					
95	Papaya (*Carica papaya* L.)	7/2/2015	20 gm for gynodioecious varieties & 40 gm for dioecious varieties in both season	-	60	7% for ambiant storage	98% for varieties & 90% for Hybrids		
96	China Aster (*Callistephus chinensis* (L.) Nees.)		2 gm each in two packets	-	60	6-9%	98		
97	Peach (*Prunus persica* L.Batsch.)		10 grafted or budded plants	-					
98	Japanese Plum (*Prunus salicina* L.)		11 grafted or budded plants	-					
99	Strawberry (*Fragaria x ananasan* Duch.)		120 runners or plant propugules or seedling plants	-					

			(tissue cultured plant hardned at 4-5 leaf Stage)						
100	Chilli, Bell Pepper and Paprika (*Capsicum annuum* L.)		15 gm for Open polinated crop & 10 gm for Hybrid and Parental line	-	85	8	98		
101	Finger Millet (*Eleusine coracana* (L.) Gaertn.)		250 gm & 10 Panicles	-					
102	Foxtail Millet (*Setaria italica* (L.) Beauv)		250 gm & 10 Panicles	-					
103	Vegetable Amaranth (Amaranthus tricolor L.)	4/19/2016	150 g (in one submissio n only)		80	<8%	98		
104	Ridge gourd (Luffa acutangula (L.) Roxb.)		250g or 1500 seeds (in one submissio n only)		80	<8%	98		
105	Spinach beet (Beta vulgaris var. bengalensis Roxb.)		250 g (in one submissio n only)		80	<8%	98		
106	Carnation (Dianthus caryophyllus L.)		150 rooted cuttings						
107	Orchid (Paphiopedil um Pfitz.)		10 plants for each centres						
108	Noni (Morinda citrifolia L.)	7/13/2016	10 grafted or budded plants for each location						

109	Bael (Aegle marmelos (L.) Correa)		5 Plants for each centres						
110	Jamun/Black plum (Syzygium cumini (L.) Skeels.)		07 grafts for each location						
111	Nutmeg (Myristica fragrans Houtt.)		10 grafted or budded plants for each location						
112	Jasmine/Mogra (Jasminum sambac L.)		20 rooted plants for each location						
113	Custard apple / Sugar apple (Annona squamosa L.)		8 grafts						
114	Kalmegh /King of Bitters (Andrographis paniculata (Burm.f.) Wall. ex Nees)		30 gm		95%	8-9%	98		
115	NEEM (Azadirachta indica A. Juss.)	12-May-17	40 clonally rooted plants with 60 cm height						
116	KARANJ (Pongamia pinnata (L.) Pierre.)		40 clonally rooted plants with 60 cm height						
117	INDIAN GOOSEBERRY (Emblica officinalis Gaertn.)		03-04 months old plants						

118	Betelvine (Piper betle L.)		Rooted cutting terminal shoots shall be 3 months old with 25 cm height						
119	Marigold (Tagetes spp. L)		10 gm seed or 200 Nos rooted cuttings		80%	Not more than 8%	98%		
120	Guava (Psidium guajava L.)		10 grafts/ air layers for each locations						
121	Litchi (Litchi chinensis Sonn.)		7 air layers for each location						
122	Deodar (Cedrus deodara) (Roxb.) G. Don		5 trees						
123	Chir pine (Pinus roxburghii) Sargent		5 trees						
124	Mulberry (Morus spp.)		50 stem cuttings						
125	Jasmine (Jasminum multiflorum L.)		20 numbers of 6 months old fully rooted plants						

126	Buckwheat (Fagopyrum esculentum)		500 gram		80%	not more than 10%	98%		
127	Buckwheat (Fagopyrum tataricum)		500 gram		80%	not more than 10%	98%		
128	Grain Amaranth (Amaranthus hypocondricus)		50 gram		80%	not more than 10%	98%		
129	Grain Amaranth (A. cruentus)		50 gram		80%	not more than 10%	98%		
130	Grain Amaranth (A caudatus)		50 gram		80%	not more than 10%	98%		
131	Grain Amaranth (A. edulis)		50 gram		80%	not more than 10%	98%		
132	Faba bean (Vicia faba L. var. major Harz)		150 gram		70%	not more than 9%	98%		
133	Elephant Foot Yam (Amorphophallus Paeoniffolius)		36 tubers 200-400g each						
134	Taro (Colocasia esculenta var. esculenta, Colocasia esculenta var. antiquorum, Colocasia esculenta var. stoloniferum)		36 tubers 30-40g each						
135	Taro (Cyrtosperma chamissonis/ C. merkusii)		36 tubers 30-40g each						
136	Jatropha (Jatropha curcas L.)		60 rooted plants with 60					June-July	

			cm height						
137	Barnyard millet (Echinocloa frumentacea e (Roxb.) Link)		250 grams seed with 10 panicles		80%	12%	97%		
138	Kodo millet (Paspalum scorbiculatu m L.)		500 grams seed with 10 panicles		80%	12%	97%		
139	Little millet (Panicum sumatrense Roth. Ex Roemer And Schultes)		150 grams seed with 10 panicles		80%	12%	97%		
140	Proso millet (Panicum miliaceum L.)		200 grams seed with 10 panicles		80%	12%	97%		

3.3 National Review Meeting of DUS Centers and Projects

11th National review meeting of DUS centres and projects were organized at IGKV, Raipur during Feb 28-March 01, 2017 which was attended by more than 100 participants with the gracious presence of Dr S K Patil, Hon'ble Vice Chancellor, IGKV, Raipur and other dignitaries including Dr M Premjit Singh, Vice Chancellor, CAU(Manipur), Dr AR Pathak, Vice Chancellor, JAU; Dr Brahma Singh, Fmr Director, DRDO(Life Sc), Director (R) and other senior officers from IGKV; Sh T Rabikumar, Secretary , NBA; Sh M Prabhakar Rao, CMD, Nuziveedu Seeds; Directors/Projects Coordinators of ICAR Institutes, Nodal Officers from DUS centres and representatives from private seed industry apart from Chairperson, Registrar General and other officers from the Authority. The technical programme consists of 8 sessions and brief progress is given hereunder:

Feb 28, 2017: Technical Session I: DUS Testing, Maintenance Breeding: Cereals

- **Lead Lecture: Dr R R Hanchinal, Chairperson**

  Discussed about the progress of PPV&FR Authority, issue of registration certificates vis a vis applications recd, shared that 114 species have been notified; opening of 3 new branches of PPVFRA as approved by Govt of India; expressed interest to improve seed storage facilities

at different locations and streamline the application process to fasten the period taken for registration to 2 years and 3-4 months.

- **Sh T Rabi Kumar,** NBA: Gave a detailed account of different provisions of BDA, 2002; interaction of CBD, ITPGRFA and BDA; Nagoya protocol and it's effect on ABS in India and abroad, functions of BDA; Issuing guidelines, granting of approval, oppose grant of patents given in other countries.
- **Dr Rakesh Seth,** IARI, Karnal: discussed about progress of DUS testing in Rice, different centres and testing of Basmati varieties. It is suggested to develop a manual of DUS testing; testing of temperate varieties in Rice to be taken up at centres of ICAR AICRP-High Altitude Zone
- **Dr Chikkappa K,** IIMR, New Delhi: discussed about Maize DUS testing and proposed new descriptors for anthocyanin/hairiness characters in leaves/auricle/stem etc: It is recommended that maintenance breeding need to be enforced so that variations are minimized; duly constituted committee for review of Guideline will examine the proposal
- **Dr Vijay Shelar,** MPKV: summarized DUS testing in Pearl Millet and Sorghum at IIMR/PC Unit-Jodhpur and MPKV, Rahuri
- **Dr Arun Gupta,** IIWBR: Discussed about progress of testing in Barley and Wheat; informed that variations in spike trait/maturity and species level are being observed in case of farmers' varieties; due to lack of key passport data, grouping traits, many a times testing became difficult, expressed serious concern that heterogeneity is observed even in new/VCK entries and shared the detail of an e-book where information on passport data/pictures are catalogued; centre has requested if funds are provided, that can be used for publication of e-book/catalogue; stressed the need for revision of DUS guideline in Wheat; also shared his experiences for the visit of Federal Plant Variety Office in Germany and desired that IIWBR may develop a Spike Depository
- **Sh M Prabhakar Rao,** CMD, Nuziveedu Seeds, stressed enforcement of PBR, requested to fast track issue of registration certificate and on-line filing, resolve EDV issues and issue certificates after completion of pre-grant opposition, sharing of passport data after completion of DUS testing, complete passport data and details of parents to be published for hybrids in PVJ and requested Authority to study EU parliament discussion of plant patent and PVP issues

Discussion: Dr A R Pathak, VC, JAU and Chairman of the session, stressed the need to generate awareness among stakeholders especially about Biodiversity Act, 2002. It was suggested that for proper expression of Rice varieties received from J&K, testing can be done in ICAR AICRP-High Altitude Zone; increased co-operation between NBA and PPV&FRA. In case of FVs, where passport data is not available, centres may characterize the varieties in the first season and undertake DUS testing in the following season.

Technical Session II: DUS Testing, Maintenance Breeding: Pulses and Oil Seeds

- **Dr N Mukta,** IIOR: Discussed about progress in Sunflower , raises issues in descriptors for A/B lines, proposed certain new traits/amendments in guidelines, issues of seed shattering in Sunflower; informed that most of the FVs are perennial castor varieties and requested if the plot size can be reduced to accommodate more entries
- **Dr Sanjeev Gupta,** MULLaRP: discuss about testing of FVs in pulses and proposed that since most of the species are self pollinated, centres can purify and test for DUS in 2nd year
- **Dr Ganesh Koutu,** JNKVV: discussed about the distinction between field pea and garden pea and stressed that different reference varieties need to be taken up
- **Dr Priyamedha,** DRMR: gave a detailed account of DUS testing in Rapeseed-Mustard varieties; informed that in case of farmers' varieties, mixtures are being found on the species level and also for different seed/maturity and siliqua characters within each var

Discussion: Dr Dalamu, CPRI raised an issue of testing of FVs in Potato as it is an introduced crop species in India and Chairperson suggested that to promote registration of farmers' varieties, centres may not simply reject the varieties even the crop species being an introduced one. Since there is a serious problem of admixtures (inter and intra species level variations observed in FVs in Rapeseed-Mustard), Farmers'cell may take up the issues with the KVKs/Institutes who are forwarding the applications

Technical Session III: DUS Testing: Horticultural Crops: Vegetables

- **Dr T H Singh,** IIHR: discussed about the suggested modifications/amendments to be proposed for Tomato/Brinjal/Okra

- **Dr Anil Khar,** IARI: discussed about progress of testing in Onion/Garlic, proposed to prepare a directory/ pictorial catalogue of landraces and suggested that Leek/*A. tuberosum(*from NE states*)* may be taken up for future
- **Dr Amish Sureja,** IARI: suggested that editorial corrections are needed in Cabbage/Cauliflower guidelines; traits like male sterility can be taken up
- **Dr T K Behera,** IARI: Discuss details about DUS testing in Okra, Brinjal and Tomato; informed about mixtures, segregating population, germination issues in FVs.

Discussion: Incase of candidate varieties in Cabbage/Cauliflower, issues with grouping traits: maturity groups were discussed and requested that monitoring may be done separately for early/med/late groups.

It was recommended that in case of FVs, centres first characterize, purify the landraces and next year, conduct the DUS testing. Dr Nazeer Ahmed, Chairman of the session, suggested that while revising guidelines, centres need to take into consideration about the speciality varieties (e.g., anthocynain rich Cauliflower) being introduced in India. In case of cucurbits, it is suggested that certain SAUs may be identified for testing of FVs in discussion with the Nodal/Co-Nodal centres.

Technical Session IV: DUS Testing: Horticultural Crops: Spices, Ornamentals, Medicinal and Aromatic Plants

- **Dr Tejwasini,** IIHR: Raised the issue of fixing deadlines for submission of planting material and passport information to IIHR; present guideline caters for garden roses and reference varieties need to be included for GH grown roses, suggested sharing of database that will aid search of reference varieties .
- **Dr J K George,** IISR: shared about on-site testing of FVs in Spices; some of these varieties outperformed varieties identified by public sector
- **Dr S S Sindhu,** IARI: shared details about the 3 varieties under testing in Bougainvillea
- **Dr S Sarkar,** CIMAP: Discussed about testing in mentha, varietal maintenance and development of new varieties

Discussion: Chairperson advised that use the exotic varieties under testing/certificate as reference varieties for green house roses.

Day 2: March 01, 2017

Session V: DUS Testing in Fruit Crops, On Site Testing, FGB

- NRC Banana informed that due to sudden administrative engagement and meeting, they are unable to participate. Chairperson has advised to revisit the grants allocated to NRC Banana
- **Dr Vijay Dalvi**, BBSKKV, discussed about the progress of Field gene bank at Dapoli; documentation about the collection of landraces/FVs of awardees
- **Dr Suryanarayana,** IIHR: discussed about betelvine germplasm variety collection under maintenance at IIHR and BCKV, modalities for on-site testing, medicinal importance. It was suggested that centres shall mentor communities to file for commercially important landraces. Dr S Rajan has informed that robust system of distinction need to be made for landraces and most of the released varieties selected from landraces
- **Dr Javid Mir,** CITH: discussed about varietal collection and maintenance of pome/stone and nut fruits, strawberry; stressed the need for image analysis equipment and software
- **Dr Neena Chauhan**, YSPHUF: discussed about FGB at Mashobra
- **Dr Hare Krishna**, CIAH: gave a detailed and pictorial diagram of on-site testing, age of materials and how to conduct On-site testing for Ber. He informed that he has received a communication from Registry to record descriptors of a FV in Mango. He requested that unless suitable training-exposure is not given to fellows, it will be difficult for someone working in Ber to record descriptors in Mango
- **Sh Dipal Roy Choudhury**, PPV&FRA: discussed about salient progress by the Authority, testing issues, maintenance breeding and use of common reference varieties; database up-gradation, possibility of testing in Breeders' plot, engage with lawyers/IP professionals, SWOT analysis of DUS system and proposed that QA and ISO certification may be obtained for centres and also suggested that Asian PVP platform may be floated and India can take a lead.

Discussion: Mandate of Field gene banks for maintenance of registered varieties, collection of FVs and documentation of descriptors were discussed. Dr S Rajan, CISH, advised that a meeting of core group of scientists working in vegetatively/asexually propagated crops to discuss about modalities of On-site testing.

Session VI: EDV Testing, Guideline Review, Stake Holders Consultation

- **Dr Santhy,** CICR proposed new descriptors for Cotton; fibre density characters to be dealt through HVI system, informed that variations/mixtures were observed in IVs compared with EDVs: It was suggested that crop specific genetic distance and threshold limits to work out
- **Dr Hariprassanna,** IIMR discussed about proposed changes in Sorghum guideline. Dr Arvind Kapoor has suggested to keep provisions for forage sorghum
- **Dr B S Raj Purohit,** PC Unit: Discussed about proposed changes in Pearl millet DUS guideline. It was suggested that finalized DUS guideline may be submitted within 1 month to the Authority. Dr R C Agrawal, PPV&FRA advised to look into the notes given to bristle colour characters and request that centres must adhere to the principles for assignment of notes
- **Dr L Chinchole,** BAYER Crop Sc: discussed about use of different forms of molecular markers for varietal identification and suggested a molecular marker assessment platform for varietal registration. It was suggested that a core group of Experts need to be constituted to work in this issue
- **Dr Arvind Kapur,** Hy Veg: discussed about strategies for IP management, how India can draw benefit by integrating with international platform, Authority can harness benefits from Asian PVP platform. He stressed the need to clarify the provisions of farmers' rights before the international community
- **Dr. Kuldeep Singh,** NBPGR: He shared the mandate of NBPGR, the indigenous crop diversity documentation, conservation and utilization; the genetic diversity of crops and livestock in India; >85,000 rice accessions; association with Svalbard; an elaborate gene bank for India; germplasm introduction and exchange to the CG centers. He also gave an exhaustive account of collection, characterization of germplasm held under MTS; discussed about different germplasm/wild type collections of Rice, Wheat, Maize, Chickpea, identification of useful trait, utilization of such traits in pre-breeding work in crop based institutes, SAUs, mapping of climate resilient germplasm for modelling studies, network of useful species, DNA fingerprinting of 6440 cultivars for development of genomic resources in indigeneous crops, development of low cost, long term conservation under perma-frost conditions in collaboration with DRDO, characterization of NE rice collection etc.

Discussion: Dr Kuldeep Singh, Director, NBPGR & Chairman of the session suggested forming committees to discuss about the possibilities of including high-precision experiments both morphological and molecular to evaluate large number of varieties. He also highlighted that public and private sectors should work together constructively to improve the society.

Session: VII: Documentation and Registration of FV offer a unique opportunity to landscape the PBR , Utilisation and benefit sharing

- **Dr B C Patra**, NRRI, highlighted about the rice FVs that are being tested for DUS since 2011. He shared issues related to mixtures, denomination etc.
- **Dr M Prabhakar**, PC (Small Millet): He shared the details about characterization of 6-7 small millet FVs; proposed that TNAU Athiyandal can be a co-nodal center. It was also proposed to explore whether ARS, Jagdalpur can also be identified for co-nodal center of other small millet species.
- **Dr Deepak Sharma**, IGKV discussed the FVs of Chattisgarh. He displayed the wide range of FVs, the identification of varieties of various crops, medicinal properties, unique properties, micronutrient content. The university has channelized formation of various farmer communities and support to conserve the wide range of landraces of cereals, pulses, vegetables and fruits.
- **Dr Ravi Prakash**, PPV&FRA can use nodal center strength for training cum awareness program, testing of FVs and identify resource farmers who can contribute to the conservation and maintenance of native germplasm. He shared the story of Dr Archana Mukherjee, CTCRI (RS), mentored and identifed a tribal community in Karnataka conserving tuber crops and to apply for PGSC awards. Projects related to identification, characterization, evaluation of FVs are gaining visibility and securing funding in the past few years. He highlighted that number of FV applications registered and certificates issued have increased significantly in the past few years.

  Discussion: Chairperson has complemented Dr Ravi Prakash for sincere efforts and requested all participants, in their own way, to mentor farmers/communities to file for applications, PGSC Awards, documentation etc.

Session VIII: Review of Physical and Financial progress of DUS centres and projects & Plenary Session

- Sh J P Singh, PPV&FRA, briefly discussed about financial progress, requirement of AUC/SOE from the centres, outstanding advances and requested that centres may send AUCs at the earliest to settle accounts
- Dr R R Hanchinal, Chairperson has conveyed sincere appreciation to organisers at IGKV, Raipur for arrangements, hospitality and wish that the proceedings and deliberations may be useful to the participants.

  The Review programme was ended with a vote of thanks to all the participants, stakeholders, IGKV staff(s), Chairman(s) of respective sessions.

CHAPTER 4: DEVELOPMENT OF DUS TEST GUIDELINES AND ESTABLISHMENT OF GERMPLASM BANKS

4. DEVELOPMENT OF DUS TEST GUIDELINES

4.1 Task Force on Development of DUS Test Guidelines

The Authority has established a numbers of Task Force committees to finalize the DUS testing guidelines to enlarge the registration basket of the Authority. The crops covered are Small Millets, conifers, Mulberry, Jatropha, Cassava, Sweet potato, Cashew & Arecanut.

Numbers of Task Force Meeting were held during the period of under report for finalization for DUS Test Guidelines which are detailed as under

- Meeting of the Task Force for Small Millets for finalize DUS guidelines at PPV&FRA Office on dated 6th May, 2016
- Task force meeting for conifers to finalize DUS test guidelines at PPV&FR Authority office on dated 3rd June, 2016
- Task Force meeting "Validation of DUS guidelines for Mulberry" at Central Sericultural Research and Training Institute, Mysore on 14th June, 2016
- Task Force Meeting was held to evaluate and finalize DUS Test Guidelines of Jatropha duirng 14th to 15th September, 2016
- Task Force Meeting was held to evaluate and finalize DUS Test Guidelines of Cassava & Sweet potato on 16th September, 2016
- Meeting of the Task Force for Cashew & Arecanut for finalize DUS guidelines at Puttur, Karnataka on dated 18th March, 2017

4.2 Project Appraisal Committee

The PAC meeting was held on 25th January, 2017 to review the projects received from various institutions by PPV&FR Authority for grant of financial assistance under the chairmanship of Dr. J. S. Chauhan, ADG (Seeds), ICAR, Krishi Bhawan, New Delhi. Dr. M.B.Chetti, ADG (HRD), Education Division, Pusa, New Delhi, Dr. Dinesh Kumar, Pr. Scientist (FFC), ICAR, Krishi Bhawan, New Delhi & Dr. I. U. Dhruj, Associate Director of Research, JAU, Junagadh, Gujarat. 14 new projects were approved. Since all the projects were given based on the importance of crops and research strength of institutes in the crop specific activities the committee recommended for post facto approval of the following projects:

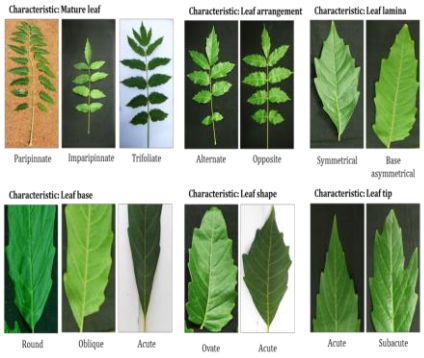
S. No.	Project Title	Name of ICAR /SAUs/ Institutions/ Universities	Duration & Sanctioned budget (in lakhs)
1.	DUS characterization using diverse germplasm, released varieties and land races of Roselle or Mesta (*Hibiscus sabdariffa L.)*	Dr. S. A. Desai Prof. (Gen. & Plant Breeding) Department of G&PB College of Agriculture, UAS, Dharwad- 580005 Co-PI- Dr. S.K. Deshpande Co-Nodal Centre CRIJAF, Barrackpore	2 Years 18.00 2Years 18.00
2.	Validation of DUS Testing Guidelines for Cucurbits i.e. Chow-chow, Ash gourd, Snack gourd and Ivy gourd"	Dr. S. P. Kanaujia, PI, Associate Professor, Department of Horticulture, SASRD, Nagaland University, Medziphema-797106,	2 Years 18.00
3.	Development of Distinctiveness, Uniformity and Stability (DUS) Guidelines for FCV (Flue Cured Virginia) and Bidi Tobacco	Dr. K. Sarala, PI, Division of Crop Improvement, ICAR-Central Tobacco Research Institute, Rajahmundry	2 Years 18.00
4.	Co-Nodal Center Formulation and Validation of DUS testing guidelines for lemon (*Citurs limeon* (L.) Burm) and pummel (*Citrus grandis*)	Dr. N. A. Deshmukh Scientist (Fruit Science) Division of Horticulture ICAR Research Complex for NEH Region, Umiam,- 793013, Meghalaya Co-PI-Dr. H. Rymbai	3 Years 27.00
5.	Nodal Center DUS characterization using diverse germplasm, released varieties and land races of Cowpea for grains (*Vigna unguiculata (L.) Waop.*)	Dr. S.K. Deshpande Prof.(Gen. & Plant Breeding) Department of G&PB College of Agriculture, UAS, Dharwad- 580005 Co- Nodal Centre IIPR, Kanpur, Uttar Pradesh	2 Years 18.00 2 Years 18.00
6.	Co-Nodal Center Development of DUS guidelines for Jackfruit	ICAR Research Complex for NEH Region, Umiam,- 793013, Meghalaya	2 Years 18.00
7.	Establishment of community seed bank and conservation of farmer's varieties of rabi sorghum, wheat and redgram in Northern region of Karnataka	Dr. N. K. Biradarpatil, Dean (Agri), College of Agriculture, Vijayapur	2 Years 10.00
8.	Mainstreaming Farmers Varieties through participatory seed production &	Dr. J. S. Hilli Professor, Dept. Of SS&T & Head, Diploma College, UAS, Dharwad,	2 Years 10.00

	establishment of community seed banks	Kranataka	
9.	Survey, Collection, characterization and registration of Pulses, Vegetables and Cereals of farmers' varieties from Konkan region of Maharashtr	Dr. P.M. Haldankar PI and Head, Dept of Horticlture, Dapoli. Dr. Balasaheb sawant konkan krishi vidyapeeth, Dapoli, 515712, Dist-Ratnagiri, (M.S.)	2 Years 18.00
10.	Identification collection, Documentation and Registration of Maize, Millets, Pulses and Vegetables of Farmers Varieties (Under PPV& FR Act,2001) of Vindhyan Region of Eastern Uttar Pradesh	Prof. (Dr.) Shailesh Marker, SHIATS, Allahabad-211007, Uttar Pradesh	2 Years 18.00
11.	Collection, Characterization and Utilization and Registration of Farmers varieties of Maize Land Races from Kashmir Valley	Dr. Z. A. Dar, Associate Professor, DARS, P. Box 905, GPO, Srinagar, Kashmir 190001	2 Years 18.00
12.	Collection, documentation and registration of Farmer's varieties cereals, Pulses and Vegetables and their protection under PPV & FRA-2001	Dr. Chandan Roy, Asstt. Professor-cum-junior Scientist, Department of Plant Breeding and genetics, Bihar Agricultural University, Sabour, Bhagalpur	3 Years 18.00
13.	Development of DUS guidelines and Establishment of DUS centre for Coffee	Central Coffee Research Institute, Coffee Research Station, Chikmagalur, Karnataka	1 Year 9.00
14.	To Collection, Characterization, Evaluation, Maintenance and Registration of Minor Seed Spices grown in Farmer's Field	Dr. V. P. Pandey, Department of Vegetable Science, NDUA&T, Kumarganj, Faizabad, UP	1 Year 9.00

4.3 On-going Projects

4.3.1 ICFRE-FGTB, Coimbatore

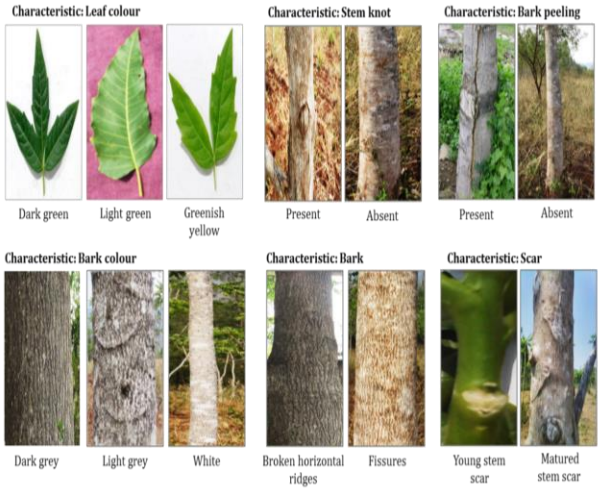
The centre is implementing a project on "Development of descriptors and DUS testing guidelines for *Ailanthus excelsa* Roxb and to establish germplasm bank"



Objectives:

- To study the tree morphological characters of different populations/ clones for identification of distinct and unique characters in Ailanthus
- To identify the stable characters across different locations/ years in *Ailanthus excelsa*
- To establish germplasm bank for *Ailanthus excelsa* with different population/ clones as reference collection
- To establish germplasm bank for *Ailanthus excelsa*

Progress in 2016-17:



- Natural population of *Ailanthus excelsa* in eastern, western, southern and northern zones of Tamil Nadu was surveyed and variability in morphological characters of leaf, bark, fruits and seeds were studied in randomly selected trees. IFGTB's *Ailanthus excelsa* germplasm assemblage at Chennai and in Kurumbappatti, Salem, Field Research Stations were also characterized for finalizing the DUS characters.
- Trees in both vegetative and reproductive stage were characterized. Morphological variations in leaf, bark and seed were recorded.
- Samples of leaves and seeds were collected from each of the selected trees in these plantations. Leaf morphological characters were analyzed using Leica Quantimet 500+ Image analyzer.
- *Ailanthus excelsa* clones are assembled at Forest campus, IFGTB for further studies.

4.3.2 Division of Horticulture, ICAR Research Complex for NEH Region, Meghalaya

Formulation and validation of DUS testing guidelines for lemon (*Citrus limon* L. Burm.) and Pummelo (*Citrus grandis*) is being under implementation at ICAR NEH centre.

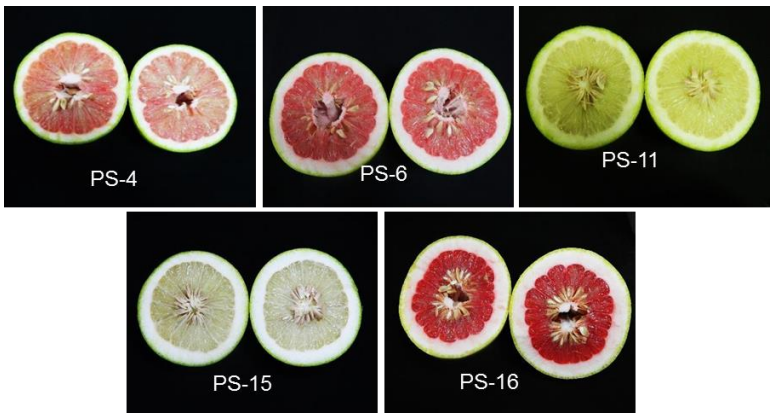
Details of the project:

- Different qualitative and quantitative descriptors defined by UPOV, biodiversity international (IPGRI) and NBPGR were consulted for the preparation of list of observations to be recorded for this study.

- Data were recorded on 20 qualitative and 20 quantitative traits of 12 pummelo and 3 lemon genotypes. Different institutes and citrus growing areas such as IIHR, CISH, PAU Ludhiana, some areas of Haryana, UP, Madhya Pradesh and Uttrakhand etc. were surveyed and some germplasms of lemon such as Gwalior seedless, Pant lemon, Hill lemon, and Eureka have been collected. Block of some reference varieties of lemon and pummelo has been established.

Progress in 2016-17:

The observations on growth habit, foliage habit, leaf length, width, leaf shape, shape of leaf base, shape of leaf margin, shape of leaf apex, petiole wing, and shape of petiole wing were recorded in both species. Fruit quality traits such as fruit weight, size, juice content, number of seeds, peel thickness, juice recovery, juice colour, and number of segments was also recorded in 12 pummelo and 3 lemon genotypes.



- **Pummelo:** Plants of PS-6, PS-8, and PS-9 showed higher leaf length, while highest leaf width was measured in PS-12. Leaf length and width ratio was highest in PS-8 (1.96), however, it was lowest in PS-12. Most of the accession had ovate leaf shape but some accession had elliptic leaf shape. However, most of the accessions had obtuse leaf base shape except PS-4, PS-10 and PS-3 which showed round leaf base. All pummelo genotypes had petiolar wing with different shapes of petiole including cordiform (PS-4, PS-6, PS-10, PS-11, PS-12, PS-13), deltoid (PS-8, PS-9, PS-15, PS-16) and obovate (PD-17).

- **Lemon:** Hill lemon had highest leaf length (12.45 cm), leaf width (6.14 cm), leaf length width ratio and leaf area (50.02 cm^2), while lowest values of these traits were found in KagziKalan**.** Kagzi Kalan had spreading growth habit, while drooping and upright growth habit was noticed in Konkan Seedless and Hill lemon, respectively. KagziKalan and Hill lemon were thornless while, Konkan Seedless behaved *vice versa*. Leaf apex varied from acute to obtuse in

all lemon genotypes studied. Hollow fruit axis was noticed in Hill lemon, while solid fruit axis was found in other two lemon cultivars. Neck on fruit was present only in KagziKalan lemon.

4.3.3 UAS, Dharwad

Development of DUS test guidelines for horsegram, mothbean, clusterbean and lathyrus is being carried out at UAS, Dharwad.

Objectives:

- Identification of agro-morphological characters for DUS testing on important minor legumes *viz*., horsegram, mothbean, clusterbean and minor oilseed crop niger
- Identification of reference/example varieties/lines for different characters to be standardized as per DUS testing guidelines of horsegram, mothbean, cluster bean and niger
- Development of procedure for grouping the varieties on the basis of different parameters

Progress:

The characterization of varieties/ genotypes for conducting of DUS test on horsegram, mothbean, cluster bean and lathyrus was based on descriptors list available under UPOV/ Biodiversity International/NBPGR. The material was shared between UAS, Dharwad – Nodal center and CAZRI, Jodhpur-Co-Nodal center.

Descriptor: Plant habit

Erect | Semi-erect | Spreading

- **Horsegram:** 35 characters at different growth stages were used for development of DUS guidelines with 48 genotypes.
- **Cluster bean and moth bean:** 28 and 30 characters at different growth stages were made analyzed for developing DUS characters in 34 and 42 genotypes, respectively.
- **Lathyrus:** 6 genotypes were made use of for 17 characters.

4.3.4 ICFRE-IFGTB, Coimbatore

IFGTB is implementing a project on "Development of descriptors and DUS testing guidelines for indigenous forest tree species (*Tectona grandis* and *Melia dubia*) and establishment of Field Gene Bank"

Objectives:

- To study the morphological characters of different populations/ clones for identification of distinct and unique characters in populations/ clones of teak and Melia in different agro-climatic zones for developing morphological descriptors for both Teak and Melia
- To identify the stable characters across different locations/ years in teak and Melia.
- To establish germplasm bank for teak and Melia with different population/ clones as reference collection.

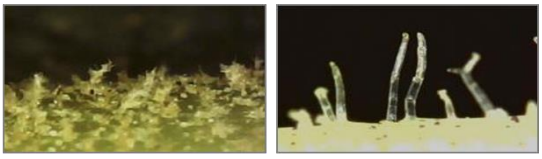
Progress:

Teak: Observations on various tree characters were recorded in the Seed Production Area (SPA) at Sankarankode and Permanent Preservation Plot (PPP) at Conolly, Nilambur which is one of the few of the oldest planted teak plots and the Clonal Seed Orchard of teak at Top Slip, Tamil Nadu and Walayar, Kerala. Observations were made in teak plantation of Chengampally Sempatty, Sathiyamangalam, Karaikal, Tanjore, Anaikkatti, Krishnakiri, Pallagoundanpalayam, Karur, Peramanallur Kanuvai, Chinnathadagam, Mettupalayam, Thudiyalur, Pannimadai, Periyathadagam and Anaikatti in Tamil Nadu; Cherupuzha, Nellikutha, and Parambikulam in Kerala. Study on the natural and plantations of teak showed that the variability within a plantation was found to be low with respect to all the leaf, bark flower and fruit characters but variability was observed in the natural populations. The tree stem form, leaf, branching habits and reproductive characters were found to be discriminating characters. A draft guideline for conducting DUS testing has been developed including tree stem form, leaf, branching habits and reproductive characters.

Descriptor: Branching habit

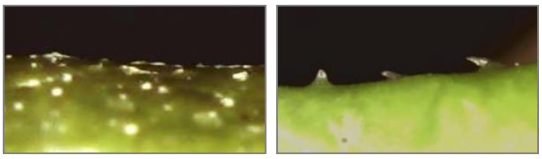
Erect Semi-erect

Descriptor: Adult leaf mid-rib hair



Absent Present

Descriptor: Adult leaf adaxial side Trichome



Absent Present

Descriptor: Inflorescence shape

Rounded Conical

- **Melia:** Studies were conducted in Panampally, Karur, Nellore, Tirupathi, Thithimathi, Hoskote, Annur and Chennai. Variation in morphological characters in leaf, stem, bark and reproductive structures were studied. Studies were also conducted in clonal trials for quantifying the uniformity and stability of the selected morphological traits. Variation in morphological characters in leaf, stem, bark and reproductive structures were studied. Studies were also conducted in clonal trials for quantifying the uniformity and stability of the selected morphological traits. A draft guideline for conducting DUS testing has been developed including tree stem form, leaf, bark, branching habits and reproductive characters.

4.3.5 ICAR-CTCRI, Trivandrum

Development of DUS test guidelines and establishment of varietal gene bank for Yam bean (*Pachyrhizus erosus*) and Greater yam (*Dioscorea alata*) is being done at CTCRI.

Objectives:

- Development of DUS test guidelines for Yam bean (*Pachyrhizus erosus*) and Greater yam (*Dioscorea alata*)
- Establishment of varietal gene bank

Progress in2016-17:

8 varieties of Greater yam and 14 varieties of Yam bean were maintained and characterized for the development of DUS guidelines

- **Greater Yam:** 31 pre-harvest morphological characters and 10 post-harvest characters were recorded. Individual and group distinct characters such as plant type, twinning direction, young and emerging leaf colour and petiole colour of young leaf were observed to be common in all the varieties of Greater yam while some of the characters showed distinctness individually and also among the groups such as cortex colour, skin colour and tuber shape. The individual distinct characters are given as follows:

- Group distinct character noted in DA-25, Sree Roopa and Hathikhoji with purple cortex colour. (Figs.2, 3 & 4); DA-25 and TGY-3 showed distinctness in texture of flesh as granular.
- Sree Roopa observed to be the sole variety with stem colour green with light purple; DA-293 showed distinctness of green stem colour; Sree Keerthi and Sree Roopa recorded light green petiole colour; leaf base was found to be overlapping only in variety DA-25 & TGY-8; cortex colour in Sree Keerthi was yellow; cream colored cortex was found in Orissa Elite (Fig.1); tuber skin colour showed distinctness with dark brown skin colour in Orissa Elite; TGY-3 was found to have distinctness with white purple flesh colour; Hathikhoji was the only variety with smooth and digitate tuber shape.

- **Yam bean:** For differentiating various released and released varieties in Yam bean, 16 pre-harvest morphological characters and 18 post-harvest characters were recorded. After analyzing the data, distinct variation in tuber, seed, pod and floral characteristics were observed.
  - Among all pre- and post-harvest characters, few characters showed group distinctiveness. The group distinct characters identified were for mature stem colour; leaf colour; flower colour of sepals; number of seeds per pod.
  - Yam bean varieties like 8x9, L3, RM-1 and RM-2 showed distinct variation in tuber and floral characteristics; 8x9 showed round shape tuber while fusiform shape was reported in RM2; neck shape found to be small in 8x9 and L3; pod dehiscence showed distinctness in TYB-4 as dispersed type; seed length /width ratio was found to be greater in TYB-10; seed length/thickness ratio was found to be greater in RM-2; greater tuber length recorded in TYB-1, etc.


RM2 RM1

  - Relative analysis between RM-2 and RM-1 for distinct morphological characters revealed leaf length/width ratio and number of branches to be greater in RM1; RM2 contained more number of seeds per pod, taller plant height, thicker skin, deep rooted tuberization and greater tuber length; colour of tuber of RM1 was light yellow and that of RM2 was yellowish brown.

4.3.6 ICAR- IARI, New Delhi

Development of DUS test guidelines for for two important venegatble crops, e.g., Radish and Carrot are being under taken at Divn of Vegetable Sc, IARI, New Delhi

Brief Progress:

- **Radish:** 19 reference varieties of radish (Pusa Mridula, RRWT, White Icicle, Chinese Pink, Pusa Chetki, Arka Nishant, Kashi Sweta, Kashi Hans, Punjab Pasand, Punjab Safed, Hisar Sweti, Palam Hriday, Pusa Desi, Pusa Reshmi, Pusa Shweta, Japanese White, Pusa Himani, Pusa Gulabi, Pusa Jamuni) were sown in a replicated trial with 3 replications and 45 cm row to row and 10 cm plant to plant distance, on 24 October 2016. The number of plants per variety per replication was 100. Data for 25 DUS characteristics were recorded in these varieties. Characteristics were noted based on measurement by a single observation of a group of plants or parts of plants; measurement of a number on individual plant or part of plants; visual assessment by a single observation of a group of plants or parts of plants and visual assessment by observations of individual plant or part of plants. The seedling, leaf, root and flower traits were noted. Data on 25 DUS recorded are being compiled and tabulated.
- **Carrot:** 13 reference varieties and 2 hybrids of carrot (PC–34, Pusa Kesar, Pusa Meghali, Pusa Rudhira, Pusa Vrishti, Hisar Gairic, Punjab Black Beauty, Punjab Carrot Red, Pusa Asita, Pusa Kulfi, Pusa Yamdagni, Nantes, Solan Rachna, Pusa Vasuda, Pusa Nayanjyoti) were sown in a replicated trial with 3 replications and 45 cm row to row and 10 cm plant to plant distance, on 24 October 2016. The number of plants per variety per replication was 150. Data for 29 DUS characteristics were recorded in these varieties and hybrids. Characteristics were noted based on measurement by a single observation of a group of plants or parts of plants; measurement of a number on individual plant or part of plants; visual assessment by a single observation of a group of plants or parts of plants and visual assessment by observations of individual plant or part of plants. The seedling, leaf, root and flower traits were noted. Data recorded are being compiled and tabulated.

4.3.7 ICAR-NRCSS, Ajmer

This centre is engaged in "Development of DUS test guidelines for Minor Seed Spices (Ajwain, Dill, Nigella, Celery and Anise)".

Details of the project:

In this project, 6 varieties of ajwain, 4 varieties of dill, 5 varieties of nigella, 3 varieties of celery and 2 varieties of anise are included. All these minor seed spice crops were sown at farm of ICAR-NRCSS, Ajmer (Raj.) in Randomised Block Design (RBD) with three replications on 21 November, 2016. After germination: seedling colour at 25 DAS was recorded in all crops whereas seedling crown pigmentation at 25 DAS in celery only. During vegetative growth, leaflet related characters

like spacing of lobs, shape of tips of margin, density of margin incisions and size of terminal leaflet; leaf blade related characters like length and density between 1st and 2nd pair of leaflet; petiole: length and width; stem related characters like pigmentation and waxiness were recorded on randomly selected ten plants. After this, number of primary and secondary branches per plant, umbel and siliqua related characters were also recorded. Varieties of different crops were harvested on different dates according to maturity of the above-mentioned crops. Threshing was done carefully and separately. Seed related observations like test weight, seed colour, seed shape etc. have been recorded in laboratory. Data recorded are being compiled and tabulated.

4.3.8 Central Coffee Research Institute, Karnataka

CCRI is working on "Development of DUS guidelines and Establishment of DUS centre for Coffee (*Coffea arabica* and *Coffea canephora)".*

Brief progress of the project in 2016-17:

- Two different species of coffee viz., *Coffea arabica* and *Coffea canephora* popularly known as Arabica and Robusta coffees, respectively are commercially cultivated in India and elsewhere in the world. The varietal improvement programmes of Coffee in India have been mainly focused on breeding for leaf rust resistance, productivity and quality in Arabica coffee and for productivity and quality in Robusta coffee. Accordingly, 13 elite Arabica selections and 3 Robusta selections have been developed for commercial cultivation.

Descriptor: Young leaf tip colour

- Descriptors for all the 16 coffee selections released by Central Coffee Research Institute were prepared earlier as per the format released by IPGRI (*Bioversity International*). Although the variation for various characters among the selections is limited, some distinctive characters have been identified. During the period of report, validation of the data generated with respect to leaf and floral features has been undertaken in two different locations. In all, data has been validated on eight leaf characters and 11 floral characters taking into account the DUS guidelines developed by UPOV, for coffee.

Descriptor: Corolla tube length

- Of the several characters, variation among the station bred selections has been observed for two leaf characters (leaf shape and young leaf colour) and two floral characters (Peduncle length and corolla length) (Fig.1 and Fig.2) at both locations. Based on the data generated, preliminary grouping of the varieties has been made.
- Further, validation of vegetative characters is in progress. Seedling nursery of station bred selections has been raised and secondary nursery has been maintained for establishing the reference block at the Institute during forthcoming planting season, August 2017.

4.3.9 BSKKV, Dapoli, Maharashtra

Development of Descriptors for Kokum (*Garcinia indica* Choisy) is being implemented at BSKKV, Ratnagiri, Dapoli.

Details of the project:

- A total 165 germplasm were characterized to identify DUS descriptors that would be essential for the preparation of the DUS guidelines.
- Tree vigour; height of tree; crown shape; branching habit; attachment of leaf; leaf characters (leaf blade length, leaf blade width, leaf blade shape, prominency of veins, leaf margin, shape of leaf apex, shape of leaf base); flower (sex types, position of flower, form of flower, petal colour, sepal colour, structure of flower); fruit (length, diameter, shape, colour, size, and taste and thicknes of rind); seed (size of seed and number of seeds per fruit); number of turfts

Shape of leaf: Oblong, Elliptic, Oblanceolate

Shape of apex: Acute, Shortly acuminate, obtuse

4.3.10 ICAR-Directorate of Cashew Research, Karnataka

DCR, Puttur is implementing a project on "Development of morphological descriptors and DUS test guidelines for Cashew (*Anacardium. occidentale* L.)"

Details of the project:

- 42 varieties have been maintained in the National Cashew Field Gene Bank.
- Numbering of 1000 trees in cashew field gene bank has been accomplished.
- Image database of different plant parts of 156 germplasm accessions has been collated.
- Decision Support System for cashew germplasm management has been developed.
- CNSL content of cashew germplasm accessions has been accomplished for 110 accessions

- The general procedure for DUS testing in cashew is developed. This document contains both off-site and on-site testing procedures along with 6 grouping characters and 25 evaluation characters. Data recorded are being compiled and tabulated.

4.3.11 ICAR-Central Plantation Crops Research Institute, Vittal, Karnataka

Development of DUS testing criteria and establishment of National Gene Bank for Arecanut (*Areca catechu* L.) is a project at CPCRI Regional Station.

Details of the project:

- A total of 11 morphological, 4 reproductive and 14 nut traits and 2 special characteristics were identified for areca nut. During the project, recording of distinct traits were done at nodal and collaborating centres. 50 seedlings each of 16 distinct varieties for 3 DUS traits and 8 adult palms each of 35 distinct varieties for 20 DUS traits have been assessed at nodal as well as collaborating centres.

- Actions have been initiated for establishing National field gene bank of genotypes/ varieties at the nodal centre.

4.3.12 ICAR-CIAH, Bikaner

Development of DUS Test guidelines in Date Palm is a project at ICAR-CIAH under implementation.

Details of the project:

- A total of 42 date palm varieties were maintained in field repository and evaluated for morphological and fruiting characters.
- Three new germplasm i.e. M1NI, MRK/S and MHN.B introduced from ICARDA, Oman and Jordan, respectively were planted in the field for evaluation. Three offshoots of Sri Ganganagar local was collected from DRS, Bikaner and kept in nursery for rooting. Exotic cultivars Siwi and Amhat introduced from Egypt were started flowering/ fruiting after 6 years of planting.
- Fruiting was low in varieties Amhat and Siwi due to young stage of plants. Both varieties are of yellow berry colour with early to mid season maturity. The observations on spathe emergence/opening and flowering were recorded in 27 varieties during the year 2016-17, since other varieties are under vegetative phase; fruiting, bunch, fruit quality and stone characters were recorded in these 27 varieties.

- The spathe emergence was started from first week of February and completed at the end of February. Delay in emergence of spathe was noted in germplsams during the year due to low temperature conditions. The spathe emergence/opening and fruiting were recorded in 27 genotypes out of 42 germplasms. Early emergence of spathe/flowering and even doka stage fruit maturity was observed in Nagal during the year. Similarly, number of strands/bunch ranged from 7-40; number of berries/strand varied from 8 to 26. The maximum number of berries (26 per strand) was recorded in cv. Zahidi followed by Khalas (20) and Khuneizi (17) while minimum was in Kotho variety (8). The bigger size and fruit weight (18.8g) was observed in Medjool followed by Dayari, Sewi, Hayani (10.23g to 12.92g) and minimum fruit weight (4.01g) was in Umshok. Variation in stone weight, size and groove was observed. The weight of stone varied from 0.63- 1.70 g (Table-1). The early maturity of fruits (doka) was observed in cv. Nagal Muscat, Siwi and Halawy and harvested from mid June, 2016 to end of June. The maturity of fruits (doka stage) recorded in maximum cultivars in the second week of July. However, cvs. Medjool, Dayari and Sewi were harvested late in first week of August, 2016. Due to maximum bunch stalk in Sewi, cracking in bunches was observed. Maximum fruit yield at doka stage was observed in cv. Sewi (60.0 kg/tree) and Halawy, Zahidi. Khalas (50 kg) followed by Khadrawy, Chip chap and Medjool (45.0kg), and However, minimum fruit yield (3.0kg/ plant) was observed in cv. kotho because of young plants. Total soluble solids (TSS) of doka fruits varied from 27.08 to 48.50 brix among germplasm.
- The data collected on fruit and seed characters are being compiled for the preparation of draft DUS test guidelines.

4.3.13ICAR-CISH, Lucknow, Uttar Pradesh

- **Characterization of aonla (*Embilica officinalis* Gaertn.) varieties for developing DUS test guidelines:** 10 cultivars i.e, Banarsi , Chakaiya , Francis , NA-7, NA-10, NA-6, Krishna , Kanchan , Anand-1, Anand-2 and BSR-1 are commercially cultivated in different parts of India. These verities are being characterized on the basis of morphological and biochemical parameters.
- **Validation of DUS descriptors for bael (*Aegle marmelos* Correa.):** About twelve varieties (CISHB-1, CISHB-2, NB-5, NB-7, NB-9, NB-16, NB-17, Pant Aparna, Pant Sujata, Pant Shivani) are commercially cultivated in different parts of the country and these are characterized for different morphological and bio-chemical parameters.
- **Development of morphological descriptors and DUS test guidelines for Jamun (*Syzygium cuminii* Skeels) and establishment of field gene bank:** A total of 40 accessions/varieties

were collected and established in the field gene bank of Jamun. During reporting period, 10 accessions/varieties were characterized.

- Growth habit: 2 accessions found having semi-spreading nature and 8 accessions were recorded with spreading growth habit.
- Tree foliage: All 10 accessions having dense foliage type.
- Leaf apex: All 10 accessions/varieties were found acuminate type leaf apex.

- Leaf base: Acute types in 9 accessions and one accession presented rounded leaf base.
- Mature fruit shape: The considerable differences in the fruit shape were recorded among different accessions /varieties. According to shape of fruit different accessions/ varieties were grouped in to the 3 group. The shape of fruit was observed oblong in 5 accessions, ovoid in 2 accessions and round fruit shape in 3 accessions.
- Mature fruit apex: The observation on the fruit apex was recorded inflattened and depressed among different accessions/varieties and 8 accessions have inflattened fruit apex while, 2 accessions have depressed fruit apex.
- Tree characteristics: There were significant variations recoded for tree height among fifteen different identified accessions/ varieties. The tree height was estimated in the range of 7.60 to 10.25 m and the maximum plant height was recorded in CISH J - 579 (10.25 m) followed by CISH J – 35 (9.73 m) however, it was recorded minimum in CISH J – 577 (7.40 m). A wide variation tree canopy was also recorded for selected accessions/ varieties. The tree canopy in E-W and N-S direction was recorded in the range of (5.67 m to 10.70 m) and (7.44 m to 9.88 m) respectively. The plant girth was recorded in the range of (0.74 to 1.15 m) for different accessions / varieties. The maximum plant girth was recorded in accession CISH J – 579 (1.15 m) followed by CISH J – 25 (1.08 m) while the minimum plant girth was recorded in CISH J-577 (0.74 m).

4.3.14 NRCSS, Ajmer

DUS centre is working on *Development of DUS test guidelines for Fennel and Cumin* and maintenance of Coriander and Fenugreek varieties

Details of the project:

- Fennel and Cumin: For developing the DUS test guidelines for fennel and cumin, 19 varieties of fennel and 9 varieties of cumin were sown in RBD with three replications at both research

stations. Data on young plant: length of cotyledons leaf (cm), young plant: length of petiole of first leaf (cm), fully bloom leaf foilage density, king umbel base leaf, foilage attitude, foliage density, foliage colour intensity, leaf shape, leaf density of feathering, stem girth (mm), second internode leaf thickness (mm), king umbel petiol length (cm), second internode sheath length, leaf length and width, plant height, umbel/plant, umbellates/umbel, seed/umbellate were recorded during crop growth in fennel. In cumin, Young plant: length of cotyledons leaf (cm), foliage attitude, foliage density, branches at base, stem girth, first to fourth internode length (cm), King umbel petiole length (cm), plant height, umbel/plant, umbellates/umbel, seed/umbellate, foliage intensity colour and test weight were recorded at different stages.

- Coriander and Fenugreek: These species are already notified. For the maintenance of coriander and fenugreek seed, 25 varieties of coriander and 21 varieties of fenugreek were sown in RBD with three replications at ICAR-NRCSS, Ajmer (Rajasthan). In coriander, four candidate varieties were also sown in RBD with three replications on 17 October, 2016 at both locations one is ICAR-NRCSS, Ajmer and another is DMAPR, Anand, Gujarat. These candidate varieties are Dhaniya Parbana, Deshi Dhane, Deshi Dhaniya Chhoti, and Deshi. During growth period, number of basal leaves, length of the longest basal leaf, presence or absence of involucer, growth habit, umbellate/umbel and seed/umbellate were recorded. After last harvesting on 27 February, 2017, all candidate varieties were threshed separately and carefully. Seed shape and test weight at 7-8% moisture content were also recorded in laboratory.

4.3.15 Department of Plant Biotechnology, UAS, GKVK, Bengaluru

Development of Distinctness Uniformity and Stability (DUS) guidelines for Jackfruit and registration of farmers' varieties in India are being implemented at UAS, GKVK

The centre collected following varieties:

Documentation of farmers varieties have been carried out in the current Jackfruit season. Several genotypes were identified along with the picture of the farmers in the respective areas. These varieties will be registered once the DUS guidelines are formulated for Jackfruit.

Name of varieties	Source of planting material
Swarna	UAS, Bengaluru
Byrachandra	Byrapatna Hort. Farm
Lalbaugh Madhura	Lalbaugh Botanical Gardens, Bengaluru

Ashoka Red and Yellow, Kachahalli, Karnataka	Farmers field, Kachahalli, Doddaballpaur, Bengaluru Rural

Central Agricultural Research Institute, A&N Islands

The center is implementing a project on Development and Standardization of DUS characteristics procedures for Noni (*Morinda citrifolia* L.)

The objectives are:

- DUS test procedure for different cultivars/ species of Noni will be used as check for registration of any cultivars and varieties in India.
- The information on biochemical parameters will further sensitize the public for Noni and helps in its commercial utilization.
- Scientific backup to Noni growers in Islands.
- This information also helps to select desired genotype for further genetic improvement programme.

Target milestone (October 2016 – March 2017)

Milestone	Progress
• Intercultural operations carried out to the Noni plantation	Silvicultural practices viz., pruning, earthing up and mulching with organic residues were carried out in the 2 ha. noni plantation
• Study the effect of Mistletoe (*Dendrophthoe curvata* Blume Miq.) on Growth and yield of Noni. • Effect of Shade on Growth and yield of Noni	The effect of Mistletoe on growth and yield of noni were studied Effect of shade on growth and yield of noni were recorded
• Preparation of DUS characterization for noni variety to register in the PPA & FRA	DUS characterization of four noni varieties prepared for the registration in PPV & FRA
• Nursery preparation seedling transplating	Four varieties of noni (CARI Sampada, CARI Rakshak, CARI Samridhi and CARI Sanjivini) seedlings were transplanted in to the poly bags from nursery mother bed.

Research achievement (October, 2016 - March, 2017)

- Noni plantations at two farms were maintained scientifically by providing timely intercultural operations.
- The effect of Mistletoe on growth and yield of noni were studied
- Effect of shade on growth and yield of noni were recorded
- DUS characterization of four noni varieties prepared for register the variety in to the PPV & FRA

- The four varieties of Noni *viz.,* CARI Sampada, CARI Rakshak, CARI Samridhi and CARI Sanjivini seedlings were produced each 1000 number seedlings and transplanted to the poly bags.

Effect of Mistletoe (*Dendrophthoe curvata* Blume Miq.) on Growth and yield of Noni

The results indicated a significant impact of mistletoe on the growth and yield parameters of noni viz., tree height (m), number of branches and DBH (cm) growth (table 1). Among the 6500 individual plants of *Morinda citrifoila* observed on five blocks [ICAR-CIARI Garacharma farm (Block-1, Block-2), ICAR-CIARI Sippighat Horticulture farm (Block-3, Block-4) and APDC plantation, Mithakhari (Block-5)] of different localities, 11.3% of trees (735 trees) were infested by *Dendrophthoe curvata.* The infection intensity of infected plant was significant as compared to the healthy plants. Among the blocks the highest level of growth reduction due to the parasite infection was observed in block 3 (tree height and number of branches) and maximum DBH reduction was observed in Block 1 when compared to healthy plants. The average mean fruit yield of the infected plants was 14.4 kg plant^{-1} and the healthy plant mean yield was 20.12 kg plant^{-1}. It clearly showed that the infected tree fruit yield was reduced up to 38 % compared to the healthy plants. Effective control of the mistletoe and constantly monitoring its infestation is, therefore, very essential in order to save noni plantations.

4.3.16 Division of Vegetables, IARI, New Delhi

The institute is the co-nodal centre for DUS testing in Cabbage and Cauliflower. Brief details of maintenance breeding:

Cauliflower: Out of 12 entries supplied (4 new, 1 VCK, 7 FV), seeds of three FV's did not germinate in spite of sowing twice. Nine entries were tested for DUS characteristics.

Cabbage: Out of 8 entries supplied, 7 were under new category and 1 FV. One new entry could not be characterised for DUS as it was highly susceptible to damping off. Total of 7 entries were tested for DUS characteristics.

4.3.17 ICAR-NRC for Orchids, Pakyong, Sikkim (*Mokara*)

- Maintenance and multiplication of Reference Varieties of Cymbidium, Dendrobium, Vanda, Phalaenopsis, Cattleya, Oncidium, Paphiopedilum and *Mokara*
- In collaboration with ICAR-NRCO 'KISSAN MELA 2017' a Training cum Awareness Program on "Protection of Plant Varieties and Farmer's Rights Act" was conducted under DUS Project on 11th March, 2017 at Conference Hall, ICAR-NRC for Orchids, Pakyong, Sikkim. In this program, 100 participants comprising of 25 Delegates, 50 Farmers and 25 Science students attended.
- 8 hybrids of *Mokara* were evaluated for development of DUS test guidelines using common descriptors. Out of 61 common descriptors developed, plant width,number of flowers/inflorescence, flower length, flower width in front view, dorsal sepal main colour, lateral sepal main colour, petal main colour, lip apical lobe main colour and throat colour of lip were used for grouping of hybrids.

4.3.18 Bidhan Chandra Krishi Viswavidyalaya

Development of standards of DUS testing for varietal gene bank in elephant foot yam (EFY) and taro is being managed at ICAR-AICRP Tuber Crops, Kalyani Centre, Bidhan Chandra Krishi Viswavidyalaya, Kalyani, West Bengal.

Brief objective:

- To develop distinct, stable and uniform morphological characters for differentiating various varieties/clones of each of the two aroid species: Taro and Elephant foot yam.
- To establish a 'varietal gene bank' with DUS standards of Taro and Elephant foot yam and to develop a computerized data base.

Milestone:

- Collection of morphological data to identify DUS characters and maintenance of collected varieties/clones in field as well as in vitro.
- The distinct qualitative as well as quantitative data will be measured and documented
- Assessment of distinct characters of different varieties/clones
- Multiplication of planting materials of varieties/clones
- Maintenance of collected varieties/clones in field and assessment of distinct characters of different varieties/clones are to be continued

Achievement:

- Identified and recorded individual distinct character of all the cultivars under this project
- Multivariate and stability test also done
- Identified unique character through morphometrics also done
- Multiplied of planting materials
- Maintained all the planting material in proper way.

The maintenance breeding of the varieties of EFY and taro are going on at BCKV field gene bank. Phenotyping and molecular characterization of EFY & Taro varieties have been done. Validation of the DUS characters among the varieties of EFY and Taro are in progress. Phenotyping of the swamptaro has been done and DUS guidelines for swamptaro are in progress. All the varieties of swamptaro, maintaining in field gene bank have been evaluated. List of varieties under maintenance are as follows:

Crop	Name of the varieties
Elephant Foot Yam	BCA-3, APPAKUDAL, SREEPADMA, GAJENDRA, BCA-5, BIDHAN KUSUM (BCA 1), BCA-2, BCA-4, IGAM-2, SREE ATHIRA, NDA-9, KOVVUR, TRC BADAMA, RC BADAMA 13. SONAJULI 14. AC-28
Taro	BCC-22, BCC-39, KCS-3, IGCOL-8, SATAMUKHI, KCS-2, SREE RESHMI, JHANKRI, MUKTAKESHI, TELIA, BCC-35, PANISARU-1, SONAJULI, PANISARU-2, BCC-38, SREE KIRAN, SREE PALAVI, AAVCOL-46, BCC-1, BCC-47, KSS-2

Forty-four genotypes of swamp taro collected from different districts of West Bengal and North Eastern States of India were grown in the Horticultural Research Station, Bidhan Chandra Krishi Viswavidyalaya, Mondouri, Nadia, West Bengal. The swamp taro collections were evaluated in randomized Block Design with three replications. Uniform standard cultural practices were followed for the experiment. One year old seedlings were planted in a well puddled swampy land during the end of December at a plant-to-plant and row-to-row spacing of 60 cm. An inorganic fertilizer dose of 200 kg N, 150 kg P2O5 and 100 kg K2O ha-1 were used along with 50 kg N as organic source. The harvesting of the stolons that initiated from the basal sucker corms was started when they attained suitable marketable length of 75-100 cm at 105-130 days after planting and continued for seven months at an interval of 15 days. The morphological characters like growth habit, length and girth of the main sucker (cm), length / breadth ratio of leaf lamina, leaf orientation, leaf colour, leaf margin colour, leaf arrangement, petiole junction colour, petiole colour and vein colour of each replication consisting of five plants were recorded during the grand growth period of the crop at 210-225 days after planting following the descriptor employed by International Board of Plant Genetic Resources. Similarly, stolon yield (t/ha) and yield attributing

characters like weight of individual stolon (g), length of stolon (cm), girth of stolon (cm) and number of stolons per plant were recorded among the genotypes.

4.3.19 Dept. of Tree Improvement and Genetic Resources, Dr YS Parmar University of Horticulture and Forestry, Nauni, Solan

The centre is implementing a project on Establishment of Clonal Bank (Nursery) and DUS specific characterization of Poplar germplasm.

Brief details of the project are as follows:

A Clonal bank of Poplar clones has been established in Naganji nursery of Dr. Yashwant Singh Parmar University of Horticulture and Forestry, Nauni, Solan, HP. About 15 clones (L-30/06, L-621/84, G-48, L-6105, S_7C_{15}, S_7C_8, WSL-22, WSL-39, 6503, 5503, 1007, L-200/86, PL-3, PL-6 and PL-7) in three replications following the design of Randomized Block Design were planted in the experimental area of the Department. The spacing between the clones was 60 X 60 cm. The draft DUS guidelines were prepared and submitted to PPV & FRA, New Delhi.

No of varieties	Source(own released/ICAR/SAU)
L6105, L30/06, L621/84, G-48 (Uttrakhand Forest Department) S_7 C_{15}, S_7 C_8,WSL 22, WSL 39(Wimco Seedlings Ruderpur, UK) 6503, 5503, 1007, L200/86 (Department of TIGR, UHF, Nauni) PL-3, PL-6, PL-7 (Department of Forestry PAU, Ludhiana)	SAU, Forest Deptt, WIMCO

4.3.20 Dept. of Tree Improvement and Genetic Resources, UHF, Nauni, Solan

This center is also maintaining one project Establishment of Clonal Bank (Nursery) and DUS specific characterization of Willow (*Salix* species) germplasm.

Brief account is as follows:

Varieties	Source
PN731, SE-63-016, PN227,SI-64-017,SI-63-007, J799, Kashmiri (*Salix alba*), Kashmiri willow (*Salix alba*), NZ1140, 131/25, J194, J795, AUSTREE, V-99, FLS (*Salix tetrasperma*), *S. acmophylla,* Devmata (*Salix tetrasperma*)	SAU

A Clonal bank of Willow clones has been established in Naganji nursery of Dr. Yashwant Singh Parmar University of Horticulture and Forestry, Nauni, Solan, HP. About 17 clones (PN731, SE-63-016, PN227,SI-64-017,SI-63-007, J799, Kashmiri (*Salix alba*), Kashmiri willow (*Salix alba*), NZ1140, 131/25, J194, J795, AUSTREE, V-99, FLS (*Salix tetrasperma*), *S. acmophylla,* Devmata (*Salix tetrasperma*) in three replications following the design of RBD (Randomized Block Design) were

planted in the experimental area of the Department. The spacing between the clones was 40 X 50 cm.

4.3.21 Institute of Forest Genetics and Tree Breeding

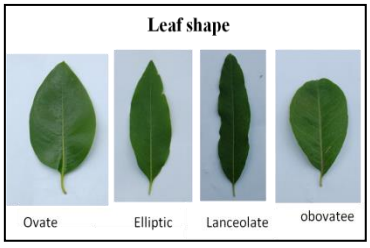
This center is implementing Development of DUS Descriptors for Red Sanders (*Pterocarpus santalinus L.f.*) and Indian Sandalwood (*Santalum album L.*) and documentation of Indigenous (Traditional) knowledge regarding these species.

Brief objectives:

- Documentation of morphological variability in natural populations of *Pterocarpus santalinus* L. f and *Santalum album* L. populations across the country.
- To identify stable morphological descriptors for DUS testing and registering varieties of *Pterocarpus santalinus* and *Santalum album.*
- Documentation of traditional knowledge of indigenous communities regarding these species.
- Establishment of field gene banks of prototypes of stable morphological descriptors of *Pterocarpus santalinus* and *Santalum album.*

Major Achievements

Red Sanders: Two plantations of red sanders located at Sri Venkateshwara University, Tirupati, Andhra Pradesh and in the research field of Institute of Forest Genetics and Tree Breeding (IFGTB) located at Chennai, Tamil Nadu were visited. The Red Sanders trees here are in leaf flushing stage and fruits found to be in young stage. Therefore, leaf morphological variations and variations in bark morphology were recorded. Samples of trifoliate leaves were collected from each selected trees in these plantations. Various leaf morphological characters were recorded using Image analyzer (Leica Quantimet 500+). Using the software QWin 2D, leaf surface area, length, breadth, roundness and aspect ratio were measured. There were significant differences in all the leaf morphological parameters measured. The data analysis showed that the number of significantly different means group were lower for all the parameter (except roundness) when leaf morphology analysis was done taking all the leaves in trifoliate compound leaves together. When the analysis was done separately for lateral leaves and apical leaves, the number of significant groups increased. Therefore, for leaf morphological analysis it is found that lateral and apical leaves may be taken separately.



Plantations of Red Sanders of various age (1-12 years) existing near Uthangarai in Tamil Nadu were visited morphological variability in bark colour, texture and size of flakes were studied. Seeds of 50 selected trees of Red Sanders have been sown in nursery for raising seedlings. Variability in fruit morphology was also studied.

Sandal: Natural population of *Santalum album* in Coimbatore and Bangalore was surveyed and variability in morphological characters of leaf, fruits, seeds and bark were studied in 20 trees selected at random. Mean seed weight varied from 0.14 gm to 0.24 g among trees sampled. Various seed morphological parameters were recorded using Image analyzer (Leica Quantimet 500+). The mean seed area varied from 0.19 to 0.49 cm^2, mean seed length varied from 0.36 to 0.89 cm, mean seed breadth varied from 0.30 to 0.75 cm and mean seed perimeter varied from 1.12 to 2.77 cm. Other parameters like aspect ratio, curve length and breadth etc., were also recorded. Similarly, mature leaves were collected from those trees to study the variability in leaf morphology using the Image analyzer.

Target milestone (for 2017-18)

- Visiting natural and planted red sanders and sandal populations
- Documentation of morphological variability in Red Sanders and Sandal
- Documenting Indigenous knowledge
- Raising seedlings of Red Sanders and Sandal from seeds collected from various populations
- Field Planting of sandal and red sanders

CHAPTER 5: ACTIVITIES RELATED TO FARMERS

5.1 Training–cum–awareness programmes

Sensitizing farmers, breeders, scientists and other relevant stakeholders about the PPV&FR Act, 2001, as it is a new legislation on IPR in Agriculture requiring awareness amongst the farmers, breeders, scientists and other relevant stakeholders. The Authority believes in close relation with the farmers, researchers, plant breeders, scientists, students, NGO, and public and private organisations. During the past ten years, Authority released funds to conduct training-cum-awareness programmes, *Kisan melas*, *Kisan utsavs*, agricultural fairs, International conferences on agriculture, National seminars and agricultural workshops. In order to create awareness amongst the farmers about their rights, as envisaged under the PPV&FR Act, 2001, a Farmers' cell was established in the Authority. The Farmers' cell looks after the implementation of provisions of the Farmers' Rights in the Act. The cell is also responsible for extending financial assistance for training–cum–awareness programmes organised by various organisations/stake-holders.

During the year 2016–17, the Authority organised total of several awareness programmes, workshops, seminars and Exhibitions throughout the country about the various provisions under PPV&FR Act, 2001 to sensitize the farmers and other stakeholders in protecting their rights with respect to the contribution made by them in conserving, improving and making Plant Genetics Resources (PGR), available for the development of new plant varieties with the help of KVKs/ ICAR Institutes/ SAUs/ Government Departments and NGOs. Funds were released to Zonal Project Directors, ICAR to conduct such programmes and brief account of some of the programme are given below.

5.1.1 Zone- I

5.1.1.1 Training programme organised by KVK, Gurudaspur, Punjab

The organizers and special invitees welcomed the participants and briefed them about the various provision of PPV&FR Act, 2001 and encouraged the farmers to register their local varieties. It was

organized on 21 March, 2017 where approximately 120 farmers, local Scientists, KVK officials participated.

In addition to the agenda of the awareness programme, the following information was shared with the participants.

- Importance of conservation of local varieties/strains of different crops.
- Various schemes run by department of Agriculture, Punjab for the benefit of farming community.
- Direct marketing of farm produce, as it is the only method to double the income of farmers.
- Literature regarding PPV&FRA, 2001 was distributed, as well as exhibition was also put up by KVK, Gurdaspur.

5.1.1.2 Training programme organised by KVK, Hoshiarpur, Punjab

The organizers and special invitees welcomed the participants and briefed them about the various provision of PPV&FR Act, 2001 and encouraged the farmers to register their local varieties. It was organized on 21 March, 2017 at village Mahilpur where approximately 103 farmers participated.

In addition to the agenda of the awareness programme, the following information was shared with the participants.

- Brief introduction about the objectives of PPV & FR Act, 2001, general functions of the PPV&FRA and rights under this act.
- S. Mohinder Singh Dosanjh, a progressive farmer of the area encouraged the farmers to adopt integrated farming model for better returns and to follow the recommended technologies by PAU, Ludhiana for optimizing farmer's profit. He also gave a brief account of the various varieties and germplasm conserved by him since many years and the recognition granted to them.
- Many farmers raised queries regarding the act and its different provisions and overwhelmingly participated in the deliberations on this occasion.

5.1.1.3. Training programme organised by KVK, Kargil, J&K

The programme was organized on 9 March, 2017 at Kargil tehsil where more than 50 rural women, farmers and local Government officials participated.

In addition to the agenda of the awareness programme, the following information was shared with the participants:

- Programme Coordinator and KVK Scientists enlighten the gatherings about the importance of germplasm conservation and their registration in different languages.

- Further they elaborated the procedures of registering the farmer's varieties with department of Protection of Plant Varieties and Farmers Right Authority.
- Appreciated the efforts of KVK team on a wonderful off season vegetable production under the harsh severe climate.
- Advised farmer to take care suggestions/advice of KVK Scientist for conserving local plants, registration of plants varieties and adopting the off season vegetable production technologies demonstrated by KVK team.

5.1.1.4 Training programme organized by KVK, Doda, J&K In this programme, about 100 participants from Government department, farmers, local officials participated which was organized at Bhaderwah on 20 March, 2017.

In addition to the agenda of the awareness programme, the following information was shared with the participants:

- The programme was aimed to make the farmers and extension functionaries aware of the PPV&FRA 2001 and motivate them to register the local varieties of the district under the Act.

- Briefed the participants about IPRs and its different components like Patents, Copyright, Trademark, Trade Secrets, Industrial Designs, GI & PPVFRA and its relevance to district farmer, in general.
- Dr AS Charak educated the participants about geographical Indicators and its relevance. He also stressed on to come forward to register some local varieties of Rajmash, Maize, Paddy, Knol Khol, etc. under GI so that mass of the local peoples can be benefited in future by protecting their rights.
- The programme was widely covered by the print and electronic media.

5.1.2 Zone II

Twenty-five programmes were organized by different KVKs from Bihar, WB and Jharkhand are given below:

S. no.	Name of the KVK	State	Date of organizing the programme	No. of participants
1	Aurangabad	Bihar	29.03.2017	200
2	Katihar	Bihar	29.03.2017	185
3	Munger	Bihar	30.03.2017	146
4	Nawada	Bihar	06.02.2016	124
5	Purnea	Bihar	29.03.2017	125
6	Samastipur	Bihar	29.03.2017	100
7	Chatra	Jharkhand	26.02.2017	110
			28.02.2017	
			03.03.2017	
8	Deoghar	Jharkhand	24.02.2016	50
			28.02.2016	51
9	East Singhbhum	Jharkhand	25.03.2017	248
10	Garwah	Jharkhand	24.03.2017	105
			25.03.2017	
			28.03.2017	
11	Godda	Jharkhand	26.03.2017	50
			28.03.2017	70
12	Gumla	Jharkhand	3.03.2017	122
13	Hazaribag	Jharkhand	6.03.2017	165
14	Jamtara	Jharkhand	29.03.2017	155
15	Lohardaga	Jharkhand	28.03.2017	95
16	Ranchi	Jharkhand	17.03.2017	100
			28.03.2017	120
18	Simdega	Jharkhand	26.03.2017	141
19	West Singhbhum	Jharkhand	30.03.2017	109
20	Dakhin Dinajpur	West Bengal	30.03.2017	98
21	Hooghly	West Bengal	17.03.2017	66
			20.03.2017	38
22	Jalpaiguri	West Bengal	17.02.2017	254
23	Nimpith	West Bengal	18.03.2017	115
24	Purulia	West Bengal	02.03.2017	40
			16.03.2017	30
			17.03.2017	30
25	Uttar Dinajpur	West Bengal	25.03.2017	119

5.1.3 Zone V

Sixteen training programmes were conducted in the Andhra Pradesh, Telangana and Maharashtra.

S. no.	Name of the KVK	Date of meeting	Place of meeting	No. of farmers attended	Details of registration of farmers' varieties with PPVFRA
1	Kadapa (Utukur)	30-03-2017	Kadapa	100	-
2	Nellore	Four meetings	In villages	160	-
3	Kurnool (Y)	31-03-2017	Kurnool	148	-
4	Warangal (Malyal)	31-03-2017	Malylal	100	-

5	Karimnagar (J)	28-03-2017	Jammikunta	72	-
6	Mehaboobnagar (M)	24-03-2017	YFA-KVK Campus, Madanapuram	81	-
7	Khammam (Wyra)	30-03-2017	Wyra	100	-
8	Nagpur	23-03-2017 and 24-03-2017	Nagpur	100	
9	Ahmednagar (B)	23-3-2017	Babhleshwar	216	
10	Amaravati (D)	27-3-2017	Durgapur	186	1
11	Beed (Ambajogai)	21-03-2017	Ambajogai	100	
12	Aurangabad (Paithan Road)	01-03-2017	Aurangabad	91	1
13	Nandurbar	30-03-2017	Nandurbar	148	
14	Sindhudurg	04-03-2017	Sindhudurg	412	
15	Solapur (Khed)	18-03-2017	Solapur	114	Custard Apple Variety NMK-1 (Golden) Registration under Process Name of the Farmer: N. M. Kaspate, A/P: Gormale, Tal: Barshi, Dist: Solapur.
16	Washim	21-03-2017	Washim	324	

5.1.4 Zone VI

Total 17 KVKs (10 from Rajasthan state and 7 from Gujarat state) were organized Awareness cum Training programmes under PPV&FRA in respective districts to the farming community during the year 2016-17. In these programmes total 2761 farmers and farm women took part actively. Total 1007 participants from 10 districts of Rajasthan (Swaimadhopur, Jhalawar, Hanumangarh-I, Ajmer, Karauli, Sikar, Pali, Pratapgarh, Dholpur and Rajsamand) participated; while total 1754 participants from 7 districts of Gujarat state (Patan, Kutch-I, Sabrakantha, Amreli, Navsari, Tapi and Dangs) attended the Training programmes under PPV&FRA.

In these Awareness cum Training programmes under PPV&FRA, severalinteractive lectures were

delivered by the facilitators from ICAR Institutes, SAUs and AICRPs at respective districts of Rajasthan and Gujarat. Display of documentary film of 17 minute duration provided by PPV&FRA, New Delhi which entitled “Krishak Adhikar Krishik Vikas” was the main attraction to convenience and mobilizes farming community on PV&FRA. Appropriate PPV&FRA printed literature was also distributed among the participants.

Several queries raised by the farmers were solved and rectified for sensitizing as well as empowering by the concerned collaborators from PPV&FRA, ICAR institutes, SAUs and KVKs in these programmes. Methodology for filling up Registration form of Farmers' Variety was also explained to the participants, which had proved very effective and useful tools for encouraging the farming community to come forward for registering their local varieties of crops, vegetables, spices and fodder etc. The KVK-wise details and photographs related to the programme are given as under:-

List of programmes conducted by KVKs:

	Rajasthan State		Gujarat State		
S. no.	**Name of KVK**	**No. of Participants**	**S. no.**	**Name of KVK**	**No. of Participants**
1	Swaimadhopur	104	1	Patan	170
2	Jhalawar	118	2	Kutch-I	182
3	Hanumangarh-I	145	3	Sabrkantha	312
4	Karauli	65	4	Amreli	132
5	Ajmer	57	5	Navsari	200
6	Sikar	25	6	Tapi	224
7	Pali	70	7	Dangs	534
8	Pratapgarh	120			
9	Dholpur	183			
10	Rajsamand	120			

5.2 Plant Genome Saviour Community Awards, Rewards and Recognitions

To recognize the contribution of large number of individual farmers and farming communities who are engaged in agriculture for generations in conserving the plant genetic resources their important contribution and role in enhancement of quality in research and development in agriculture, PPV&FRA confers annually Plant Genome Savior Community Awards. PPV&FR Rules, 2003 provides that National Gene Fund could be utilized to support and reward farmers, particularly the tribal and rural communities engaged in conservation, improvement and preservation of genetic resources of economic plants and their wild relatives, particularly in areas identified as agro-biodiversity hotspots. To energise and implement the said Rule, the PPV&FR Authority initiated Plant Genome Savior Community Awards. The Award is open to all Indian farming communities, particularly the tribal and rural communities engaged in conservation, improvement and preservation of plant genetic resources of economic plants and their wild relatives particularly in the areas identified as agro-biodiversity hotspots. The applicants are required to submit evidences in support of the conservation work done by them, provide seeds/planting material of the conservation varieties, brief proposal for the utilization of the award money in community welfare and also to inform if the

material has been utilized by any breeders in developing any other improved varieties etc. The selection of awardee (s) is done by a high level national committee.

The Authority has constituted five Plant Genome Saviour Community Awards of Rs. 10 lakh each since 2009-10 to be awarded every year to the eligible farming communities engaged in the conservation and preservation of plant genetic resources. The Authority has also instituted 10 Plant Genome Saviour Farmers' Rewards and 20 Recognitions every year as per Rules 5 (2) of PPV&FR Act, 2001 (Reward and Recognition from Gene Fund) Rules, 2012. From 2013 Farmers' Rewards consisting a cash award of Rs. 1.5 lakh and Recognitions consisting of cash award of Rs. 1.0 lakh each farmer with citation and memento.

In the year 2016–17, PPV&FRA organized two Plant Genome Saviour (PGS) awards cermonies in the months of August and December of 2016.

5.2.1 Awards for 2012–13

On 24 August, 2016 PPV&FRA conducted the PGS Awards Ceremony at A.P. Shinde Symposium Hall, NASC Complex, New Delhi. The Chief Guest, Shri Radha Mohan Singh, the Hon'ble Union Minister of Agriculture and Farmers Welfare, graced the occasion as Chief Guest. The meeting was also graced by the presence of Shri Parshottam Rupala, Hon'ble Minister of State for Agriculture & Farmers Welfare and Panchayati Raj and Shri Sudarshan Bhagat, Hon'ble Minister of State for Agriculture & Farmers Welfare. The other dignitaries included Dr. T. Mohapatra, Secretary (DARE) & Director General (ICAR), and Shri R.K. Singh, Joint Secretary (Seeds), Department of Agriculture, Cooperation and Farmers Welfare.

An exhibition about the traditional varieties being conserved by the awardees who were to be conferred awards and the Genome Saviour awardees who have been awarded by Authority in the past. The exhibition was inaugurated by Chief Guest Shri. Radha Mohan Singh, Hon'ble Minister of Agriculture and Farmers Welfare in the august presence of Sh. Parshottam Rupala, Hon'ble Minister of State for Agriculture & Farmers Welfare and Panchayati Raj and Sh. Sudarshan Bhagat, Hon'ble Minister of State for Agriculture & Farmers Welfare.

The details of Awards/Rewards and Recognitions conferred are as follows:-

Plant Genome Savior Community Awards (2012-13):

- **Society For Conservation Of Mango Diversity (SCMD),** Malihabad, Kasmandi Kalan, Lucknow, Uttar Pradesh in Upper Gangetic Plains agro-biodiversity hotspot. This community is involved in conservation, maintenance and multiplication of traditional mango varieties and diversity

including forty two traditional varieties that are commercially important under their possession in future as well.

- **Kachai Village Community,** LM Block, Kachai, Ukhrul, Manipur, in North Eastern Hills agro-biodiversity hotspot area, is actively involved in the conservation of Kachai Lemon (Citrus jambhiri Lush), a type of rough lemon class which is also used as root stock. This species is also used as rootstock for Khasi Mandarin grafts. For conservation of Kachai Lemon, the villagers implemented community conservation programme adopting the package of practices developed by ICAR NEH Manipur Centre. This is a classic example of extensive cultivation and conservation of a particular species by a community including post harvest processing and marketing. The effort of the Tangkhul Naga Community for preservation and conservation of Kachai lemon is appreciable.

- **Dharohar Samiti Muria/Bhatra Adivasi and Backward Tribal community,** Golaband Bastar, Kondagaon, Chattisgarh, in Bastar agro-biodiversity hotspot area, is engaged in conservation of traditional landraces of various crops including Rice. The community is conserving nearly 267 traditional Rice varieties, including red rice varieties like Meher and Kanta Meher having medicinal properties; scented varieties like Kadamphool and improved farmers' varieties like Shiv Dharohar-1 and Lazni Super etc. Seeds and panicles of these indigenous rice varieties are being conserved in a community seed bank and varieties are cultivated through organic method. The effort and keenness shown by this community is commendable and needs to be appreciated and suitably rewarded to boost the morale of community members.

- **Community of Kharchi Village,** Pali, Rajasthan, in Arid Western agro-biodiversity hotspot area, is involved in cultivation of agricultural crops like Moong, Til, Cluster bean etc in Kharif and Wheat, Barley, Cumin, Chickpea etc in Rabi season. Locally adapted, landrace of wheat, known as Kharchia, which is conserved by the community, is extensively used for development of improved, salinity tolerant

wheat varieties. Due to conservation and maintenance of this landrace, local community is able to earn livelihood by cultivating Kharchia wheat in saline affected soils with minimal input. The landraces has been also used internationally for developing improved salinity tolerant varieties.

- **Siddharudh Savayav Krushikar Balag,** Gudenatti, Bailur, Khanapura, Belgam, Karnataka in Western Ghat involved in conservation, cultivation of traditional varieties of rice, pulses, vegetables, millets and fruit crops etc. This community has conserved 68 different types of rice varieties collected from different areas having unique morphological features; maintain a community seed bank and exchange seeds among local farmers. This community also conserved and distributed of old varieties of different crops for encouraging farmers.

Plant Genome Saviour Farmer Rewards (2013):

- **Shri Benny Mathew** , Kuruvanpady, Chittor, Agali, Palakad, Kerala, has been engaged in the conservation of local varieties of Pepper along with Arecanut, cardamom, rubber, coffee and other fruit/medicinal plant species. He is doing a commendable work of conservation of Pepper and spreading awareness among farmers about conservation of fruit/medicinal plants, land races and farmer varieties.

- **Shri Melethil Beerankutty** , Tirur, Anadavoor, Malapppuram, Kerala, has been engaged in the conservation of traditional varieties of betelvine unique to Tirur region. He is doing a commendable work of conservation of Betelvine from Tirur area and spreading awareness among farmers about special morphological and biochemical characters because of geographical features, organic method of cultivation and cultural practices.

- **Shri T. Venkadapathi** , Koodapakkam, Pondicherrry, Kerala, is engaged in the conservation of local varieties of Crossandra along with unique cultivars in Chilli, Casuarina plant species. He is doing a commendable work of conservation of *Crossandra Selection* like *Delhi Crossandra Selection, APJ Abdul Kalam-1, Abdul Kalam-2, Vijaya Crossandra, Lakshmi Crossandra* and spreading awareness among farmers about agro-biodiversity and conservation of landraces and farmer varieties.

- **Shri Muhammed Mooppan** , Tirur, Meenadtahoor, Malapppuram, Kerala, is engaged in the conservation of traditional varieties of betelvine unique to Tirur and other horticultural crops. The farmer is conserving Puzhokodi and Nadan ecotypes of Betelvine and growing through*Ottakodi* and *Koottakodi* system and organic farming. He is doing a commendable work of conservation of Betelvine and spreading awareness among farmers about conservation of betelvine plants, land races and farmer varieties.

- **Shri Anjaneya A. N.** , Harihara, Kumbaluru, Davanagere, Karnataka, is engaged in the conservation of traditional varieties of rice namely 'Dodabhatta'. He is cultivating other traditional varieties popular in the region like Siddasanna, Gowrisanna, Mysore Sanna etc and follows traditional methods of seed storage like 'mudikattu'. He is doing a commendable work for conservation of local rice varieties and spreading awareness among farmers about agro-biodiversity and conservation of landraces and Farmer varieties.
- **Shri K. V. Kannan**, Snehalayam, Kandoth, Payyanur, Kannur, Kerala, is engaged in the conservation of Plant biodiversity. He is conserving two traditional coconut variety(s), viz., *West Coast Tall* and *Chowghat Orange Dwarf*; one Rice variety *Chitteni* (north eco type); Jackfruit having lower latex, other fruits & medicinal plant species. He is doing a commendable work for conservation of coconut, rice, jackfruit, banana, guava and Mango important local dessert type popular in North Malabar region and spreading awareness among farmers about conservation of fruit/medicinal plants, land races and farmer varieties.

- **Shri Arun Kumar**, Udham Singh Nagar, Uttrakhand, is engaged in the conservation of local varieties of rice namely '*Hansraj Basmati*'. He is adopting mixed farming through organic and traditional cultivation. He is doing a commendable work for conservation of local rice varieties and spreading awareness among farmers about agro-biodiversity and conservation of landraces and Farmer varieties.
- **Shri Devnath Verma** , Udham Singh Nagar, Uttrakhand, is engaged in the conservation of local varieties of rice namely '*Tilak Chandan'*. He is doing a commendable work for conservation of local rice varieties and spreading awareness among farmers about agro-biodiversity and conservation of landraces and Farmer rice varieties.

- **Shri Amit Kumar Bera**, Purba Medinipur, West Bengal, is engaged in the conservation of local five varieties of rice namely "Radhunipagal, Bhutmuri, Sabita, Dudheswar and Gobindabhog" that has been utilised in rice improvement programme in Bidhan Chandra Krishi Viswavidyalaya, West Bengal. He is doing a commendable work for conservation of local rice varieties and spreading awareness among farmers about agro-biodiversity and conservation of landraces and Farmer rice varieties.
- **Shri Yumnam Ranjit Singh**, Imphal West, Manipur, is engaged in the conservation of local seven varieties of rice namely "*Moirangphou khoknganghi (A), Tumai angangbi, Tumai angouba, Phouren phoujao, Phougak Phouren akuppi, Phoungang, Chakhao amubl*, which have been utilized as donors for varieties registrable under PPV & FR Act, 2001". He is adopting System of rice intensification (SRI) method was practiced to cultivate the different varieties and IPM method was adopted as plant protection measures. He is doing a commendable work for conservation of local rice varieties and spreading awareness among farmers about agro-biodiversity and conservation of landraces and Farmer rice varieties.Sh. Benny Mathew, Kerala

Plant Genome Saviour Farmer Recognition (2013):

- **Shri K. Narendran** , Nambaruvikala, Alumkadavu Kollam, Kerala, is engaged in the conservation of several rare and endangered species of medicinal plants, coconut, arecanut, ornamental plant species etc and follow organic method of farming. He is doing a commendable work of training to progressive growers and supply planting material(s) of medicinal plants and publications in Malayalam to local growers and spreading awareness among farmers about conservation of medicinal plants, land races and farmer varieties.

- **Shri P. Krishnan**, Pattambi, Koppam, Pulassery Palakkad, Kerala, is engaged in the conservation of varieties of medicinal plant species, fruit plants, traditional rice varieties like "*Chettadi, Makram, Kattamodan"* etc. He is doing a commendable work of conservation of above crops and spreading awareness among farmers about agro-biodiversity and conservation of land races and farmer varieties.
- **Shri K. Raman**, Cheruvayal Raman, Mananthavadi, Wayanand , Kerala, is engaged in the conservation of 35 traditional rice varieties Two of the varieties, viz., *Palthondi* and *Kayama* have been used as donor of genes for the development of Rice varieties

at Kerala Agricultural University, Thrissur. One of the Pepper variety, Uthirankotta, has contributed towards the development of *Panniyoor-1*, released from RARS (KAU), *Panniyoor*. He is doing a commendable work of conservation of above crops and also banana and Coconut and spreading awareness among farmers about agro-biodiversity and conservation of land races and farmer varieties.

- **Shri Anjan Kumar Sinha** , Gangajalghati, Ranbahal, Amarkanan, Bankura, West Bengal, is engaged in the conservation of 102 Landraces varieties of Rice, such as *Raghusal, Nikunja, Nona-bogra, Malabati, Khajurchari* etc. for development varietal improvement. He is doing a commendable work of conservation of many types of rice varieties and spreading awareness among farmers about agro-biodiversity and conservation of land races and farmer varieties.

5.2.2 Awards for 2013–14

PPV&FR Authority organized another PGS awards ceremony on 21st December at B.P. Pal Auditorium, IARI-ICAR, New Delhi. Shri.Radha Mohan Singh, Hon'ble Union Minister of Agriculture and Farmers Welfare, Govt. of India conferred the Plant Genome Saviour Awards/ Rewards / Recognitions to the farmers/ farming communities. The occasion was also graced by Shri S.K. Pattanayak, Secretary, DoAC&FW; Dr. T. Mohapatra, Secretary, DARE and DG, ICAR; Dr. Ashok Dalwai, Additional Secretary, DoAC&FW; Shri R.K.Singh, Jt. Secretary (Seeds), DoAC&FW. Shri N.A.Wagay, Member of Parliament; Shri A.R.Rather, Hon'ble Member of Legislative Assembly of J&K; Vice Chancellors; Deputy Director Generals of ICAR, ADGs, Director, Representative of Embassies, and many other esteemed guests, farmers and Authority Members also graced the occasion.

Hon'ble Union Agriculture Minister, in his address, informed that farmers and farming communities who have made important contribution towards advancement of Indian agriculture is praiseworthy who were not earlier recognized and he congratulated all the awardees. He also announced that recently the Government has given approval for opening of three new branch offices of the Authority to be established soon at Palampur (HP), which will cover the states of northern hill zone, another at Pune, which will covers the Central and western zone states and third one at Shivamogga (Karnataka) for southern states so that the Authority shall have a better reach to the Farmers and other stakeholders for implementation of various provisions of the PPV&FR Act, 2001. He also informed that the Government shall sanction one more branch office for the benefit of the farmers.

Plant Genome Savior Community Awards 2013-14:

The award consists of Rs. 10.00 lakh cash prize, a citation, a certificate and a memento. The Awards were conferred to the following five communities:

Farming community of village of Sagam and Danwathpora (District Anantnag, J&K): The farming community in the Western Himalayan agro-biodiversity hotspot area is involved in the conservation and cultivation of rice varieties, especially *Mushkbudgi* and *Kamad* that have high aroma, high cold tolerance, better cooking quality and great market value. In addition to the conservation of these rice varieties, this community is involved in post-harvest processing and marketing. This community is also actively involved in extending the irrigation channels in this region.

Chengalikodan Banana Growers Association, Erumapetty (Thrissur, Kerala): This community**,** located in the Malabar agro-biodiversity hotspot area**,** is actively involved in the conservation of Banana varieties with special emphasis on *Chengalikodan nendran* Banana along with other crops like mango, coconut, jackfruit, timber trees and vegetables etc. This variety of banana is famous for its taste, bunch shape and fruit colour. This community is conserving the *Chengalikodan Nendran* banana by traditional method.

Sagar Krishnanagar Swami Vivekananda Youth Cultural Society, South 24 Parganas (West Bengal): This community is located in the Gangetic Delta agro-biodiversity hotspot area and is involved in the conservation of traditional landraces of rice and medicinal species. The community is conserving about 39 indigenous varieties of rice and 34 types of medicinal species. Some of the rice varieties *viz*. *Badshabhog, Durgabhog, Dudheswar, Harinakhuri, Kalajira, Kartikbhog* and *Kanakchur* are aromatic in nature. This community distributed seeds of indigenous rice varieties among the farming communities in the gangetic delta region of West Bengal.

Khola/ Canacona Chilli Cultivators Groups, Khola (Shirothi, South Goa): This community from the Konkan agro-biodiversity hotspot area is actively involved in the conservation of the traditional local variety of chilli known as *Khola/ Canacona* chilli, tuber crops and vegetables. This chilli has brilliant red colour with medium pungency.

Karen Welfare Association, Webi (Mayabunder, Andaman, **A&N Islands):** This community is in the islands agro-biodiversity hotspot area and is actively involved in conservation and cultivation of 6 traditional varieties of rice *viz*. *Khushbayya, Black Burma, White Burma, Mushley, Nyawin* and *Red Burma*. This community has conserved these varieties since 1925 in North & Middle Andaman using traditional method for maintaining the genetic variability for long term conservation.

Plant Genome Saviour Farmer Rewards (2014):

The reward carries a cash reward of Rs.1.5 lakh, a citation, a certificate and a memento. The Rewards were conferred to the following farmers:

- **Shri Ram Prakash Kesharwani** (Bamhanidih, Lakhuri, Janjgeer, Chhattisgarh) is a progressive grower and conserver of eight local varieties of paddy. The important cultivars are *Gudshakkar, Ram Basmati, Shankar Bhog, Purana Basmati, Shyam Swarn, Shree RamprakashDhan, ChinniShakkar* and *Parvati Shiv*. He has developed his own special agricultural techniques.
- **Shri Shaji N.M.** (Elapupara house, Arattuthara PO, Mananthawady, Wayanad district, Kerala) is a conserver of tuber crops *viz*., greater yam, colocasia, sweet potato, tapioca/cassava, elephant foot yam, arrow root, Chinese potato, lesser yam and other crops such as turmeric, vegetables, medicinal plant and orchid species. He has used innovative methods of conservation, storage techniques and planting techniques, especially for greater yam and elephant foot yam**.**
- **Shri Surendra Kumar** (Sadholi Kadim, Naniyari, Kamboh Mazra, Saharanpur, Uttar Pradesh) is a progressive grower and conserver of local varieties of wheat, paddy, vegetables, cotton etc. The wheat cultivar *Bansi* (durum wheat) conserved by him, has been used for development of high yielding wheat varieties. He used traditional innovative methods of conservation and storage techniques.

Plant Genome Saviour Farmer Recognition (2014):

The recognition consists of Rs. 1 Lakh cash prize, a citation, a certificate and a memento. The Recognitions were conferred to the following farmers:

- **Shri N. A. Chandran** (P. Vernballur P.O., Thrissur, Kerala) is conserving different traditional coconut varieties (Malayan Yellow Dwarf and Chowghat Orange Dwarf). He also conserved different local varieties in mango, bamboo, *Heliconia* etc. The traditional cultivars of many other

crop plants including cashew, tamarind, guava, medicinal plants, jackfruit, teak, etc. are also conserved by him. He follows organic method of cultivation.

- **Shri Aravind K** (P V Kalam (H), Pombra, Palakkad, Kerala) is a progressive grower and conserver of local varieties of banana, fruit trees, plantation crops, vegetables, medicinal and aromatic plant species. The local variety *viz*., Pisang Linin conserved by him was used in the development of Banana hybrids BRS1 and BRS2. He is also propagating the concept of natural living and biodiversity conservation.
- **Shri Rechanna M** (Kollagala, Hosa Malangi Post. Chamarajanagar, Karnataka) is a conserver of varieties in paddy, black gram, cowpea, green gram, sesame etc. The farmer has adopted innovative *in-situ* methods of conservation. The varieties are having various special traits *viz*. medicinal, disease resistant, nutrition and drought tolerance.
- **Shri Shankarguru M.K.** (Madralli, Kannalli, P.O. Narasipura, Mysore, Karnataka) is a progressive farmer and a certified organic seed grower of traditional paddy varieties. He has conserved fourteen traditional paddy varieties and developed *NMS-2* variety which is preferred for its high yield.
- **Shri Prabhakar M. Keny** (Salcete, Savor Katta, Cuncolim, South Goa) is a conserver of cashew, coconut, areca nut, mango, jackfruit, black pepper, nutmeg and vanilla. Two promising local selection in Cashew *viz*. *Balli-2* and *Goa cashew nuts (KN–2/98)* are originally located from his farm. He has also developed a unique technique for the propagation of cashew, mango, nutmeg and jackfruit.
- **Shri Budhram Kashyap** (Bheramgarh, Talnar, Nailsnar, Bijapur, Chhattisgarh) is conserving traditional varieties of rice, tuber, vegetables, fruits etc. One of the rice varieties *viz*., *Munda dhan* is preferred for its quality of white rice and disease resistance. The other popular conserved varieties are Diyari, Samsari, Navsingo and Budma.
- **Shri NitaiMistri** (Balrampur, Maharajganj, Chhattisgarh) is a progressive grower and conserver of local varieties of paddy, minor millets, pigeonpea, vegetables and other flower species like marigold, rose, Hibiscus, Frangipani, Magnolia etc.
- **Shri Rohit Kumar Sahoo** (Patan, Achanakpur, Tarra, Durg, Chhattisgarh) is engaged in conservation of Mango variety *Totapari*. The special feature of this variety is that, it gives fruits twice after every three years. The unripe fruits taste like coconut.
- **Shri Bosaram Atami** (Geedam, Kasoli, Hiranar, Dantewada, Chhattisgarh) has conserved four varieties of rice (*ChudiDhan, Ganga baru, Andradeshibosaram* and *SefmaBaingi*) that have been

utilised in rice improvement and cultivated through SRI or broadcast sowing. The farmer uses traditional storage techniques especially for *Dolakkuchha* for rice.

- **Shri Manjeet Singh Saluja** (Rajnandgaon, Chhattisgarh) is a progressive grower and conserver of local varieties of Rice (*Kartar-1*), Wheat (*Bhagat-1*), Pea (*Bhagat Matar*) and Gram (*Bhagat Chana-1*). The farmer developed one local variety in rice viz. *Kartar-1* (improvement over *Badshahbhog* local variety) through selection.
- **Shri Kamal Kishore Kashyap** (Badechkua, Bastar, Chhattisgarh) is a progressive grower and conserver for traditional varieties in bitter gourd, brinjal, papaya and some varieties of medicinal plants.

The summary of these awards conferred so far by the Authority to the farmers and the farming communities are given as under:

Details of applications received for the "Plant Genome Saviour Awards"

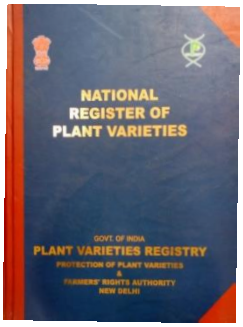
Name of the Award	2007-08			2008-09			2009-10			2010-11			2011-12			2012-13			2013-14			2014-15		
	Total Application Received	State Participated	Total Award Given	Total Application Received	State Participated	Total Award Given	Total Application Received	State Participated	Total Award Given	Total Application Received	State Participated	Total Award Given	Total Application Received	State Participated	Total Award Given	Total Application Received	State Participated	Total Award Given	Total Application Received	State Participated	Total Award Given	Total Application Received	State Participated	Total Award Given
Plant Genome Saviour Community Recognition Certificate	-	5	5	15	-	4	-	-	-	19	11	7	-	-	-	-	-	-	-	-	-	-	-	-
Plant Genome Saviour Community Award	-	-	-	-	-	-	20	11	2	19	11	4	27	11	4	28	15	5	26	14	5	14	10	5
Plant Genome Saviour Farmers' Reward	-	-	-	-	-	-	-	-	-	-	-	-	30	13	10	80	20	10	78	16	3	46	10	10
Plant Genome Saviour Farmers' Recognition	-	-	-	-	-	-	-	-	-	-	-	-	30	13	15	-	-	4	-	-	11	46	10	20

CHAPTER 6: PLANT VARIETY JOURNAL OF INDIA, NATIONAL REGISTER OF PLANT VARIETIES AND PUBLICATIONS OF THE AUTHORITY

6.1 Plant Variety Journal of India

In accordance with Rule 2(g) of PPV&FR Rules, 2003 the Authority publishes its official journal "*Plant Variety Journal of India*" (PVJ) as a monthly bilingual (Hindi & English) publication and made available to public on the first working day of each month on its official website as well as in the hard copy. This Journal has the equivalent status of a Gazette under the Regulations, 2006. The contents of Journal includes official and public notices, Gazette notifications, passport data of plant varieties along with photographs, DUS test guidelines of different crop species, details of certificate of registration and other related matters.

6.2 National Register of Plant Varieties



The PPV&FR Authority, in compliance with section 13 of the PPV&FR Act, 2001, has opened the National Register of Plant Varieties at the Headquarters of the Plant Varieties Registry. It contains complete details of the names of all the registered plant varieties along with the names and addresses of the respective breeders, denomination, specifications, salient features etc. During the period of reporting, 495 varieties including 99 new varieties, 46 extant notified varieties, 62 Extant VCK and 288 belonging to Farmers' Varieties which have been registered under the Act.

6.3 Publications of the Authority

In addition to Plant Variety Journal of India, which is published regularly in bilingual mode, i.e. in Hindi as well as in English, the brochures on PPV&FR Act, 2001 and Farmers' Rights were published and distributed in several meetings, training-cum- awareness programmes, workshops etc. Compendium of registered varieties, posters, annual report and other publications were prepared and published by the Authority in Hindi language also. The Authority maintains its website in bilingual mode. DUS test guidelines were published regularly by the Authority in both the languages. During the year DUS test guidelines of 26 crops species. have been published and sent to

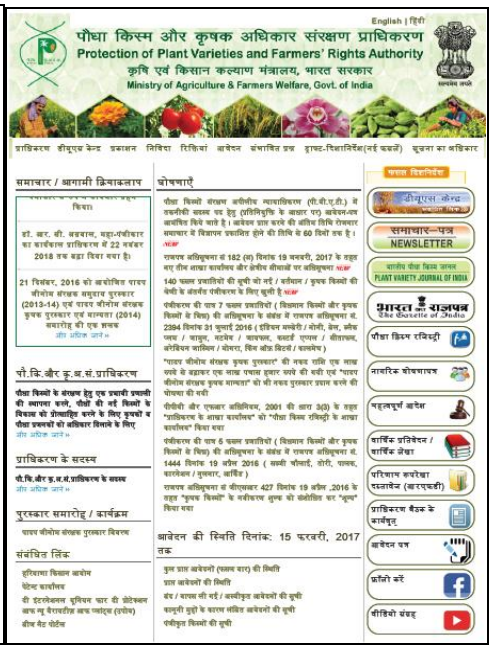
Department of Agriculture, Co-operation and Farmers Welfare for notification. These crop species represent ornamental plants, spices, coarse cereals and fruits. The letters and official communications received in Hindi were responded in Hindi. The officers of the Authority also delivered their lectures in Hindi and English as per the requirement of the audience / occasion.

CHAPTER 7: DEVELOPMENT OF WEBSITE AND INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

Website:

The website of the Authority (*www.plantauthority.gov.in)* is maintained in bilingual. The Hindi version of Authority website is redesigned. The head element is now bilingual along with new improved emblem and high resolution authority logo. The right hand side vertical navigation menu bar items rounded corner border style in incorporated, make it more elegant. The new footer section is introduced. Home contact us, sitemap, downloads, feedback, archives and disclaimer links are incorporated in footer section. Related link section is now shifted to left site in Home page. The improved crop DUS guidelines web page in introduced. In this page table is divided into crop group, crop name followed by botanical name along with crop DUS guideline in downloadable format (in pdf).

Total 140 crop species have been listed. A new FAQ web page is introduced with collapse and expands all feature using javascript. Other web pages designed are Plant Genome Saviour Community, Reward & Recognition Award web page. RTI Page , Plant Variety Registry Related Information Webpage, Annual report and annual account web page, About the employees of the authority webpage, list of registration open for 140 crop species under the category of new / Extant/ Farmer Variety and Important Gazette Notifications webpage.etc.



Information and Communication Technology (ICT)

The database of all the registered varieties in the PPV&FR Authority is maintained in a Register known as National Register of Plant Varieties in hard copies as well as in digital form in e-National register. It is updated on regular basis. Authority also gives a copy of tenders on Central Public procurement portal (https://eprocure.gov.in/eprocure/app), update General Pool Residential Accommodation (http://gpra.nic.in/gpra), quarterly reports of RTIs (http:// http://dsscic.nic.in/users/pn-login), New Pension System Contributions Accounting System (https://npscan-cra.com/CRA/), Representation of Reserved Categories in Posts and Services in Govt. of India Monitoring System (http://www.rrcps.nic.in/). Authority also maintains an e-National Register of the Registered Varieties. The Authority is also trying to fulfill the concept of national e-governance and has taken initiatives in this regard.

CHAPTER 8: ADMINISTRATIVE MATTERS

8.1 Legal Cell

The Legal Cell of the Authority has successfully defended all cases filed against the Authority. Further in case of quasi-judicial proceedings before the Registry and Authority, legal inputs were rendered and daily order sheets were dispatched to the parties promptly. During the reporting period none of the orders passed by Authority or Registrar were set-aside. The Hon'ble Delhi High Court earlier reserved its order on constitutional validity of provisional protection enshrined in section 24 (5) of PPV&FR Act, 2001. On 02.12.2016 the Hon'ble Delhi High Court declared section 24 (5) of PPV&FR Act, 2001 as void. The Authority is planning to get a stay on the said judgement from Hon'ble Supreme Court of India.

During the reporting period, 34 cases were pending against the Authority out of which 7 were disposed off, and 27 cases are pending against the Authority as on 1 April, 2017. The details of forum and number of cases pending for adjudication are given below:

Central Administrative Tribunal	High Courts	Supreme Court
4	21	2

The following Gazette Notifications were published in the year 2016–17:

- Gazette Notification S.O. 1444(E) dated April 19, 2016 regarding notification on the 5 crop species (not being extant varieties and farmers' varieties) Vegetable Amaranth, Ridge gourd, Palak/Spinach beet, Carnation, Orchid for the purpose of registration of varieties.
- Gazette Notification No. GSR 427(E) dated April 19, 2016 regarding Amendment in Renewal fee for farmers' varieties shall be "NIL".
- Gazette Notification S.O. 2394 (E) dated July 13, 2016 regarding notification on the seven crop species (not being extant varieties and farmers' varieties) Indian Mulberry/ Noni, Bael/ Bel, Black plum/ Jamun, Nutmeg/ Jaiphal, Arabian Jasmine/ Mogra, Custard apple/ Sitaphal, King of Bitters/ Kalmegh for the purpose of registration of varieties.
- Gazette Notification No. S.O. 3094 (E) dated September 30, 2016 regarding Notification of Nomination of Non-Official Members on the PPV&FR Authority.
- Gazette Notification No. S.O. 182 (E) dated January 19, 2017 regarding notification on the Three New Branch Offices & Territorial limits

8.2 Rights of Information (RTI)

As per RTI Act, 2005, the PPV & FR Authority has nominated officers and first Appellate Authority for furnishing information to the concerned persons. The Details of the

designated officers are available on Authority's website under the menu heading RTI. Compliance of provision contained under section 25 (2) of RTI Act, 2005 for submission of information to Chief Information Commissioner (CIC) is being done. During the period, the Authority received 87 (list enclosed) applications either directly or through transfer from other departments seeking information under RTI Act, 2005. The information sought was made available within the stipulated time. There is no single application pending before first Appellate Authority or CIC.

Status of RTI applications received by the Authority 2016–17:

S. No.	Name of Applicant	Date of Application on	Information Sought	Position of Application	Remarks
1.	Shri Manoj Kumar Anand	04.03.2016	Sought 1 question	Reply sent on 01.04.2016	Transferred by DAC
2.	Shri Jayaprakash T R	18.03.2016	Sought 6 question	Reply sent on 25.04.2016	Transferred by DAC
3.	Shri J. Parthasarthy	04.04.2016	Sought 06 question	Reply sent on 25.04.2016	Transferred by DAC
4.	Shri H. S. Kumbhat	11.04.2016	Sought 04 questions	Reply sent on 25.04.2016	Transferred by DAC
5.	Shri Vodela Suresh Babu	11.04.2016	Sought 1 question	Reply sent on 26.04.2016	Transferred by DAC
6.	Shri P. Raja	22.04.2016	Sought 01 question	Reply sent on 26.04.2016	Transferred by DAC
7.	Shri Umesh Kumar Mahilani	22.04.2016	Sought 01 question	Reply sent on 26.04.2016	Transferred by DAC
8.	Shri Atul Jain	26.04.2016	Sought 04 questions	Reply sent on 13.05.2016	Direct Received
9.	Shri Banarsi Ram	27.04.2016	Sought 01 questions	Reply sent on 27.05.2016	Transferred by DAC
10.	Shri Azad Singh	27.04.2016	Sought 05 questions	Reply sent on 27.05.2016	Transferred by DAC
11.	Shri Milton David	27.04.2016	Sought 07 questions	Reply sent on 27.05.2016	Transferred by DAC
12.	Shri M. Ramchander	27.04.2016	Sought 01 question	Reply sent on 02.06.2016	Transferred by DAC
13.	Shri R. V. S. Kaushal	30.05.2016	Sought 05 questions	Reply sent on 06.06.2016	Transferred by DAC
14.	Shri Kishore Kumar	13.05.2016	Sought 01 question	Reply sent on 15.06.2016	Transferred by DAC
15.	Shri Gopal Prasad	31.05.2016	Sought 13 questions	Reply sent on 24.06.2016	Transferred by DAC
16.	Shri Ramswaroop	02.06.2016	Sought 06 questions	Reply sent on 01.07.2016	Transferred by DAC
17.	Ms. Aruna	02.06.2016	Sought 03 questions	Reply sent on 01.07.2016	Transferred by DAC
18.	Shri N. Venkateswara Rao	06.06.2016	Sought 03 questions	Reply sent on 01.07.2016	Transferred by DAC
19.	Shri Vijay Kumar	07.06.2016	Sought 01 question	Reply sent on 05.07.2016	Transferred by DAC

20.	Shri Jai Ram	10.06.2016	Sought 03 questions	Reply sent on 05.07.2016	Transferred by DAC
21.	Shri Mohammad Faisal Nawaz	16.06.2016	Sought 07 questions	Reply sent on 15.07.2016	Transferred by DAC
22.	Shri Manzoor Ahmad Dar	16.06.2016	Sought 01 question	Reply sent on 14.07.2016	Transferred by DAC
23.	Shri N. Paparao	07.07.2016	Sought 2 questions	Reply sent on 05.08.2016	Transferred by DAC
24.	Shri Shyamlal Yadav	08.07.2016	Sought 6 questions	Reply sent on 04.08.2016	Transferred by DAC
25.	Ms. N. Aruna	13.07.2016	Sought 3 questions	Reply sent on 11.08.2016	Transferred by DAC
26.	Mr. N. Venkateswara	13.07.2016	Sought 3 questions	Reply sent on 11.08.2016	Transferred by DAC
27.	Shri N. Paparao	18.07.2016	Sought 2 questions	Reply sent on 11.08.2016	Transferred by DAC
28.	Shri N. Nagababji	20.07.2016	Sought 6 questions	Reply sent on 19.08.2016	Transferred by DAC
29.	Shri Brijesh Kumar	20.07.2016	Sought 6 questions	Reply sent on 21.08.2016	Transferred by DAC
30.	Shri Dharampal S. Kapoor	22.07.2016	Sought 1 question	Reply sent on 22.08.2016	Transferred by DAC
31.	Mr. N. Venkateswara	22.07.2016	Sought 3 questions	Reply sent on 22.08.2016	Transferred by DAC
32.	Shri N. Nagababji	03.08.2016	Sought 8 questions	Reply sent on 05.09.2016	Transferred by DAC
33.	Ms. N. Aruna	04.08.2016	Sought 3 questions	Reply sent on 31.08.2016	Transferred by DAC
34.	Shri N. Paparao	09.08.2016	Sought 3 questions	Reply sent on 31.08.2016	Direct Received
35.	Mr. N. Venkateswara	09.08.2016	Sought 3 questions	Reply sent on 31.08.2016	Direct Received
36.	Ms. N. Aruna	09.08.2016	Sought 5 questions	Reply sent on 31.08.2016	Direct Received
37.	Mr. N. Venkateswara	18.08.2016	Sought 4 questions	Reply sent on 16.09.2016	Transferred by DAC
38.	Ms. N. Aruna	18.08.2016	Sought 5 questions	Reply sent on 16.09.2016	Transferred by DAC
39.	Shri N. Paparao	18.08.2016	Sought 5 questions	Reply sent on 16.09.2016	Transferred by DAC
40.	Ms. N. Aruna	19.08.2016	Sought 5 questions	Reply sent on 19.09.2016	Direct Received
41.	Mr. N. Venkateswara	19.08.2016	Sought 2 questions	Reply sent on 19.09.2016	Direct Received
42.	Shri N. Paparao	19.08.2016	Sought 2 questions	Reply sent on 19.09.2016	Direct Received
43.	Ms. N. Aruna	22.08.2016	Sought 2 questions	Reply sent on 21.09.2016	Direct Received
44.	Mr. N. Venkateswara	22.08.2016	Sought 4 questions	Reply sent on 21.09.2016	Direct Received
45.	Shri N. Paparao	22.08.2016	Sought 4 questions	Reply sent on 21.09.2016	Direct Received
46.	Ms. N. Aruna	22.08.2016	Sought 3	Reply sent on	Transferred

			questions	21.09.2016	by DAC
47.	Shri Bhavik Brahmbhatt	29.08.2016	Sought 1 question	Reply sent on 23.09.2016	Transferred by DAC
48.	Shri Satpal Singh	30.08.2016	Sought 4 questions	Reply sent on 23.09.2016	Transferred by DAC
49.	Shri Musthafa	02.09.2016	Sought 4 questions	Reply sent on 28.09.2016	Transferred by DAC
50.	Shri Birendra Kumar	08.09.2016	Sought 5 questions	Reply sent on 07.10.2016	Transferred by DAC
51.	Shri Nikhil Kumar Singh	16.09.2016	Sought 4 questions	Reply sent on 13.10.2016	Transferred by DAC
52.	Shri Dharam Deo Ojha	22.09.2016	Sought 5 questions	Reply sent on 13.10.2016	Transferred by DAC
53.	Shri Dharampal S. Kapoor	22.09.2016	Sought 1 question	Reply sent on 19.10.2016	Transferred by DAC
54.	Ms. N. Aruna	23.09.2016	Sought 2 questions	Reply sent on 19.10.2016	Transferred by DAC
55.	Mr. N. Venkateswara	27.09.2016	Sought 2 questions	Reply sent on 19.10.2016	Transferred by DAC
56.	Mr. N. Venkateswara	27.09.2016	Sought 2 questions	Reply sent on 19.10.2016	Transferred by DAC
57.	Shri Harish Upadhyay	28.09.2016	Sought 5 questions	Reply sent on 25.10.2016	Direct received
58.	Shri D. S. Mishra	29.09.2016	Sought 5 questions	Reply sent on 26.10.2016	Transferred by DAC
59.	Shri Harish Upadhyay	30.09.2016	Sought 4 questions	Reply sent on 25.10.2016	Direct received
60.	Shri N. Paparao	07.10.2016	Sought 2 questions	Transfer application 01.11.2016	Transferred by DAC
61.	Mr. N. Venkateswara	07.10.2016	Sought 2 questions	Transfer application 01.11.2016	Transferred by DAC
62.	Shri Niranjan Yadav	07.10.2016	Sought 2 questions	Reply sent on 01.11.2016	Transferred by DAC
63.	Ms. Ritu Mathur	17.10.2016	Sought 4 questions	Reply sent on 11.11.2016	Direct Received
64.	Ms. N. Aruna	28.10.2016	Sought 2 questions	Reply sent on 18.11.2016	Transferred by DAC
65.	Mr. N. Venkateswara	28.10.2016	Sought 2 questions	Reply sent on 18.11.2016	Transferred by DAC
66.	Mr. N. Nagababji	02.11.2016	Sought 24 questions	Reply sent on 08.12.2016	Direct Received
67.	Shri Harshvardhan	18.11.2016	Sought 1 questions	Reply sent on 08.12.2016	Transferred by DAC
68.	Mr. A. V. B. Sayoji Rao	21.11.2016	Sought 10 questions	Reply sent on 29.12.2016	Direct Received
69.	Mr. N. Venkateswara	28.11.2016	Sought 5 questions	Reply sent on 27.12.2016	Transferred by DAC
70.	Ms. N. Aruna	30.11.2016	Sought 1 question	Reply sent on 27.12.2016	Transferred by DAC
71.	Shri Balbir Singh	08.12.2016	Sought 7	Reply sent on	Transferred

			questions	05.01.2017	by DAC
72.	Mr. N. Paparao	09.12.2016	Sought 1 question	Reply sent on 05.01.2017	Transferred by DAC
73.	Mr. N. Paparao	13.12.2016	Sought 1 question	Reply sent on 05.01.2017	Transferred by DAC
74.	Ms. N. Aruna	13.12.2016	Sought 5 questions	Reply sent on 05.01.2017	Transferred by DAC
75.	Ms. Malti Devi Gupta	26.12.2016	Sought 1 question	Reply sent on 24.01.2017	Transferred by DAC
76.	Ms. N. Aruna	26.12.2016	Sought 1 question	Reply sent on 05.01.2017	Transferred by DAC
77.	Ms. N. Aruna	29.12.2016	Sought 1 question	Reply sent on 05.01.2017	Transferred by DAC
78.	Mr. Vikas Gupta	30.12.2016	Sought 1 question	Reply sent on 25.01.2017	Transferred by DAC
79.	Mr. N. Paparao	30.12.2016	Sought 1 question	Reply will be send with in stipulated time	Transferred by DAC
80.	Mr. N. Venkateswara	02.01.2017	Sought 6 questions	Reply sent on 30.01.2017	Transferred by DAC
81.	Shri M. Nagaraju	23.01.2017	Sought 5 questions	Reply sent on 14.02.2017	Direct Received
82.	Shri A. V. B. Sayoji Rao	24.01.2017	Sought 4 questions	Reply sent on 23.02.2017	Direct Received
83.	Ms. Pushpa Kumari	16.02.2017	Sought 5 questions	Reply sent on 10.03.2017	Direct Received
84.	Ms. Pushpa Kumari	17.02.2017	Sought 5 questions	Reply sent on 14.03.2017	Direct Received
85.	Shri M. Nagaraju	06.03.2017	Sought 6 questions	Reply sent on 14.03.2017	Transferred by DAC
86.	Shri Jitendra Singh	16.03.2017	Sought 3 questions	Reply sent on 21.03.2017	Received through email
87.	Shri Pradeep Kumar Singh	23.03.2017	Sought 1 questions	Reply sent on 26.04.2017	Transferred by DAC

CHAPTER 9: GENERAL ACTIVITIES OF THE AUTHORITY

During the reporting period, the Authority organized several events and meetings on important issues relating to its affairs and official business. The Chairperson, Registrar General and the Registrar visited several organizations and meetings to sensitize breeders, researchers and farmers about the provisions of the PPV&FR Act, 2001 and the role of PPV&FR Authority. Highlights of some of the activities are mentioned below–

9.1. Foundation Day of the Authority

Eleventh Foundation Day of the Authority was celebrated on 20 November, 2016 in the Farmers' Guest House, IARI, New Delhi. At the outset, Dr. R.R. Hanchinal welcomed all the officers and staff on the foundation day summarised the progress of the Authority. On this occasion, he addressed the staff of the Authority and congratulated and appreciated the staff of the Authority for their excellent services extended in the progress of the Authority. He urged the staff to work together as a team for the future progress of the Authority and to take it to new heights. Dr. R.C. Agrawal, Registrar General also addressed to the gathering and requested that all officers and staff together should work as one family in team spirit. Dr. Ravi Prakash, Registrar conveyed his regards to the Chairperson and Registrar General for their leadership and expressed his gratitude to the staff for their support and hard work.

9.2 Progress in use of Hindi in official work

Hindi Pakhwada Diwas was celebrated and the Authority organized essay writing competition, *Nibandh Pratiyogita*, on 14 September, 2016 on the topic was "कृषक किस्मों क पंजीकरण की आवश्यकता एवं इसका जैव विविधता के संरक्षण में योगदान". Five officials of the Authority enthusiastically participated in this competition and the award were conferred persons to the following:

Name	Prize
Ms. Ritu Yadav	First
Miss Sai Leela	Second
Miss Manisha Singh	Third
Mr. Sunil Kumar Singh	Consolation
Mr. Manoj Kumar	Consolation

9.3 Vigilance awareness week

The staff of the Authority joined together in pledging their support to fight corruption and being vigilant as part of the Vigilance Awareness Week (27 October–1 November, 2016). An essay writing competition (Bilingual) was also organized as part of the activity under the vigilance week.

9.4 PPV&FR Authority Meetings

Major decisions of the Authority taken during meetings

- **Pls discuss with RG**

9.5 Participation of Chairperson in various meetings and discussions during 2016–17:

Date	Details
4 April, 2016	Attended a meeting with Additional Director General, Doordarshan to discuss the support for organizing awareness programme of PPV&FRA through Doordarshan and Akashvani. Attended the meeting of the International Advisory Committee (IAC) for the International Agro-biodiversity Congress at New Delhi.
6 April, 2016	Attended Pre-Launch Preparatory Workshop for GEF – UNEP – ICAR – Bioversity International project entitled "Mainstreaming Agricultural Biodiversity Conservation and Utilization in Agricultural Sector to Ensure Ecosystem Services and Reduce Vulnerability" at New Delhi. Attended the meeting with Chairperson of Prasar Bharati to discuss the support from Prasar Bharati for organizing awareness programme of PPV&FRA through electronic media.
7–8 April, 2016	Attended the NAAS sponsored meeting on "Strategies Workshop: Towards Self-sufficiency of Pulses in India" and made a presentation on "Pulse Varieties and Protection". Co-chaired the plenary session on 8 April at New Delhi.
11 April, 2016	Attended meeting of Executive Council of Indian Society of Plant Genetic Resources (ISPGR) at NBPGR, New Delhi.
16 April, 2016	Attended DPC-meeting at Bhabha Atomic Research Centre (BARC) Mumbai as an Expert.
18 April, 2016	Participated in the Awareness programme on "Take it to Breeder & Researcher-The Plant Breeder's and Researcher's Rights" through awareness at SHIATS, Allahabad, Uttar Pradesh
21 April, 2016	Participated as a Chief Guest in the National Seminar organized by Directorate of Areca nut and Spices Development, West Hill, Kozhikode on "Planting Material Production in Spices" at Calicut, Kerala.
22 April, 2016	Attended 2nd Selection Committee Meeting with Additional Secretary (Extn.) at Mahalanobis Committee Room No. 138, Krishi Bhawan, New Delhi.

	Chaired the meeting regarding construction of Plant Authority Bhawan at PPVFRA, New Delhi. As members secretary, Registrar General also attended the meeting.
2 May, 2016	Attended meeting with Hon'ble Member, National Commission for Schedule Castes regarding denial of appointment to the post of computer assistant in PPV&FR Authority at National Commission for Schedule Castes, New Delhi
5 May, 2016	Attended the meeting with Dr. Sharma, Vice-Chancellor, SKUAT Jammu at PPV&FR Authority office to workout progress for inviting applications of Farmers' varieties of Jammu region for registration and also awareness programme to scientists/farmers.
6 May, 2016	Attended First meeting of the Task Force for Small Millets to finalize DUS guidelines at PPV&FRA Office
9 May, 2016	Chaired the meeting regarding outstanding issues of Audited Certificates, settlement of funds released to outsiders and issues pertaining to closing of annual accounts of the Authority for the financial year 2015-16 at PPV&FRA Office. Attended meeting regarding fact finding mission in the framework of the bilateral cooperation project between India and Germany on seed development at PPV&FRA Office.
10 May, 2016	Chaired the session-II on "Collection Conservation and evaluation of germplasm in the AICRP-workshop on Vegetable" at IARI, New Delhi and stressed the importance of registration of farmers varieties/public bred varieties/hybrids.
12–13 May, 2016	Participated as expert in the selection of officer/Director/Dean posts at SKUAT, Srinagar (Jammu & Kashmir).
16 May, 2016	Attended the 5th meeting of the Expert Committee for registration of EDV at Committee Room, NAAS Complex, New Delhi to discuss the various issues for registration of EDVs.
19 May, 2016	Convened a meeting with German experts with regard to "seed project".
20 May, 2016	Attended meeting regarding fact finding mission in the framework of Bilateral Cooperation between India and Germany in seed development. A wrap-up meeting with the JS (Seeds)/IC) ministry of Agriculture & Farmers Welfare at New Delhi.
23–24 May, 2016	Organized and participated in the "Indo-German Bilateral Cooperation Joint Workshop in Seed Development" at NASC, New Delhi. It was attended by about 100 participants from ICAR DUS centres, SAUs, NGOs and Seed Industries. A panel discussion on areas of mutual interest between India and Germany was also organized. An exhibition on important farmers' varieties from various Zones and about PPV&FRA was also organized. The PVP system of both the countries was

	discussed during the workshop.
25–26 May, 2016	Accompanied the German Delegation to visit field gene bank at Mashobra, Himachal Pradesh Vice-Chancellor of Dr. Y.S. Parmar University Solan also took the delegation to KVK, Kandaghat, Dr. S.K. Chakraborti, Director and other Scientists discussed the research and development in potato and vegetables, DUS testing and other related activities at Central Potato Research Institute (CPRI), Shimla. A visit to CPRI station, Kufri was also organized to see the DUS testing of Potato.
27–28 May, 2016	Visited IIHR, Bangalore along with the German Delegation and discussed about the DUS testing in Horticultural crops. A discussion with private seed Industries was also organized during the visit.
2 June, 2016	Participated in the discussion on "*Boudhik Sampada Adhikar aur Kisan*" on DD-Kisan Channel
3 June, 2016	Attended Task force meeting for conifers to finalize DUS test guidelines at PPV&FR Authority office. Attended a "Strategy Workshop on transformation of Indian Agriculture and Improving Farmers Welfare" as a panel member at NAAS New Delhi.
4 June, 2016	Attended the "Roundtable Discussion on IPR, Access to Technology and Policy Interventions" at India Habitat Centre, New Delhi and made a presentation on PPV&FR Act and Breeders' Rights.
6 June, 2016	Attended the meeting with SC/ST commission with regards to appointment of Computer Assistant.
7–9 June, 2016	Attended meeting "Finalizing the QRT Report" at Central Tobacco Research Institute, Rajahmundry, A.P.
11 June, 2016	Visited DUS centres (Pune and Kolhapur) along with Vice Chancellor, MPKV Rahuri to review the progress, Participated in the Kisan Mela and spoke on "Provisions of Farmers' Rights in the PPV&FR Act".
14 June, 2016	Attended Task Force meeting "Validation of DUS guidelines for Mulberry" at Central Sericultural Research and Training Institute, Mysore
18 June, 2016	Delivered special lecture on "Protection of Plant Varieties and Farmers' Rights" at Alumni Association, University of Agricultural Sciences, Bangalore and Felicitation to Distinguished UAS Alumni.
23 June 2016	Attended 5th EDV Expert Committee Meeting of the sub-committee to discuss the EDV cases in PPVFRA Office, New Delhi

27 June, 2016	Attended the meeting with SC/ST commission with regards to appointment of Computer Assistant. नगर राजभाषा कार्यान्वयन समिति (उत्तरी दिल्ली) की बैठक दिनांक 27 जून, 2016 को एन.ए.एस.सी. परिसर, नई दिल्ली में आयोजित की गई। जिसमे अध्यक्ष ने भाग लिया।
30 June, 2016	Paricipated in a workshop on "Take it to Breeders & Researcher-the Plant Breeders and Researchers Rights through Awareness and Streamlining of Farmers' Varieties" at New Delhi. It was attended by about 100 participants from ICAR, DUS centres and SAUs. A panel discussed on strategies for enhanced registration of new/extant varieties, implementation of breeders' rights in India and mainstreaming of registered farmer's varieties for commercialization was discussed.
4 July, 2016	Attended the 38th Authority Meeting of the National Biodiversity Authority at National Biodiversity Authority, Chennai.
6 July, 2016	Attended a meeting with Director, Indian Institute of Wheat and Barley Research, Karnal on registration of extant notified varieties of Wheat and Barley and reviewed the progress of DUS centre on Wheat and Barley.
7 July, 2016	Delivered a lecture to faculty of PAU, Ludhiana on "Protection of Plant Varieties and Breeders' Rights" and had discussion of extant notified varieties with Vice-Chancellor and Director of Research on filing applications from PAU, Ludhiana for registration.
8 July, 2016	Participated in one-day sensitization workshop on "Protection of Farmers' Plant Varieties and their commercialization" at Jammu. Also had a meeting with Vice-Chancellor and Director of Research of SKUAST-Jammu on registration of farmers' varieties and extant notified varieties.
15 July, 2016	Attended meeting regarding National IPR Policy at PPV&FRA Office
25 July, 2016	Met with Dr. (Mrs.) Usha Barwale Zehr, Chief Technology Officer, MAHYCO at PPV&FRA office on benefit sharing issues.
26 July, 2016	Attended meeting with Mr. Shyam Khadka, Rep FAO and Dr. GG Koppa, Assistant FAO at Lodi Estate, New Delhi to discuss the project proposals on PGR activities.
27 July, 2016	Attended Round Table on Legal Ambiguity related to IPR and Access to Technology in Agriculture Sector, Expert Consultation at G. Parthasarathi Conference Hall, RIS.
28 July, 2016	Agricultural Scientists Recruitment Board invited as Adviser to interview the candidates for the post of Director, ICAR-National Bureau of Plant Genetic Resources, New Delhi.
29 July, 2016	Attended meeting to discuss about the pending applications of extant notified

	varieties in the Indian Institute of Rice Research (IIRR), Indian Institute of Millet Research (IIMR), Indian Institute of Oil Seeds Research (IIOR) and State Agricultural University at Hyderabad.
30 July, 2016	Attended 28th meeting of the Extent Varieties Recommendation Committee on 30 July 2016 at Junagadh Agricultural University.
2–4 August, 2016	Spoke on "Farmers' Rights and Policies to Integrated Farmers' Varieties in to the Seed chain" in the Bioversity International workshop "Seeds for Needs" held on 2-4 August, 2016 at New Delhi
4 August, 2016	Attended Round Table Discussion on "Promoting Biotech Innovations in Agriculture and Related Issues at NAAS Committee Room No 1, NASC Complex, New Delhi and chairperson was one of the panellist and made presentation on "IPR issues in Plant Varieties.
6 August, 2016	Attended as Chief Guest during Valedictory Session of National Conference on "Bringing Self Sufficiency in Pulses for Eastern India" at Sabour Bhagalpur, Bihar
10 August, 2016	Attended meeting with JS (Seeds) regarding Amendment in Gazette Notification on annual fees to be paid on the registered varieties under section 35 of PPV&FR Act, 2001 at Krishi Bhawan.
11 August, 2016	Participated in the National Inception Workshop on GEF-6 India, FAO Project at Krishi Bhawan, New Delhi and provided inputs for project conceptualization.
12 August, 2016	Attended NABS conference to received Prof. S. Kannaiyan Life Time Achievement Award and deliver lecture on "International Treaties, Indian IPR-Policy and Impact on Plant Variety Protection" at Chennai
13 August, 2016	Reviewed DUS Project at IFGTB and TNAU, Coimbatore and had a meeting with Vice Chancellor TNAU, Coimbatore on registration of TNAU developed extant notified varieties.
16 August, 2016	Reviewed DUS projects of Horticulture crops at IIHR, Bangalore and took part in a live phone in programme of Doordarshan, Bangalore on "PPV&FR Act" and Indo-German collaboration Project Inception Programme at UAS Bangalore.
17 August, 2016	Attended Second meeting of the Selection Committee for Plant Genome Saviour Community Award 2013-14 at Committee Room no. III, NAAS, NASC Complex, Pusa, New Delhi
24 August, 2016	Organized Plant Genome Saviour awards/rewards/recognition at New Delhi. An exhibition about the traditional varieties being conserved by the awardees who were to be conferred awards and the Genome Saviour awardees who have been awarded by Authority in the past.

29 August, 2016	Inaugurated of Seed building at UAS Dharwad and review of DUS centre.
31 August, 2016	Attended 29th meeting of the EVRC on 31 August 2016 at Indian Institute of Rice Research (IIRR), Hyderabad during which about 70 varieties were put up for consideration of EVRC.
1 September, 2016	Visited to Farmers' Variety Gene Bank Maintained by Smt. Anjamma at Gangawar (Medak dist.), Telangana State and discussed with KVK scientists and villagers for establishment of community seed bank.
2 September, 2016	Received Shri S.V. Reddy Memorial Award for outstanding contribution to Seed Industry and Farming Community by Seedsmen Association on 02.09.2016 at Hyderabad. Deliver key note address: Seed Industry and Breeders' Rights in India
14–15 September, 2016	Attended meeting of registration of extant varieties/ hybrids developed by TNAU involving breeders/seed technologists/ horticulturists/ plant protection scientists who are involved in the development of crop varieties at Tamil Nadu Agricultural University, Coimbatore. Met with farmers of Chittor, Palghat regarding mainstreaming of Farmers' Varieties in Rice and Vegetables and establishment of community seed bank. Gave a presentation on "Role of SAUs in Protection of Plant Varieties and Breeders Rights" and "Preparedness for National IPR Policy" and attended Task force meeting of Jatropha for finalization of DUS guidelines at TNAU, Coimbatore.
16 September, 2016	Attended Meeting with OSD to Union Agriculture Minister and the Consultation meeting as a follow-up action of the comments received on Bt. Cotton Draft Licensing Guidelines and Formats for GM Technology Agreements at Krishi Bhawan.
19–20 September, 2016	Attended the selection committee meeting for the appointment of Dean (Home Science) and Deputy Directors at Lembucherra, Tripura
23–24 September, 2016	Inaugurated Seed Mela and Plant Biodiversity Fair at UAS, Dharwad
25–26 September, 2016	Attended exhibition of agricultural related activities by Ministry of Agriculture & Farmers Welfare at Deendayal Dham, Mathura.
26 September,	Attended APSA Interactive Workshop for the delegation at New Delhi.

2016	
30 September, 2016	Attended RAC meeting as Chairman of RAC-Cashew at ICAR-NRC Cashew, Puttur.
3 October, 2016	Participated in the Foundation day function at IARI Regional Station, Indore as Chief Guest and delivered a lecture on "Indian seed Industry and Protection of Plant Varieties and Farmers' Act-2001". Visited DUS centre on soybean at IISR, Indore and attended meeting with Director and staff.
8 October, 2016	Attended the Workshop on Intellectual Property Rights (IPR) & Patents as Chief Guest at Vivekananda Global University, Jaipur and delivered a talk on "International Treaties-Preparedness for National IPR-Policy".
19 October, 2016	Attended review meeting on the PPV&FR Authority under the Chairmanship of Hon'ble Agriculture Minister at 11.00 AM at Krishi Bhawan.
20 October, 2016	Attended meeting to discuss the issue for requirement of No Objection Certificate for registration of crop varieties/hybrids under Protection of Plant Varieties and Farmers' Rights Authority and Standing Committee of DBT for commercial release of Bt. Cotton hybrids based on event based approval mechanism.
21 October, 2016	Attended as an advisor on the selection committee for conducting Viva-Voce of the candidates in connection with the ARS Examination 2015 for the recruitment to the posts of Scientist.
24 October, 2016	Attended meeting with Ekkehard Schroeder Project Coordinator - Germany Indo-German Seed Project.
26 October, 2016	Attended as an advisor on the selection committee for conducting Viva-Voce of the candidates in connection with the ARS Examination 2015 for the recruitment to the posts of Scientist.
3 November, 2016	Attended meeting of Search-cum-selection committee for filling up the post of Director General, National Institute of Plant Health Management at Krishi Bhawan, New Delhi.
4 November, 2016	Attended first meeting of National Project Management Unit of GEF Project on Agriculture under the Chairmanship of Sh. R.B. Sinha, Joint Secretary (NRM&RFS) & NPD (GEF).
5 November, 2016	Attended a programme of Curtain Raiser in order to give wide publicity for the benefit of common public and for those who are engaged in the conservation and use of genetic resources at Hotel Siddharth, New Delhi.

6–9 November, 2016	Attended the 1st International Agro-biodiversity Congress (IAC 2016) which is organized by PPV&FR Authority, the Indian Society of Plant Genetic Resources (ISPGR), and Bioversity International in collaboration with Indian Council of Agricultural Research (ICAR), National Biodiversity Authority (NBA), Trust for Advancement of Agricultural Sciences (TAAS), National Academy of Agricultural Sciences (NAAS), MS Swaminathan Research Foundation (MSSRF) and with support from ICRISAT, CIMMYT, GCDT, JIRCAS, GIZ, at NASC Complex, New Delhi. Chairperson presented invited talk namely "Indian Initiatives on Farmers' Rights" and "Farmers' Role in Conservation of Genetic Resources" and acted as moderator in Farmers Forum on Farmers Role in Conservation of Genetic Resource.
11 November, 2016	Conducted the 26th Authority Meeting at Delhi for the adoption of Annual Account and Annual Report for the year 2015–16 which have to be placed before both houses of parliament in the winter session. The agenda related to technical legal and progress of registry was also discussed during the meeting.
22 November, 2016	Attended 8th Foundation Day of UAS, Raichur as Chief Guest and delivered Foundation Day lecture and also interacted with scientists for registration of varieties for protection of plant varieties as per the Protection of Plant Varieties and Farmers' Rights Act, 2001.
29–30 November, 2016	Organized and conducted the "Indo-German Bilateral Cooperation on seed development" NASC Complex, New Delhi. The workshop was attended by a delegation of technical experts from Germany & the Netherlands, counsellors of their Embassies in India, besides senior officers of Central Government, ICAR Institutes, SAUs and seed industry. It was attended by above 100 participants. Chairperson gave presentation on "PPV&FR Act and UPOV Membership".
1 December, 2016	Visited to CPRIC, Modipuram along with Germen delegates to show the DUS test plots and maintenance breeding program to the delegates and also to interact with the Scientists working on the DUS testing of Potato.
2–3 December, 2016	Participated as Guest of Honour: ISNS-WNRF-Noni Search 2016-Eleventh National Symposium on "Noni and medicinal plants for health and livelihood Security" organized in collaboration with ICAR-IISR and ICAR-CISH, Lucknow.
8–10 December, 2016	Attended Conference on Climate Change Adaptation and Biodiversity Ecological Sustainability and Resource Management for Livelihood Security on 8 to 10 December, 2016 at ICAR-Central Island Agricultural Research Institute, Port Blair. And chaired the session on biodiversity and delivered lecture as Special Guest during the inauguration. Chairperson was the guest of honour in the inaugural

	session and chief guest in the valedictory function.
13–14 December, 2016	Visited Cotton DUS test centre at Dharwad and delivered a lecture on "PPV&FR Act & Registration of Essentially Derived Varieties". Also addressed the winter school participants.
21 December, 2016	Organized 6th Plant Genome Saviour community awards/rewards/recognition function at B.P. Pal Auditorium, IARI-ICAR, New Delhi. An exhibition on traditional varieties being conserved by the awardees was also organized.
22nd December, 2016	Attended "Silver Jubilee Celebration" of College of Agriculture, Vijayapur.
29–30 December, 2016	Attended Board meeting of National Innovation Project-IIM Ahmadabad and also attended interviews of teachers/scientists/SMS as an expert at Junagadh Agricultural University.
6 January, 2017	Attended interphase meeting with National Biodiversity Authority (NBA) to discuss issues related to Compensation under section 41(3) of PPV&FR Act, 2001.
7 January, 2017	Attended meeting for registration of Fruit Varieties during the 4th Group Discussion of ICAR-AICRP on Fruits at ICAR-IIHR, Bengaluru and as a lead speaker made a presentation on "Registration of Fruit Crop Varieties under PPV&FR Act".
10 January, 2017	Attended awareness program on "Indian seed Industry & PPV&FR Act" at College of Agriculture, Bijapur, Karnataka
11 January, 2017	Visited KVK, Bijapur, Karnataka and made presentation on Farmers' Rights.
12 January, 2017	Attended PPV&FRA Awareness programme at KVK Hanumanamatti, Karnataka. Interacted with the members of Purshottam Rao Foundation regarding registration of Farmers' Varieties at Teerthahalli, Karnataka
13 January, 2017	Visited Shivamogga, Karnataka to discuss with Vice Chancellor about the building and land to be allotted to PPV&FRA for its branch office at University of Agricultural & Horticultural Science, Shimoga. The draft MOU and lease deed was also discussed.
20 January, 2017	Attended Annual Seed Industry Program (SIP) conducted by Sathguru Management Consultants at Hyderabad and delivered a lecture on "Plant Variety Protection Intricacies and its Impact on Trait Development and Delivery".
22 January, 2017	Attended a Chief Guest National Seminar on "Seed Spices for Enhancing Farmers Prosperity and Livelihood Security" at ICAR-National Research Centre on Seed Spices, Ajmer, Rajasthan and delivered a talk on importance of IPR in Seed spices.

31 January, 2017	Visited HPKV, Palampur to discuss establishment of new branch office and availability of land at HPKV, Palampur.
1 February, 2017	Visited KVK Kangda attended meeting with KVK staff on awareness of PPV&FR Act.
3 February, 2017	Attended one-day Awareness programme at KVK Bidar, Karnataka and delivered lecture on "PPV&FR Act 2001".
4 February, 2017	Attended one-day awareness programme at KVK Gulbarga and delivered a lead talk on "PPV&FR Act". Attended a farmers' congregation in the evening on 4.2.2017 and talked on awareness about Farmers Rights.
5 February, 2017	Attended Awareness programme organized by Allahabad University during and delivered lecture on PPV&FRA.
9 February, 2017	Attended awareness programme during the Foundation day of Indian Institute of Wheat & Barely Research Institute, Karnal. Delivered a lecture on "Indian Seed Industry and PPV&FR Act Achievements and Way Forward".
11–12 February, 2017	Visited Ranchi to review various activities of the Branch Office and discussed issues related to Field Gene Bank activities with BAU, Ranchi and also discussed with Dr. (Mrs.) Nikki Kumari, Authority Member about the awareness activities which can be taken up in Jharkhand and Bihar.
13–14 February, 2017	Co-chaired the session "Regulations Governing Indian Seed Industry" in the 7 Indian Seed Congress at Kolkata and also delivered lecture at Central Jute Research Institute Barrackpore, Kolkata on PPV&FR Act 2001.
27 February–1 March, 2017	Attended 11th Review Meeting of DUS test centres at IGKV, Raipur. The meeting was attended by various Vice Chancellors, Private Seed Industry and DUS Centres. The meeting was conducted to review various DUS Projects activities, their financial progress and also the review of various DUS Guidelines which are under development. PPV&FRA also organized awareness programme and biodiversity fair for livelihood exhibition at IGKV, Raipur.
13 March, 2017	Attended Meeting with Vice-Chancellor of MPKV, Rahuri regarding opening of PPV&FRA Branch office at Pune
17 March, 2017	Attended Workshop on Protection of Plant Varieties and Farmers' Rights at JNKVV, Jabalpur. Chairperson made a presentation on role of NARS in registration of farmers' and public-sector varieties.
18 March,	Attended Task Force for Development of DUS testing criteria for cashew & Arecanut

2017	and also attended PPV&FRA Awareness Program at Puttur.
28 March, 2017	Visited to Kahikuchi, Guwahati to discuss on awareness programme and also discuss with Head ICAR Institute, Arecanut Research about the establishment of co-nodal centre.
28 March, 2017	Attended Awareness programme on Protection of Plant Varieties and Farmers' Rights organized by Department of Forestry & Department of HAMP school of Earth Sciences & Natural Resource Management, Mizoram University, Aizawl.
29 March, 2017	Attended the awareness program at School of Agricultural Sciences and Rural Development, Nagaland University, Medziphema and made a presentation on "Role of NARS in registration of public bred varieties and facilitation in farmers' varieties registration".

9.6 Participation of Registrar General in various meetings and discussions:

Date	Description
6 April, 2016	Participated in the pre-launch workshop of "Mainstreaming Agrobiodiversity Conservation and utilization in the agricultural sector to ensure ecosystem services and reduce vulnerability" at NASC Complex.
13 April, 2016	Outside Expert for Departmental Promotion Committee for the Assessment of Senior Scientists at Indian Agricultural Statistics Research Institute (IASRI), New Delhi.
22 April, 2016	Participated in the 2nd Selection Committee Meeting for PGSC Awards under the Chairmanship of Additional Secretary (Extn.) at Krishi Bhawan, New Delhi.
22 April, 2016	Organised a meeting of the Building Committee regarding construction of Plant Authority Bhawan.
25 April, 2016	Conducted a legal hearing section 20(2)(b) of PPV&FR Act, 2001 of all applications where amended sheets for column 10 of Technical Questionnaire of Application Form-I and details of agronomic and commercial attributes of the variety have not been submitted at the Registry of PPV&FRA.
26–27 April, 2016	Attended 46th Annual Group Meeting of All India Coordinated Research Project and Review of DUS Guidelines on Sorghum at Udaipur.
30 April–2 May, 2016	Attended on-spot verification of the activities of applicants for Plant Genome Saviour Committee Award 2013–14 at Sher-e-Kashmir University of Agricultural Science & Technology, Srinagar.
2 May, 2016	Attended meeting with Hon'ble Member, National Commission for Schedule Castes regarding denial of appointment to the post of computer assistant in

	PPV&FR Authority at National Commission for Schedule Castes, New Delhi.
5 May, 2016	Attended the meeting with Dr. Sharma, Vice-Chancellor, SKUAST, Jammu at PPV&FR Authority office to workout progress for inviting applications of Farmers' varieties of Jammu region for registration and to conduct an awareness programme for scientists and farmers.
6 May, 2016	Attended 1st meeting of the Task Force for Small Millets to finalize DUS guidelines at PPV&FRA Office, New Delhi
9 May, 2016	Attended a meeting regarding outstanding issues of Audited Certificates, settlement of funds released to outsiders and issues pertaining to closing of annual accounts of the Authority for the financial year 2015–16.
9 May, 2016	Attended a meeting regarding "Fact Finding Mission in the framework of the Bilateral Cooperation between India and Germany on seed development" at PPV&FRA Office, New Delhi.
16 May, 2016	Attended the 5th meeting of the Expert Committee for registration of EDV at NASC Complex, New Delhi to discuss the various issues for registration of EDVs.
20 May, 2016	Attended a meeting regarding "Fact Finding Mission in the framework of the Bilateral Cooperation between India and Germany on seed development". A wrap-up meeting with the Joint Secretary (Seeds), Ministry of Agriculture & Farmers Welfare, New Delhi.
23–24 May, 2016	Organized and participated in the Indo-German Bilateral Cooperation Joint Workshop in Seed Development at NASC, New Delhi.
25–26 May, 2016	Visited the field gene bank at Mashobra (Himachal Pradesh), KVK-Kandaghat, and Central Potato Research Institute research station (CPRI-Kufri) along with the German Delegation to discuss the research and development of potato and vegetables and development of DUS test guidelines.
3 June, 2016	Attended an inter-ministerial meeting along with Mr. R.K. Mishra, Additional Commissioner to discuss on "IPR Chapter of RCEP free trade agreement" organised by Department of Industrial Policy and Promotion, Ministry of Commerce, Government of India at Udyog Bhawan, New Delhi.
8 June, 2016	Attended one-day workshop organised by Embassy of Netherland on "Exploring institutional settings and economic impact of increased commercial registration of varieties and certification of seed potatoes in India" at Chandigarh.
10–11 June, 2016	Attended meeting regarding issues related to technical matters and other financial issues of DUS testing with Vice Chancellor, Punjab Agricultural University at Ludhiana.

23 June 2016	Conducted meeting of sub-committee of EDV-Expert committee at PPV&FRA, New Delhi.
30 June, 2016	Attended National Workshop "Take it to Breeders & Researchers - The Plant Breeder's and Researcher's Rights through Awareness and Streamlining of Farmers' Varieties" at Lecture Hall, NAAS, NASC Complex, New Delhi
2 July, 2016	Attended meeting as a Chief Guest of Valedictory Function at NBPGR and distributed the certificates to the participants of ICFRE Sponsored Programme and explained the participants about various aspects of PPV&FR Act, 2001.
6–8 July, 2016	Attended on the spot verification of Kholo/Canacona Chillies Cultivators Group activities along with other committee members for the Plant Genome Savior Community Award 2013–14 which was co-ordinated by ICAR- Central Coastal Agricultural Research Institute, Goa.
15 July, 2016	Attended meeting regarding National IPR Policy at PPV&FRA, New Delhi.
25 July, 2016	Attended Appeals as the First Appellate Authority in the case of Ms. N. Aruna (Flat No. 225, Narayandri Block, Swamiji Apartments, 6/2, Chandramoulinagar, Guntur – 522 007) at PPV&FRA, New Delhi.
25 July, 2016	Attended Appeals as the First Appellate Authority in the case of Mr N. Venkateswara Rao (S/o Sambaiah, D. No. 3-87, Kantheru Village, Via Namburu, Tadikonda Mandal, Guntur) at PPV&FRA, New Delhi.
27 July, 2016	Attended meeting with Dr. R.K. Roy, Sr. Scientist & Head at PPV&FRA, New Delhi to discuss the issues in DUS testing in flowers at NBRI, Lucknow.
29 July, 2016	Attended meeting to discuss about the pending applications of Extant Notified Varieties in the Indian Institute of Rice Research, Indian Institute of Millet Research, Directorate of Oil Seeds Research and State Agricultural University at Hyderabad.
30 July , 2016	Attended 28th meeting of Extant Varieties Recommendation Committee (EVRC) at Junagadh Agricultural University, Junagadh.
4 August, 2016	Attended "Round Table Discussion on Promoting Biotech Innovations in Agriculture and Related Issues" at NASC Complex, New Delhi.
5 August, 2016	Attended meeting with Mr. Theo Ruis, The Netherlands to discuss the various aspects of DUS testing in flowers in various countries.
5 August, 2016	Attended Appeals as the First Appellate Authority in the case of Mr. N. Venkateswara Rao, (S/o Sambaiah, D. No. 3-87, Kantheru Village, Via Namburu, Tadikonda Mandal, Guntur).
9 August,	Attended Interactive Session arranged with the IARI Alumni with Joint Director

2016	(Education), IARI, New Delhi at IARI, New Delhi to discuss the various possibilities to improve the functioning of IARI as part of discussion with the accreditation committee of UGC.
10 August, 2016	Attended meeting with Joint Secretary (Seeds) regarding amendment in Gazette Notification on annual fees to be paid on the registered varieties under section 35 of PPV&FR Act, 2001 at Krishi Bhawan, New Delhi.
17 August, 2016	Attended 2nd meeting of the Selection Committee for Plant Genome Saviour Community Award 2013-14 at NASC Complex, New Delhi.
24 August, 2016	Attended Plant Genome Saviour Community Award 2012–13 at A. P. Shinde Symposium Hall, NASC Complex, New Delhi.
31 August, 2016	Attended 29th EVRC Meeting at ICAR-Indian Institute of Rice Research, Hyderabad.
9 September, 2016	Conducted legal hearing in case of a rose variety under pre-grant opposition at PPV&FRA, New Delhi.
15–16 September, 2016	Attended meeting of registration of extant varieties/hybrids and farmers' varieties at Tamil Nadu Agricultural University, Coimbatore. Attended Task force meeting of Jatropha for finalization of DUS guidelines at Tamil Nadu Agricultural University, Coimbatore. Meeting with farmers at Chittor and Palghat regarding mainstreaming and establishment of community seed bank.
25–26 September, 2016	Attended exhibition of agricultural related activities by Ministry of Agriculture & Farmers Welfare at Deendayal Research Institute, Mathura from 25–29 September, 2016. PPV&FRA organized an exhibition on Agrobioversity. Smt. Anjamma, a farmer from Telangana was felicitated PPV&FRA felicitated on 26 September, 2016 for her contribution in conservation of traditional varieties by Hon'ble Agricultural Minister Shri Radha Mohan Singh at a function organized at Deendayal Research Institute, Mathura.
27 September, 2016	Participated in the Farm Innovators Meet in the technical Session and to share the views on "Government initiatives for Germplasm Conservation and Farmers' Rights" at Conference Hall, IARI, New Delhi.
3 October, 2016	Attended 24th Meeting of the ICAR Regional Committee at Library Hall, IARI, New Delhi and discussed the issues related to PPV&FR Act, 2001.
4 October, 2016	Participated in a *Vad-vivad* documentary program of DD Kisan channel regarding agro-biodiversity.
7 October,	Attended RTI Appeals in the case of N. Naga Babji (H.No. 6-284/1, Plot No. 47,

2016	Bank Colony, Jeedimetla, Quthbullapur, Hyderabad) v/s First Appellate Authority.
7 October, 2016	Conducted legal hearing in the case of Moerheim Roses & Trading India Pvt Ltd related to pre-grant opposition.
18 October, 2016	RTI Appeals in the case of N. Naga Babji (H.No. 6-284/1, Plot No. 47, Bank Colony, Jeedimetla, Quthbullapur, Hyderabad) v/s First Appellate Authority.
19 October, 2016	Attended review meeting on "Access and Benefit Sharing– Striking the right balance" a pre-International Agrobiodiversity Conference 2016 (IAC 2016) event at India Habitat Centre, New Delhi.
19 October, 2016	Attended review meeting on the PPV&FR Authority under the Chairmanship of Hon'ble Agriculture Minister TAAS office, New Delhi.
19 October, 2016	Attended Pronounced Judgment in opposition filed by SIFA against registration of rose variety Meiflemingue filed by Moerheim Roses & Trading India.
22 October, 2016	Delivered a talk on various provisions as available in PPV&FR Act, 2001 in brainstorming meeting on "Access and Benefit Sharing–Striking the Right Balance" at India Habitat Centre, New Delhi.
24 October, 2016	Attended meeting with Mr. Ekkehard Schroeder, Project Coordinator, Indo-German Seed Project
24 October, 2016	Attended a hearing of m/s. Seedsmen Association & Anr vs. Union of India & Anr in High Court, Hyderabad.
24 October, 2016	Attended Review meeting of 1st International Agrobioversity Congress in New Delhi.
26 October, 2016	Delivered a talk in the "Access to Seeds" event organized by Institute for Studies in Industrial Development, Indian Society for Agro Ecology and Third World Network organised by NBPGR at New Delhi.
3 November, 2016	Attended a "Demonstration programme on e-office products" at National Informatics Centre Services Inc. (NICSI), New Delhi.
4 November, 2016	Attended 1st meeting of National Project Management Unit of GEF project on Agriculture in New Delhi.
5 November, 2016	Attended a curtain raiser event organized to give wide publicity for the benefit of common public and for those who are engaged in the conservation and use of genetic resources in New Delhi.
6–9 November, 2016	Attended the "1st International Agrobiodiversity Congress (IAC 2016)" organized by Bioversity International in collaboration with PPV&FR Authority, Indian Society of Plant Genetic Resources (ISPGR), Indian Council of Agricultural

	Research (ICAR), National Biodiversity Authority (NBA), Trust for Advancement of Agricultural Sciences (TAAS), National Academy of Agricultural Sciences (NAAS), MS Swaminathan Research Foundation (MSSRF) along with the support from ICRISAT, CIMMYT, GCDT, JIRCAS, GIZ, at NASC Complex, New Delhi.
29–30 November, 2016	Attended "Indo-German Bilateral Cooperation on Seed Development" at NAAS Lecture Hall, NASC Complex, New Delhi.
1 December, 2016	Visited along with foreign delegates to Central Potato Research Institute Center (CPRIC), Modipuram to showcase the DUS test plots and maintenance breeding and an interaction with the Scientists working in the DUS testing of Potato.
2 December, 2016	Attended meeting regarding the implementation of IPR Policy with respect to PPV&FRA.
8–10 December, 2016	Attended Conference on "Climate Change Adaptation and Biodiversity Ecological Sustainability and Resource Management for Livelihood Security" at ICAR-Central Island Agricultural Research Institute, Port Blair.
21 December, 2016	Organised 6th Plant Genome Saviour award function at IARI, New Delhi.
22 December, 2016	Attended Appeals as the First Appellate Authority in the case of Ms. N. Aruna (Flat No. 225, Narayandri Block, Swameji Apartments, 6/2, Chandramoulinagar, Guntur) v/s First Appellate Authority at PPV&FRA, New Delhi.
22 December, 2016	Attended Appeals as the First Appellate Authority in the case of Mr. Naga Babji (H. No. 6-284/1, Plot No. 47, Bank Colony, Jeedimetla, Quthbullapur, Hyderabad) v/s First Appellate Authority at PPV&FRA, New Delhi.
4 January, 2017	Attended a meeting with Deputy Secretary, Vigilance at Krishi Bhawan, New Delhi.
6 January, 2017	Attended a meeting at National Biodiversity Authority (NBA) to discuss issues related to Compensation under section 41(3) of PPV&FR Act at Chennai.
11–14 January, 2017	Visited Shivamogga to discuss with Vice-Chancellor about the building and land to be allotted to PPV&FRA for its branch office at University of Agricultural & Horticultural Science, Shivamogga, draft MOU and lease deed.
16 January, 2017	Attended a meeting to discuss with Vice-Chancellor and other concerned breeders of Navasari Agricultural University for registration about the pending extant notified varieties. Delivered a lecture about the importance of the farmers' rights and various

	provisions of PPV&FR Act, 2001 to the staff of KVK and progressive farmers of nearby districts.
17 January, 2017	Attended meeting at Krishi Bhawan with Mr. R.K. Mishra, Additional Commissioner regarding Vigilance matter.
19 January, 2017	Attended a training programme on "Intellectual Property Rights" at Janta College, Bakewar, Uttar Pradesh.
25 January, 2017	Attended meeting to discuss and prepare the road map on Farmers knowledge Digital Library (FKDL) Committee Room of PPV&FRA.
27 January, 2017	Attended PGSC Selection committee meeting at NASC Complex, Delhi.
27 January, 2017	Conducted 30th Extant Varieties Recommendation Committee (EVRC) meeting at NASC Complex, New Delhi.
30 January, 2017	Attended meeting with Mr. Ekkehard Schroeder regarding Indo–German Cooperation on Seed Sector Development, PPV&FRA, New Delhi.
31 January, 2017	Attended a meeting on establishment of new branch office and availability of land at HPKV, Palampur.
9 February, 2017	Attended an awareness programme during the Foundation day of Indian Institute of Wheat & Barely Research Institute, Karnal.
11 to 12 February, 2017	Visited Branch Office, Ranchi to review various activities of the branch office, discuss issues related to Field Gene Bank activities with BAU, Ranchi and meet with Dr. (Mrs.) Nikki Kumari, Authority Member about the awareness activities which can be taken up in Jharkhand and Bihar.
15 February, 2017	Attended meeting regarding Plant Authority Bhawan at PPV&FR Authority, New Delhi.
20 February, 2017	Conducted Departmental Enquiry against Dr. P.M. Pillai, Ex- Registrar, CAU, Imphal at PPV&FR Authority, New Delhi.
21-22 February, 2017	Delivered a lecture on "Legal aspects of PPV&FR Act, 2001" at Punjab Agricultural University, Ludhiana.
27 Feb–1 March, 2017	Attended 11th Review Meeting of DUS test centres at IGKV, Raipur.
3 March, 2017	Attended Selection Committee Meeting for Plant Genome Saviour Farmer's Reward and Recognition 2015 at International Guest House, NASC complex, New Delhi.
8 March,	Attended meeting with Mr. Raghav (DIPP) at PPV&FRA, New Delhi for

2017	organizing National Seminar/workshop in collaboration with DIPP.
9 March, 2017	Delivered inaugural address at "National workshop on Biostatistics" at Salman Ghani Hashni Auditorium, Zakir Husain Delhi College, University of Delhi.
	Attended meeting on Round Table discussion on "Sustainable inputs for Agriculture" organized by National Innovation Foundation at Rashtrapati Bhavan, New Delhi.
16–19 March, 2017	Attended awareness programme about PPV&FR Act, 2001 at Jabalpur. Attended a Task Force Meeting for the development of DUS testing criteria for Cashew and Areca nut and awareness programme at Puttur, Karnataka.
20 March, 2017	Attended a meeting at NBPGR regarding the Indian Society of Plant Genetic Resources.
	Conducted Departmental enquiry of Dr. P.M. Pillai at PPV&FRA, New Delhi.
28–30 March, 2017	Attended awareness programme at KVK, Banka organized by Bihar Agricultural University, Bhagalpur in collaboration with PPV&FR Authority.
31 March, 2017	Attended a Brainstorming meeting organized by Global Forum for Farmers (GFF), NAAS and PPV&F Authority at NASC Complex, New Delhi.

9.7 Progress of work at Branch Office, Guwahati

The Branch Office, Guwahati of Protection of Plant Varieties and Farmers' Rights Authority started functioning from the campus of Assam Agricultural University, Khanapara, Guwahati from 20 May, 2011. Dr. A.C. Sarma, Ex Deputy Registrar completed his term of deputation on 19th May 2016 and joined back his parent department. The Charge of Branch Office was handed over to Dr. AK Singh, Plant Variety Examiner (PVE).

9.7.1 Applications / Seed Samples Received

During the reporting period, fifty six applications were received for different crops under various categories and after preliminary examination, these were sent to Head Office for further necessary action. During the reporting period applications as well as seed samples/planting material of the candidate varieties which have been applied for the purpose of registration were received. Sixty seed samples of different crop species for DUS / GoT received for the varieties applied for registration were received at Guwahati and sent to Headquarters.

The details of applications received and forwarded are as under:

Crop species	No. of applications
Rice	39
Foxtail millet	08
Maize	03
Black Gram	02
Green Gram	01
Soybean	01
Pumpkin	01
Total	**52**

9.7.2 Activities at Branch Office:

Date	Event	Details
17th March 2017	Awareness Program KVK Barpeta, Assam	Dr. AK Singh, PVE and Incharge Branch Office participated and delivered a lecture on PPV & FR Act, 2001 and registration of plant varieties in one day awareness programme on PPV & FR Act, 2001 organized by KVK Barpeta, Assam. Participation was made by local farmers including women farmers. Total 149 people participated in the training programme.
22nd March 2017	Awareness Program KVK, Chirang, AAU Kajalgaon, BTAD, Assam	Dr. AK Singh, PVE and Incharge Branch Office participated and delivered a lecture on PPV & FR Act, 2001 and farmers Rights in one day awareness programme organized by KVK Chirang, Assam. Video clips on farmers' rights and agro-biodiversity prepared by the Authority were displayed to the farmers. Other invited guests delivered talks on importance of local germplasm, biodiversity and importance of registration to the participants in local language.
28th March 2017	Central Plantation Crops Research Institute, Research Centre, Kahikuchi and KVK Kamrup, Kahikuchi, Assam	Dr. R.R. Hanchinal, Chairperson, PPV & FRA along with Dr. Ravi Prakash, Registrar, PPV & FRA visited bothe the Centres. A small review meeting was conducted with the scientists at both Centres. A field visit was also conducted after the meeting to explore the possibilities for establishment of DUS test centre/sub centre for conducting DUS test of varieties applied for registration.

30th March 2017	Awareness Program KVK Kamrup Kahikuchi, Assam	Dr. AK Singh, PVE and Incharge Branch Office participated and delivered a lecture on PPV & FR Act, 2001 and Farmers' Rights in one day awareness programme on PPV & FR Act, 2001 organized by KVK Kamrup, Kahikuchi, Assam. Shri Babesh Kalita, MLA Rangiya constituency, Assam graced the occasion and motivated the farmers to come forward to protect their germplasm and reap the rights and benefits provided under the PPV & FR Act, 2001. Participation was made by local farmers including women farmers. More than 150 participants attended the training programme.

9.8 Progress of work at Branch Office, Ranchi

The PPVFRA Branch office Ranchi is situated in the premise of Computer Centre Building of the Birsa Agriculture University, Kanke, Ranchi (Jharkhand) with its territorial jurisdiction, functioning since May 2011. The mandate of branch office to participate in training–cum-awareness programme/ meetings/ Seminars/ workshop convened by various research institutions/ agricultural universities/ KVKs/ departments/ organizations/ agencies in the jurisdiction for dissemination of knowledge concerning to PPV&FR Act 2001 including different award, reward & Recognitions, popularization & motivation of registration of Farmers' Varieties.

9.8.1 Registration of varieties:

During the reporting period Branch office Ranchi has made following achievements:

- **Farmers Varieties applications: 1331 applications of farmers varieties** for registration and after initial examination these applications were sent to the Plant Varieties Registry, New Delhi for further processing.
- **Seed samples: 227 seed samples of different crops for DUS and Grow out Test (GOT)** and sent to the National Gene bank and/or different DUS Centres directly for further necessary action.
- **Utilization Certificates**: Branch office Ranchi has made sincere effort for collecting Utilization Certificates (UCs) for funds released by Authority for Training-cum-Awareness programmes to various organizations including KVKs in its jurisdiction.

9.8.2 Participation in Seminars/Workshop/Kisan Gosthi:

- Workshop on PPV&FR Act 2001, organized at Jawaharlal Nehru Krishi Vishwa Vidyalaya (JNKVV), Jabalpur (M.P) on March 17, 2017 with Chairperson & Registrar General PPV&FRA New Delhi: The Directorate of Research services, Jawaharlal Nehru Krishi Viswa Vidyalaya (JNKVV), Jabalpur (M.P) organized one day workshop on PPV& FR Act 2001. In the workshop all the PC of KVKs falls under JNKVV Jabalpur and in charge scientist of Zonal Research station (ZRS) were present. Apart from above the following were also present. Dr. S.K.Rao, Director Research & Dr.G.S. Koutu professor elaborated the state of farmer Variety in the Madhya Pradesh the area falls under the JNKVV.
- Dr.R.R. Hanchinal, Chairperson, delivered lecture on PPV& FRA, achievements, challenges includes, importance of PGR, Seed industry, development & growth, seed market different national & international offering TRIPS, CBD, ITPGRFA, Nagoya protocol, UPOV, PGT Cartegena protocol and GI. He had also elaborated Breeders Right, Researchers Rights, infringements, Awareness programme and progress of Farmer Variety Registration. Dr.V.S.Tomar Vice Chancellor, JNKVV, elaborated the importance of knowledge to wealth through technology and innovation.
- Deputy Registrar Ranchi was nominated in committee constituted for the on-spot verification of applicant for plant genome savior community award (Sagar Krishnanagar swami Vivekanad Youth Cultural Society, South 24 Parganas,(WB). Dr KD Kokate, Director(Extension),MPKV Rahuri, was the chairman of the committee with Director(research) BAU Sabour and Deputy Registrar Ranchi were member in the verification committee. The committee visited from 03 to 06/06/2016 the applicant's working place and submitted the report to PPV&FRA headquarter New Delhi.
- Deputy Registrar, Ranchi participated in function of Plant Genome Savior Community Award organized at PPV& FRA headquarter New Delhi on August 24, 2016. A workshop on empowering the Plant Genome Savior awardees and other farmers in conservation and sustainable use of farmers varieties was also organized.
- Dr.Nikki Kumari Member (PPV&FR Authority) visited the Branch Office Ranchi on 19.09.2016. Sh UK Dubey, Deputy Registrar welcomed and briefed her about vast role in agriculture, bio-diversity conservation & different provisions of PPV & FR Act. She was glad to know the progress of registration of applications during the short period of establishment of PPV & FRA Branch Office Ranchi.
- Participation in Review meeting of Agriculture development activities in Jharkhand by Shri Radha Mohan Singh, Hon'ble Union minister of Agriculture and famer welfare, Govt of India at BAU Ranchi on Sep.27, 2016: Hon'ble Union minister reviewed the agricultural development activities of Jharkhand state. Shri Randhir Kumar singh Hon'ble minister of

Agriculture of Jharkhand and Dr Nitin Madan Kulkarni, Secretary Agriculture cum Vice-Chancellor BAU, Ranchi were also grace the meeting.UK Dubey Deputy Registrar Ranchi attended the review meeting and briefed about the territorial jurisdiction of branch office Ranchi and progress of registration, total applications received since its inception from May 2011 and applications received during the financial year and community award and its verification .

- Participation in DUS Review meeting organized at IGKV, Raipur Chhattisgarh from Feb 27,2017 to March 01,2017
- Hon'ble Chairperson, Prof R.R.Hanchinal & Registrar General, Dr.R.C.Agrawal, PPV &FRA New Delhi visited branch office Ranchi and Field Gene Bank situated at the Birsa Agricultural University Ranchi (Jharkhand). Chairperson appreciated regarding the filing of application of farmer varieties from branch office Ranchi and participation in training cum awareness programme. Chairperson & Registrar General also visited the Divyayan Krishi Vigyan Kendra, Ram Krishna Mission Ashrama, Morabadi Ranchi (Jharkhand) and ICAR Research Centre for Eastrern region Rasearch Complex, Plandu Ranchi, during their visit on 11&12 February, 2017.
- Deputy Registrar also participated in the brain storming workshop on strategies for realizing the provisions of Farmers Rights under PPV& FRA, 2001 on March 31, 2017 at New Delhi. The brain storming workshop was jointly organized by Global forum for farmers and PPV & FR Authority.

9.8.3 Training Cum-awareness programmes:

During the reporting period UK Dubey, Deputy Registrar branch office Ranchi has participated in different training cum awareness programme organised by different institutions/KVKs/Agricultural Universities, NGOs with the financial assistance from PPVFR Authority in territory of branch office Ranchi. The details are as under;

- Krishi Vigyan Kendra (KVK), Purulia (West Bengal) on March.02, 2017: Krishi Vigyan Kendra (KVK), Purulia (West Bengal) organized one day Training-Cum-Awareness Programme on different provisions of Protection of Plant Varieties & Farmers Rights Act (PPV&FRA), 2001 on March 02, 2017. U.K Dubey, Deputy Registrar, Branch Office Ranchi has attended the said training Cum-Awareness programme. Apart from above the following were present on 02.03.2017 with more than 50 farmers of Purulia and neighbouring districts. Senior Scientist &head (PC) Krishi Vigyan Kendra (KVK) Purulia (West Bengal), Sh.Manik Kumar Deoghara,Secretary Krishi Vigyan Kendra (KVK) Kalyan

(West Bengal), Sh.Atanu Ghosh,Assistant Director (Plant Protection), Sh. Bidhan Chandra Sahani,ADA (Seed).

- Vikas Bharti Bishunpur,Krishi Vigyan Kendra (KVK), Gumla (Jharkhand) organized one day Training-Cum-Awareness Programme on different provisions of Protection of Plant Varieties & Farmers Rights Act (PPV&FRA), 2001 on March 03, 2017. Sh UK Dubey, Deputy Registrar, Branch Office Ranchi attended the said training Cum-Awareness programme. Apart from above the following were present on 03.03.2017 with more than 550 farmers of Gumla and neighboring districts:

- Shri Sudarshan Bhagat, Hon'ble Union Minister of State for Agriculture and Farmer Welfare, Govt. of India inaugurated the programme by lightening of lamp and highlighted the importance of this programme. Dr. R. P. Singh 'Ratan' Director, Extension Education, Birsa Agricultural University, Ranchi presided over the function and expressed the importance of this programme in collecting unique and rare land races which is one the way of extinction . Umakant Dubey, Deputy Registrar, PPV & FRA Branch office, Ranchi expressed the role of PPV&FR in conserving and protecting Farmers right in details. He emphasized the importance of indigenous crop varieties in breeding programme for enhancing the productivity of the crops, registration of crops in different variety & different awards. The Exhibition was also organized and depicted very good collection of traditional varieties.

- Krishi Vigyan Kendra (KVK) Gram Nirman Mandal Sarvodaya Ashram Sokhodeora, Nawada (Bihar) organized one day Training-Cum-Awareness Programme on different provisions of Protection of Plant Varieties & Farmers Rights Act (PPV&FRA), 2001 on March 06, 2017. U.K Dubey, Deputy Registrar, Branch Office Ranchi has attended the said training-cum-awareness programme. Apart from above the following were present on 06.03.2017 with more than 100 farmers of Nawada and neighboring districts; Ms. Kalpana Sinha, Senior Scientist &head (PC) Krishi Vigyan Kendra (KVK) Nawada (Bihar), Syed Abid Imam, Subject Matter Specialist (SMS) Krishi Vigyan Kendra (KVK) Nawada (Bihar), Sh.Arvind Kumar Rai, Subject Matter Specialist (SMS, Agronomy) Krishi Vigyan Kendra (KVK) Nawada (Bihar), Sh.Niranjan Prasad Singh, Subject Matter Specialist (SMS, EX-1) Krishi Vigyan Kendra (KVK) Nawada (Bihar), Dr.Dhananjay Kumar Singh, Subject Matter Specialist (SMS,Animal Science) Krishi Vigyan Kendra (KVK) Nawada (Bihar).

- Holy Cross Krishi Vigyan Kendra (KVK), Hazaribagh (Jharkhand) organized one day Training-Cum-Awareness Programme on different provisions of Protection of Plant Varieties & Farmers Rights Act (PPV&FRA), 2001 on March 07, 2017. Sh UK Dubey, Deputy Registrar, Branch Office Ranchi has attended the said training Cum-Awareness programme.Apart from above the more than 125 farmers of Hazaribagh and neighboring districts.

Krishi Vigyan Kendra (KVK), Simdega (Jharkhand) organized one day Training-Cum-Awareness Programme on different provisions of Protection of Plant Varieties & Farmers Rights Act (PPV&FRA), 2001 on March 26, 2017. Sh UK Dubey, Deputy Registrar, Branch Office Ranchi has attended the said training Cum-Awareness programme. Apart from above more than 100 farmers of Simdega and neighbouring districts including the following: Dr.A.Kumar, Senior Scientist &head (PC) Krishi Vigyan Kendra (KVK) Simdega (Jharkhand), Dr.Rakesh Ranjan, subject matter specialist (SMS) Horticulture, Krishi Vigyan Kendra (KVK) Simdega (Jharkhand), Dr.Himanshu singh, subject matter specialist (SMS) Animal science, Krishi Vigyan Kendra (KVK) Simdega (Jharkhand).

The Indian PVP legislation has special provisions relating to applications for registration from citizens of foreign countries on the basis of principle of reciprocity where any country specified by the Central Government on this behalf by notification in the Official Gazette under sub-section (1) of section 31. Since, India is not member to the UPOV therefore, many countries are exploring Bilateral Cooperation with India in the field of agriculture and allied area through Department of Agriculture & Co-operation (DAC), Ministry of Agriculture, Govt. of India, New Delhi.

India is member to the many International Conventions and Treaties and founder member of the International Treaty on Plant Genetic Resources for Food & Agriculture (ITPGRFA). The biennial contribution to the ITPGRFA on behalf of the Govt. of India is paid by the Authority. The Authority participates in the Governing Body Sessions / Meetings and technical programmes of the International Treaty and UPOV. India's membership to the UPOV is under consideration and given the status of observer. The details of foreign visitors and the visits of Indian delegation during the reporting period are as under:

10.1 Foreign Visits:

Objective of the visit of Indian delegation to Germany

Germany is one of the advanced country in respect of Seed Development and among the five founder countries for UPOV system and has an expertise in cereals, vegetables and fruit corps. The visit of Indian delegation was aimed to study the DUS testing and visit to DUS and VCU centres to get onsite experience, special tests being used and also details of plant breeders' rights in Germany.

Study visit was a good learning experience for us because of following reasons:

- In India, varietal development programme in cereals is in hand of public funded institutes, whereas pvt. Plant breeding companies in Germany has good programme in varietal development in cereals. Therefore, in India there is need to encourage private Seed companies to invest more in varietal development cereals.

- German seed industry has some advantage in bulk production of seed because of mechanization. Therefore more cooperation is needed in seed sector from Germany.
- Harmonization is required between DUS descriptor of CPOV and PPV8FRA.
- Reference collection needs to be maintain like IPK for resolving the future conflict of PBRs.

10.2 Workshop(s) under Indo German Bilateral Cooperation in Seed Sector Development

Two meetings were conducted. Salient progress are given hereunder

10.2.1 Bilateral Workshop during May 23-24, 2016

- A working group may be constituted to study on Harmonisation procedure between India and German in relation to DUS testing to work out details about convention country approached
- A working group may be constituted to identify crop species of mutual interest: harmonisation in DUS test Guideline, application and examination procedure, DUS test, calibration, reporting and varietal description, common reference variety collection and database etc.
- This group shall develop procedure keeping in mind of procedure followed in UPOV-BSA and recommend in consultation with BSA
- PPV&FRA and NBA may facilitate an interaction with the seed industry to discuss issues regarding ABS and various regulatory mechanisms governing seed sector
- A joint workshop at Hyderabad to train Breeders in DUS procedure
    - Can be organized in late Sept or early Oct 2016 at Hyderabad (Rice, Sorghum and Maize) provide training to Breeders in recording of DUS description, database, automation and image analysis: sharing of experiences in DUS testing
- PPV&FRA shall constitute a committee to examine the different provision regarding the Farmers' Rights including "Reasonable price" of a variety registered under Act
- Visit of a NBPGR scientist to study on Genetic Integrity and Diversity in terms of allele frequency in Ex situ conservation of land races
- Co-operation for Exploration, Evaluation and Quarantine procedure: bio-systematic study and genetic enhancement and evaluation of germplasm for novel training: training in areas of plant health measures etc
- One day Bi-lateral conference on Essentially Derived Variety may be conducted during winter 2016
- Govt. support for community seed banks

- Harmonisation to be made for VCU and DUS testing as per the system prevailing in Germany and accreditation of seed certification agencies and seed testing labs in India
- Knowledge co-operation in precision agriculture, IPM, affordable technologies in seed storage, molecular diagnostics and auditing in seed management system

10.2.2 Bilateral Workshop during November 29–30 , 2016

The third Indo-German Bilateral Cooperation Workshop was conducted on 29–30 November, 2016 at the National Agriculture Science Complex (NASC), New Delhi. The joint workshop was organized by Protection of Plant Varieties and Farmers' Rights Authority (PPV&FRA, New Delhi) in order to facilitate exchange and discussions on various aspects of plant protection, and build stronger relations between the participating countries. Representatives from The Netherlands also participated in this meeting. The meeting was attended by delegates from Germany and The Netherlands, researchers and representatives from Ministry of Agriculture and Farmer's Welfare (Government of India), Indian Council of Agricultural Research (ICAR), state agricultural universities (SAUs), non-governmental organizations (NGOs), ICAR-DUS centres, private seed industries, and Protection of Plant Varieties and Farmers' Rights Authority (PPV&FRA).

The two-day workshop included five technical sessions that covered various aspects of plant protection, DUS centres, EDVs, IPRs and PPV&FR Act. Chairperson, PPV&FRA, Prof. R.R. Hanchinal, welcomed and introduced the delegates inaugurating the workshop. He briefed the gathering on the Indo-German Bilateral Cooperation that was initiated in 2011 to build collaborations in agricultural sector and was declared as a joint cooperation on April 11, 2013. Proposing a two year extension to the on-going collaboration, Chairperson expressed his interest in intensifying knowledge exchange and enhancing business opportunities between the countries. On that note, he welcomed the representatives from The Netherlands & Germany, CPVO and expressed the interest towards building tri-lateral cooperation, strengthening the seed sector, trade opportunities and building capacities to share the benefits of rich germplasm biodiversity of crops between countries. He raised the subject of harmonizing DUS guidelines, understanding the legislative and judicial aspects of International Union for the Protection of New Varieties of Plants (UPOV) convention, interest of India becoming an UPOV member and the inclusion of Germany and The Netherlands as Convention countries under the PPV&FR Act, 2001. Reconnecting to the proposal India had made in 1998 for being a part of the UPOV countries, Chairperson expressed that such knowledge cooperation is highly valuable and should be revisited during this meeting.

Sh. R K. Singh, Joint Secretary (Seeds), Ministry of Agriculture & Farmers Welfare, shared his view on building the cooperation on the commonalities between PPV&FR Act, 2001 and UPOV

convention and reach new heights of cooperation. He highlighted that the workshop would be a good platform to discuss the Farmers' Rights component of the Act, essentially derived varieties (EDVs), procedural differences between UPOV and PPV&FR Act, etc.

Dr. Shivanna, Vice-Chancellor, University of Agricultural Sciences-Bengaluru, addressed the gathering and briefed about the importance of this cooperation, capacity building and the need to improve the DUS testing system for horticultural crops.

Dr. Nazeer Ahmad, Vice-Chancellor, Sher-e-Kashmir University of Agricultural Sciencesand Technology (SKAUST), Srinagar, Jammu & Kashmir, addressed the gathering with a brief note on Indian agroecosystems and compared the crops grown at SKAUS&T, a temperate SAU, and Germany and The Netherlands. He highlighted that India being a mega-centre for many crops, has a large number of landraces and genotypes spread across tropical, sub-tropical and temperate zones. He emphasized on the need for field gene banks for fruit and tree crops. He regarded this workshop as a rich platform for networking, exchanging ideas and sharing knowledge.

Dr. Martin Ekvad, President, Community Plant Variety Office (CPVO), France briefed the participants about CPVO being a 40-year old independent authority in European Union (EU) providing plant variety protection to 28 countries across the globe. He mentioned that he looked forward to understand how EDVs were dealt with under the PPVFR Act, technical details of the Indian system of plant protection, and build professional interaction with the participants of the workshop.

Dr. Udo von Kröcher,President, Bundessortenamt, Germany, highlighted that significant progress has been made since the inception of the bilateral cooperation in 2013. He expressed his interest to intensify the cooperation, identify commonalities and legal differences between the Indian and EU system of plant protection and design approaches for strengthening future collaboration.

Mr. Bjorn Grözinger, Advisor of Industrial Affairs, German Embassy, New Delhi, encouraged the participants to build this bi-lateral collaboration into a multi-lateral collaboration and suggested that such workshops are crucial for building economic cooperation enabling fruitful exchange between the countries and establishing seed companies in both India and Germany.

Dr. T. Mohapatra, Secretary, Department of Agricultural Research and Education (DARE) and Director-General, ICAR, encouraged the gathering to initiate tri-lateral cooperation between India, The Netherlands and Germany, and critically review the scientific tools used for describing the distinctness of a plant variety. He highlighted that through discussions in the workshop we could improve our DUS and VCU tests, explore the grey areas in assessing EDVs, identify molecular-DUS descriptors, etc. He emphasized on the use of molecular markers as they provide a robust, precise and an efficient system to screen and identify unique markers

associated with traits in developed varieties. He also opened an array of unresolved topics that can be categorized into four sections: DUS descriptors (epigenetic influence the DUS descriptors used, identification of descriptors for comparing a single variety grown in two countries, exploring the use of molecular markers in DUS test, identification of molecular markers for specific traits, maintenance of reference collections,); streamlining seed diagnostics (evaluating seed quality, purity, viability, longevity, etc.) and seed storage facilities available in the country; exchange of plant material between countries (legalities and the dynamics of the judicial systems involved in plant material exchanges, quarantine aspects of plant material exchange between countries, impact of ecosystem through introduction of new plant varieties), India's membership in UPOV (demands of international treaties, formulating association without jeopardizing legal systems, novelties of building cooperation with EU, impact on farmers and industrial sector of concerned countries, bottlenecks and concerns in building cooperation).

Dr. R.C. Agrawal, Registrar-General, PPV&FRA, concluded the introductory session expressing his gratitude to the Chairperson for organizing the event, Dr. T. Mohapatra for encouraging the participants to critically value the opportunity of the workshop to explore the new directions essential for improving the DUS system and integrating the common aspects of UPOV and PPVFR Act to synthesise a future working plan, Sh. R.K. Singh, JS, for the support from the Ministry, Mr R K. Mishra, Dr. Kees, representatives from the seed industry and other stakeholders. He expressed the importance of the workshop mentioning that the bilateral cooperation could extend into a multi-lateral cooperation if interests align through the discussions during the two-day workshop. He invited participants to discuss the use of markers as DUS descriptors, harmonization of DUS guidelines, concerns related to registration of EDVs, concept of convention countries, UPOV membership, and role of stakeholders from the seed sector. He highlighted that the bilateral cooperation has been a very progressive one and organizing the 3rd meeting with EU counterparts marks another milestone of wider prospects.

10.3 Field visits arranged for German delegation

Consequent to the workshop held on 23-24th May, 2016 PPV&FRA also arranged field visits for German delegation from 25th to 26th May, 2016 to Shimla. Chairperson and Registrar General accompanied the German Delegation to visit field gene bank at Mashobra, Himachal Pradesh. Vice-Chancellor of Dr. Y.S. Parmar University of Horticulture & Forestry, Solan also took the delegation to KVK, Kandaghat. Dr. S.K. Chakraborti, Director, CPRI and other Scientists discussed the research and development in potato and vegetables, DUS testing and other related activities at CPRI, Shimla. A visit to CPRI station, Kufri was also organized to see the DUS testing of Potato.

Another field visit was made at IIHR, Bangalore during 27th - 28th May, 2016. Chairperson along with German Delegation visited IIHR Bangalore and discussed about the DUS testing in Horticultural crops. A discussion with private seed Industries was also organized during the visit.

CHAPTER 11: FINANCIAL STATEMENTS OF THE AUTHORITY

The financial statements were prepared under the historical cost convention in accordance with Generally Accepted Accounting Principles (GAAP), the applicable mandatory Accounting Standards (AS) issued by the Institute of Chartered Accountants of India (ICAI) and relevant presentational requirements for Central Autonomous Bodies as prescribed by the Controller General of Accounts (CGA). The Authority follows the accrual system of accounting in respect of all items of expenditure & income except where otherwise stated. A copy of Balance sheet as on 31 March, 2017, Income & Expenditure Account and Receipt & Payment Account for the year ended 31 March, 2017 are enclosed. The audited accounts along with the audit report and management reply were approved in the PPV&FR Authority meeting held at New Delhi.

In compliance with section 62(2) of PPV & FR Act, 2001, the accounts of the Authority were submitted to the Comptroller and Auditor General of India (CAG). The Audit by CAG is yet to be taken up. The audited accounts along with audit report and management reply shall be sent to the Ministry separately for placing before both the houses of Parliament. The Authority received Rs. 1975.00 lakh as grants-in-aid from Department of Agriculture, Cooperation & Farmers Welfare, during the year 2016–17 and utilized Rs. 1886.90 lakh after adjusting unspent balance of Rs. 7.38 lakh of previous year leaving a balance of Rs. 95.40 lakh.

Table: Balance Sheet as on 31 March 2017

Corpus/capital fund and liabilities	Current year (Amount in rupees)	Previous year (Amount in rupees)
Corpus/capital fund	402,074,246	285,360,795
Reserves and surplus	-	-
Earmarked/ endowment funds	-	-
Secured loans and borrowings	-	-
Unsecured loans and borrowings	-	-
Deferred credit liabilities	-	-
Current liabilities and provisions	123,527,750	152,845,257
Assets		
Fixed assets	30,025,715	29,977,679
Less: accumulated depreciation	24,983,197	24,139,774
Net fixed assets	5,042,518	5,837,905

Capital work in progress	17,838,219	17,838,219
Investments-from earmarked/ endowment funds		-
Investments-others		-
Current assets, loans, advances, etc.	502,721,259	414,529,928
Miscellaneous expenditure (to the extent not written off or adjusted)		-
Total	**525,601,996**	**438,206,052**

Table: Income and Expenditure Account for the Year Ended 31 March 2017 (Amount in Rupees)

Income	**Authority fund**		**Gene fund**	
	Current year	**Previous year**	**Current year**	**Previous year**
Income from Sales/Services	-	-	-	-
Grants/Subsides	197,451,964	158,115,040	57,167,000	18,500,000
Fees/Subscriptions	19,532,600	29,849,800	4,722,123	7,665,296
Income from investments	-	-	-	-
Income from royalty, publication, etc.	-	-	-	-
Interest earned	22,411,926	14,288,012	985	2,311,840
Other income	656,856	601,581	2,805,487	-
Increase/(decrease) in stock of finished goods and works in progress	-	-	-	-
Deferred income (Depreciation on fixed asset)	843,422	1,213,294	-	-
Prior period adjustment	-	5,543,859	-	1,304,000
TOTAL (A)	240,896,768	209,611,585	64,695,595	29,781,136
Expenditure				
Establishment expenses	91,228,598	49,152,403	-	-
Other administrative expenses etc.	20,047,710	45,415,679	15,636,572	-

Expenditure on grants, subsidies, etc.	58,308,868	49,460,328	-	-
Interest	17,783	10,985	633	630
Depreciation including impairment loss	843,422	1,213,294	-	-
Prior period adjustment	1,999,941	-	-	-
TOTAL(B)	172,446,322	145,252,689	15,637,205	630
Balance being excess of Income Over Expenditure (A-B)	**68,450,446**	**64,358,897**	**49,058,391**	**29,780,506**
Transfer to special Reserve	-	-	-	-
Transfer to/from General Reserve	-	-	-	-
Balance being surplus (deficit) carried to corpus/ capital fund	**68,450,446**	**64,358,897**	**49,058,391**	**29,780,506**

Table 108: Receipts and payments for the financial year (Amount in Rupees)

RECEIPTS	Current Year	Previous Year	PAYMENTS	Current Year	Previous Year
1. Opening Balances			**1. Expenses**		
a) Imprest (Cash In hand)	22,815	44,593	a) Establishment Expenses	19,920,282	20,167,178
b) Bank Balances			b) Administrative Expenses	39,142,253	21,506,248
State Bank of India	52,271,445	64,978,652			
Syndicate Bank	32,976,805	7,453,097	**2. Payments made against funds**		
Remittance in Transit	-	19,630	a) Existing DUS Centres	47,131,161	39,179,207
SBI (Gene Fund)	52,161,780	24,157,718	b) New DUS Centres	11,225,966	21,516,314
Guwahati Bank	32,433	19,910	c) Referral Labs	-	-
Ranchi Bank	26,086	3,024	d) Field Gene Bank	3,524,952	3,113,386
Less: Sweep Balance (Net)	(127,740,142)	-			
State Bank of India-5,87,53,190					
Syndicate Bank-2,72,93,143					
SBI (Gene Fund)-4,16,93,809					
2. Grants received from Government of India	197,500,000	158,544,000	**3. Expenditure on fixed Assets and Capital Work in Progress**		
			a) Purchase of Fixed Assets(Authority)	48,036	428,960
3. Interest Received on Bank deposits			b) Expenditure on Capital Work-in-Progress	-	-
Gene Fund	-	1,858,911			
Authority Fund (Incl Branches)	14,633,296	6,853,854	**4. Advance to Training Centres**	17,712,267	27,998,875
Interest Earned on Authority Fund FD 81,96,643					
Interest on CPF Deposits 10,313			**5. Advance to outsiders**	1,101,075	978,591
Interest on SB (Syndicate Bank) 5,79,100					

Interest on Sweep (SBI) 38,53,395			**6. Refilling of Franking Machine**	100,000	250,000
Interest on Sweep (Syndicate) 19,93,845					
6. Capital Account (Authority Fund)	-	210,000	**7. Contribution to Gene Fund**	57,167,000	18,500,000
7. Refund of Advance from Training Centres	313,411	444,293	**9. Advance to Staff**	1,307,562	1,017,900
8. Refund of Advance for Development of DUS Guidelines (New DUS Centre)	163,141	304,783	**10. Finance Charges**	17,945	11,729
9. Refund of Advance from Staff	608,939	219,197	**11. TDS Deducted by Bank**	199,483	-
10. Refund of Advance from Field Gene Bank	351,181	-	**12. Fixed Deposit-(CPF)**	356,000	-
11. Refund of Advance from Maintenance of Reference Varieties	148,050	-	**13. Recurring Deposit-(CPF)**	297,000	-
12. Refund of Advance from Referral Laboratories	1,000,000	-	12. Fixed Deposit	-	131,650,000
13. Advance against DUS Test & Registration Fee	285,600	-	12. Reversal of Stale Demand Draft		
			Gene Fund	-	863,279
14. Fees / Subscriptions/Other Income			Authority Fund	-	70,410
Application/Registration Fees	10,141,600	15,304,600			
PVJ Subscription Fees	107,500	141,600	**13. Statutory Liabilities Paid**	5,356,830	4,210,718
Fees for Notice of Opposition	10,000	-			
Annual Fees (Including Share from sale of Seeds)-Gene Fund	4,722,123	8,792,574	**14. Other Remittances**	37,560	218,520
Annual Fees - Authority	-	8,000			
DUS Test Fees	8,278,500	12,430,000	**17. Closing Balances**		
			a) Imprest (Cash In		

			hand)		
Annual Renewal Fees	722,000	1,821,000	Authority	25,819	25,000
Inspection Fees	273,000	5,000	Ranchi Branch	52	52
Annual Return Form	2,805,487	-	Guwahati Branch	767	767
Other Income	600	155,961	b) Bank Balances (Including MOD)		
Sale of Publications 600			i) State Bank of India	25,340,939	52,271,445
Sale of Old Newspapers,Scrap	29,486	2,908	ii) Syndicate Bank	40,484,983	32,976,805
RTI (310+60)	370	-			
Reversal of TDS deducted	81,077	52,242	iii) SBI (Gene Fund)	65,009,845	52,161,780
Excess credit given by Bank	-	224,608			
Contribution from Authority Fund	57,167,000	18,500,000	iv) Guwahati Bank	32,433	32,433
Prior Period Account	-	20,996	v) Ranchi Bank	26,086	26,086
11. Encashment of Sweep-SBI	155,849,395	-	Creation of Sweep-SBI	207,403,000	-
12. Encashment of Sweep-SBI-GENE	9,970,473	-	Creation of Sweep-SBI-GENE	21,970,000	-
13. Encashment of Sweep-Syndicate	363,775	-	Creation of Sweep-Syndicate	45,159,000	-
11. Encashment of FD		-			
Central Bank of India	63,754,768	106,421,975			
Allahabad Bank	70,408,303	-			
12. CPF Recurring Deposit	658,000	144,000			
13. Reversal of Stale Cheques	-	38,557			
TOTAL	**610,098,297**	**429,175,683**	**TOTAL**	**610,098,297**	**429,175,683**

CHAPTER 11: CITIZEN CHARTER

VISION OF THE AUTHORITY:

To ensure an effective system for protection of plant varieties, the rights of the farmers, plant breeders and to encourage the development of new varieties of plants.

OBJECTIVES OF THE AUTHORITY:

- To provide an effective system for protection of plant varieties and rights of farmers, plant breeders and researchers.
- To protect plant breeders' rights and to stimulate investment for Research & Development and evolution of new varieties.
- To recognize the farmers in respect of their contributions made for conserving, improving and making available plant genetic resources for development of new plant varieties.
- To facilitate the growth of seed industry to ensure production and availability of high quality seeds and planting material to the farmers.

FUNCTIONS OF THE AUTHORITY:

- Encourage the development of new varieties of plants and to protect the rights of the farmers and the plant breeders.
- Establishment of National Gene bank for orthodox seeds and field gene banks for perennial crops
- Registration of new and extant varieties of plants
- Developing documentation of registered plant varieties
- Documentation, indexing and cataloguing of farmers' varieties
- Compulsory cataloguing facility for all varieties of plants
- Ensuring seeds of varieties registered under the Act are available to farmers and providing for compulsory license, if needs arise
- Ensuring maintenance of National Register of plant varieties
- Utilization of Gene Fund for supporting the conservation and sustainable use of plant genetic resources and capacity building of the panchayats in carryings out such conservation and sustainable use and meeting the expenditure of the schemes relating to benefits sharing and compensations to the stakeholders

Protection of Plant Varieties and Farmers' Rights is a unique subject involving diverse activities, initiatives and stakeholders. The stakeholders of Protection of Plant Varieties and Farmers' Rights Authority are Central Government, State Governments, Union Territories, Research Organizations including State Agricultural Universities, Seed Industries, NGOs and above all the farmers including tribal farming communities.

SERVICES OFFERED BY THE AUTHORITY:

- Providing IPR protection to plant varieties bred by farmers, researchers/ plant breeders in the form of plant variety registration
- Maintaining National Register of Plant varieties wherein details of plant varieties and the rights of respective breeders are documented
- Providing compensation to the farmers in case a registered variety does not perform as per the claim made by the breeders
- Facilitating benefit sharing to the communities/ farmers for the contribution/ sharing of plant genetic resources
- Creating awareness and capacity building for the rights of plant breeders and farmers towards implementation of PPV&FR Act, 2001
- Developing plant varieties database for the stakeholders
- Supporting and rewarding farmers and communities of farmers, particularly the tribal and rural communities, engaged in conservation, improvement and preservation of genetic resources

GRIEVANCES REDRESSAL MECHANISM:

Registrar General, PPV&FRA is the designated officer for redressal of public grievances and can be contacted at:

Registrar General

Appellate Authority

Protection of Plant Varieties and Farmers' Rights Authority

S-2, A Block, NASC Complex, DPS Marg,

New Delhi -110012

Ph: 011-25843316. Fax: 011-25840478.

E mail: ppvfra-agri@nic.in

www.plantauthority.gov.in

The Chief public information officer, Registrar of PPV&FRA is designated to address the RTI appeals. He can be contacted at the RTI Cell:

Dr. Ravi Prakash
Chief Public Information Officer
Protection of Plant Varieties and Farmers' Rights Authority,
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ANNEXURES

ANNEXURE I: MEMBERS OF THE AUTHORITY

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Chairperson
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Members (*ex officio*):

1. **Shri R. K. Singh** (IAS)
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2. **Dr. S.K. Malhotra**
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9. **Shri. Bihari Lal Sharma**
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10. **Shri. Aruna Kumar V.K.**
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11. **Shri. M Prabhakar Rao**
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14. **Principal Secretary (Agriculture)**
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15. **Principal Secretary, (Agriculture)**
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Member Secretary (*ex officio*):

Dr. R.C. Agrawal
Registrar General
PPV&FR Authority, NASC Complex, DPS Marg, New Delhi-110012
Phone: 011-25843316
E-mail: rg-ppvfra@nic.in

ANNEXURE II: DETAILS OF HUMAN RESOURCES PPV&FR AUTHORITY

Name of the post	Pay scale	Posts sanctioned	Posts vacant
Chairperson	80,000 fixed	1	-
Registrar General	67,000 - 79,000	1	-
Registrar	37,400 - 67,000 + GP 8700/-	3	2
Finance Advisor	37,400 - 67,000 + GP 8700/-	1	-
Joint Registrar I	15,600 - 39,100 + GP 7600/-	2	-
Joint Registrar II	15,600 - 39,100 + GP 7600/-		-
Legal Advisor-I	15,600 - 39,100 + GP 6600/-	2	-
Legal Advisor-II	15,600 - 39,100 + GP 6600/-		
Deputy Registrar	15,600 - 39,100 + GP 6600/-	3	2
Senior Technical Officer	9300 - 34,800 + GP 4600/-	3	2
Technical Assistant	9300 - 34,800 + GP 4200/-	1	-
Computer Assistant	9300 - 34,800 + GP 4200/-	6	2

ANNEXURE III: STATEMENT SHOWING FUNDS RELEASED TO NEW DUS CENTRES/PROJECTS DURING 2016–17

Table: Statement showing funds released to new DUS centers during 2016-17:

S.no.	Name of the New DUS Centre	Crop	Amount released (Rupees)
1	IGFRI, Jhansi	Oat, Guinea Grass	**100,000**
2	BAU Sabour, Bhagalpur	Cereals, Pulses and Vegetables	**165,000**
3	IFGTB, Coimbatore	Teak	**400,000**
4	CIAH, Bikaner	Aonla	**203,945**
5	CIAH, Bikaner	Chironji and Tamarind	**123,790**
6	CISH, Lucknow(Bael)	Bael	**255,800**
7	NRC on Litchi, Muzaffarpur	Litchi & Guava	**275,000**
8	CIAH, Bikaner	Bael	**190,267**
9	Dr. Y.S. Parmar University of Horticulture & Forestry, Solan	Willow (Salix Species)	**288,298**
10	IIHR, Bangalore	Marigold	**444,000**
11	SHUATS, Allahabad	-	**450,000**
12	ICAR-Unit, CTRI, Rajahmundry	Flue Cured Virginia and Bidi	**450,000**
13	SKUAST-K, Srinagar	Maize and Landraces	**450,000**
14	Central Coffee Research Institute, Karnataka	Coffee	**450,000**
15	UAS, Dharwad	Cowpea	**450,000**
16	CPCRI, Karnataka	Areca nut	**450,000**
17	BSKKV, Dapoli	Kokum	**450,000**
18	CIAH, Bikaner	Date palm	**270,823**
19	CIAH, Bikaner	Jamun	**256,744**

20	CAZRI, Jodhpur	Horsegram, Mothbean, Clusterbean and Lathyrus	**491,656**
21	CISH, Lucknow	Anola	**420,466**
22	CISH, Lucknow	Jamun	**473,556**
23	CARI, Port Blair	Mungbean, Urdbean, Cowpea and Pigeonpea	**646,000**
24	Dr. B.S. Konkan Krishi Viswadidyalaya, Dapoli	Nutmeg	**345,633**
25	UAS, Dharwad	Horsegram, Mothbean, Clusterbean and Lathyrus	**566,028**
26	IARI, Division of Vegetable, New Delhi	Radish and Carrot	**423,960**
27	IARI, Division of Fruit & Horticulture, New Delhi	Lemon and Pummelo	**900,000**
28	IIHR, Bangalore	-	**85,000**
29	ICAR Research Complex NEH Region, Umian	Jackfruit	**300,000**
30	BSKKV, Dapoli	Cereals, Pulses and Vegetable	**450,000**
Total			**11,225,966**

ANNEXURE IV: STATEMENT SHOWING FUNDS RELEASED TO EXISTING DUS CENTRES/PROJECTS DURING 2016–17

Table: Statement of showing funds released to existing DUS Centers/Project during 2016-17:

S. no.	Name of DUS Centre	Crop	Amount released (Rupees)
1	DTR & DCTB, Kurseong	Tea	**100,000**
2	Central Tuber Crops Research Institute, Trivandrum	Sweet Potato and Cassava	**50,000**
3	CITH, Srinagar	Peach and Plum	**450,000**
4	Bidhan Chandra Krishi Vishwavidyalaya, Kalyani	Pointed Gourd	**64,449**
5	IIPR, Kanpur	Pigeonpea	**132,965**
6	IIHR, Bangalore	Jasmine	**100,000**
7	CISH, Lucknow	Mango	**559,836**
8	RARI, Durgapur, Jaipur	Barley	**70,000**
9	CIAH, Bikaner	Water and Muskmelon	**417,405**
10	IARI, New Delhi	Rose and Chrysanthemum	**300,000**
11	UAS, Bangalore	Rice	**143,847**
12	SKNAU, Jobner	Barley	**70,000**
13	CSAUA&T, Kanpur	Linseed	**273,151**
14	CIMAP, Lucknow	Medicinal Plants	**312,500**
15	CIAH, Bikaner	Ber	**203,461**
16	IARI, New Delhi	Bottle Gourd	**284,760**
17	IARI, Regional Station, Katrain	Cabbage and Cauiflower	**258,036**
18	IIHR, Bangalore	Mango	**300,000**
19	NRCB, Trichy	Banana	**300,000**

20	CITH, Srinagar	Strawberry	**400,000**
21	CARI, Port Blair	Noni	**220,143**
22	TNAU, Coimbatore	Jasmine	**450,000**
23	Directorate of Groundnut Research, Junagarh	Groundnut	**417,481**
24	IARI, New Delhi	Chilli	**628,843**
25	Dr. Y.S. Parmar University of Horticulture & Forestry, Solan	Orchids	**287,500**
26	JNKVV, Jabalpur	Sesame and Niger	**374,163**
27	IIHR, Bangalore	Watermelon and Muskmelon	**253,456**
28	Central Sericulture Research and Training Institute, Mysore	Mulberry	**275,000**
29	JAU, Jamnagar	Castor	**368,000**
S. no.	**Name of DUS Centre**	**Crop**	**Amount released (Rupees)**
30	Dr. Y.S. Parmar University of Horticulture & Forestry, Solan	Poplar	**779,560**
31	Sugarcane Breeding Institute, Agali	Sugarcane	**425,586**
32	IFGTB, Coimbatore	Eucalyptus and Casuarina	**475,294**
33	IIHR, Bangalore	Amaranth, Palak and Ridge Gourd	**71,657**
34	NRCSS, Ajmer	Seed Spices	**567,823**
35	AAU, Jorhat	Rice	**434,614**
36	IARI, New Delhi	Marigold	**582,991**
37	VPKAS, Almora	Rajma, Soybean and Maize	**616,422**
38	DOGR, Rajgurunagar	Onion and Garlic	**377,690**

39	NRC, Sikkim	Orchids	**414,79**
40	NRCP, Sholapur	Pomegranate	**859,960**
41	IARI, New Delhi	Onion and Garlic	**536,068**
42	IISR, Lucknow	Sugarcane	**592,363**
43	IIHR, Bangalore	Betel Vine	**464,711**
44	CSAUA&T, Kanpur	Mustard and Wheat	**578,312**
45	IISR, Calicut	Spices	**555,220**
46	DSR, Indore	Soybean	**559,113**
47	IIPR, Kanpur	Mungbean, Urdbean, lentil, Rajma and Vegetable Pea	**465,696**
48	IARI, Regional Station, Karnal	Rice	**475,294**
49	Sugarcane Breeding Inst, Coimbatore	Sugarcane	**393,738**
50	IGKV, Raipur	Grow out Test (Rice)	**733,170**
51	Sugarcane Breeding Institute, Karnal	Sugarcane	**582,716**
52	IIWBR, Karnal	Barley	**640,162**
53	DRMR, Bharatpur	Rapeseed and Mustard	**452,052**
54	IIHR, Bangalore	Chilli	**1,284,120**
55	RAU Bikaner-Mandore AICPMIP, Jodhpur	Pearl Millet	**544,206**
56	PAU, Ludhiana	Oat,cowpea and guinea grass	**533,874**
57	Central Tuber Crops Research Institute, Trivandrum	Elephant foot yam and Taro	**913,441**
58	CRRI, Cuttack	Rice	**531,233**
59	PDKV, Akola	Chickpea and Pigeonpea	**300,000**
60	IARI, New Delhi	Amaranth, Palak and Ridge Gourd	**795,640**

S. no.	Name of DUS Centre	Crop	Amount released (Rupees)
61	DMAPR, Anand	Medicinal & Aromatic plants	**882,953**
62	CCSHAU, Hisar	Cotton and Chickpea	**442,859**
63	IARI, Regional Station, Indore	Wheat	**644,500**
64	CPRI, Shimla	Potato	**702,400**
65	NEH Region, Barapani	Rice	**595,145**
66	IARI, New Delhi	Cabbage and Cauiflower	**200,000**
67	JTSAU, Hyderabad	0	**908,43**
68	IIWBR, Karnal	Wheat	**1,175,000**
69	TNAU, Coimbatore	Rice, Sunflower and Groundnut	**792,198**
70	IIMR, Hyderabad	Millets	**1,063,100**
71	CRIJAFR, Barrackpore & CSRS, Budbud	Jute	**716,115**
72	MPKV, Rahuri	Cotton	**412,201**
73	IIOR-ICAR,Hyderabad	Sunflower, Castor and Safflower	**1,022,957**
74	CPCRI, Kerala	Coconut	**528,949**
75	UAS, Banglore	Small Millet	**950,000**
76	CISH, Lucknow	Guava and Litchi	**472,766**
77	IIPR, Kanpur	Chickpea and Pigeonpea	**982,448**
78	MPKV,Rahuri	Sorghum, Pearl Millet	**945,862**
79	IIHR, Bangalore	Vegetables	**1,224,000**
80	UAS, Dharwad	Cotton, Soybean, Groundnut and Sesame	**984,545**
81	IIHR, Bangalore	Rose and Chrysanthemum	**989,796**

82	IIRR, Hyderabad	Rice	**1,067,897**
83	IIMR, New Delhi	Maize	**2,170,514**
84	CICR,Coimbatore	Cotton	**825,125**
85	CICR, Nagpur	Cotton	**944,887**
86	IIVR, Varanasi	Okra, Brinjal, Tomato, Cabbage and Cauliflower	**224,000**
Total			**47,131,161**

ANNEXURE V: STATEMENT SHOWING FUNDS RELEASED TO FIELD GENE BANKS/GENE BANKS DURING 2016–17

Table: Statement showing funds released to Field Gene Banks during 2016-17:

S. no.	Name of Centers	Amount released (Rupees)
1	BAU Ranchi	**1,000,000**
2	Dr. Balasaheb Konkan Krishi Vidyapeeth	**705,069**
3	CAZRI	**375,000**
4	Dr. Y.S. Parmar University of Horticulture & Forestry	**565,951**
5	NBPGR	**878,932**
	Total	**3,524,952**

ANNEXURE VI: FINANCIAL SUPPORT TO DIFFERENT ORGANIZATIONS DURING THE YEAR 2016–17

Table: Financial support to different organizations during the year 2016-17:

S. no	Name of Beneficiary	Release During 2016-17
1	Central Agri. Uni., Manipur (CAU)	**80,000**
2	Ch SKK Vishwavidyalaya, Palampur	**400,000**
3	VPKAS Almorah	**53,767**
4	Directorate of Cashew Res Dakshina Kannada	**80,000**
5	IIHR, Bangalore (136/15)	**80,000**
6	MSSRF Chennai	**80,000**
7	Research SHIATS Allahabad(136/15)	**80,000**
8	IARI New Delhi	**120,000**
9	NRC of Orchids,Sikkim	**80,000**
10	PAU, Ludhiana	**20,000**
11	PDKV, Akola	**80,000**
12	Zonal Projects Directorate -Zone -VIII , Bangalore	**1,840,000**
13	Zonal Projects Directorate, ICAR Zone -I , Ludhiana, punjab	**720,000**
14	Zonal Projects Directorater, ICAR Zone -II, Kolkata, W.B	**2,560,000**
15	Zonal Projects Directorater, ICAR Zone -III, Barapani, Mghalaya	**1,680,000**
16	Zonal Projects Directorate, ICAR Zone -IV, Kanpur, U.P	**1,520,000**
17	Zonal Projects Directorater, ICAR Zone -V, Hyderabad	**1,520,000**
18	Zonal Projects Directorate, ICAR Zone -VI, Jodhpur	**1,280,000**
19	Zonal Projects Directorate, ICAR Zone -VII, Jabalpur	**3,600,000**
20	Presidenet, JSS Mahavidyapeeth, Mysore (Suttur)	**80,000**
21	Nagaland Uni. , Zunheboto	**80,000**
22	KSR College of Technology, Tiruchengode, Tamil Nadu	**80,000**

23	UAS, Bangalore	**200,000**
24	International Agrobiodiversity Congress 2016	**398,500**
25	Directorate of Arecanut & Spices Developmnt, Calicut	**80,000**
26	Andaman Science Association-ICAR-CIAR, Port Blair	**80,000**
27	Botany Department, University of Allahabad	**80,000**
28	SRMR Conference (RTGS)	**80,000**
29	Directorate of Education of BAU Sabour, Bhagalpur	**160,000**
30	Indian Society of Genetics & Plant Breeding	**80,000**
31	ICAR Unit-IIMR Hyderabad	**80,000**
32	Mizoram University	**80,000**
33	7th Indian Horticulture Congress 2016	**80,000**
34	Society for Plant Research, Meerut	**100,000**
35	Bharat Prakashan Delhi Ltd.	**100,000**
	Total	**17,712,267**

ANNEXURE VII: LIST OF FARMERS' VARIETIES RECEIVED DURING THE YEAR 2016–17

Crop	Assam	Bihar	Chhattisgarh	Delhi	Goa	Haryana	Himachal Pradesh	Jammu & Kashmir	Jharkhand	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Manipur	Nagaland	Telangana	Uttar Pradesh	Uttarakhand	West Bengal	Total
Acid Lime	-	-	10	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	**13**
Almond	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
Apple	-	-	1	-	-	-	1	4	-	-	-	-	-	-	-	-	-	-	-	**6**
Apricot	-	-		-	-	-	-	42	-	-	-	-	-	-	-	-	-	-	-	**42**
Bael	-	-	7	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	**12**
Banana	-	-	2	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	**7**
Barley	-	-		-	-	-	1	1	6	-	-	13	-	-	-	-	-	-	-	**21**
Barnyard Millet	-	-		-	-	-	-	-	-	-	-	33	-	-	-	-	-	-	-	**33**
Bell Pepper	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
Bitter Gourd	-	-	6	-	-	-	-	-	4	-	-	2	-	-	-	-	-	-	1	**13**
Black gram	1	1	13	-	-	-	4	-	44	-	-	49	-	-	-	-	-	-	4	**116**
Black Pepper	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	**2**
Bottle gourd	-	-	20	-	-	-	-	-	10	-	-	25	-	-	-	-	-	-	6	**63**
Brinjal	-	-	50	-	-	-	-	-	21	-	-	7	-	-	-	-	1	-	-	**95**
Cabbage	-	-	1	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	**3**
Castor	-	-	4	-	-	-	-	-	4	-	-	1	-	-	-	-	-	-	-	**9**

Crop	Assam	Bihar	Chhattisgarh	Delhi	Goa	Haryana	Himachal Pradesh	Jammu & Kashmir	Jharkhand	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Manipur	Nagaland	Telangana	Uttar Pradesh	Uttarakhand	West Bengal	Total
Cauliflower	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	5	**7**
Cherry	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	**1**
Chickpea	-	4	5	-	-	-	-	-	13	-	-	31	-	-	-	-	-	-	2	**55**
Chilli	-	-	13	-	1	-	-	-	14	-	-	2	-	1	-	-	-	-	5	**36**
Coconut	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
Coriander	-	5	15	-	-	-	1	-	7	-	-	9	-	-	-	-	-	-	-	**37**
Crysanthemum	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
Cucumber	-	-	11	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	8	**21**
Custard Apple	-	-	5	-	-	-	-	-	1	-	-	1	1	-	-	-	-	-	-	**8**
Diploid Cotton	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
Durum Wheat	-	-	-	-	-	-	-	-	1	-	-	4	-	-	-	-	-	-	-	**5**
Fenugreek	-	-	1	-	-	-	1	-	2	-	-	4	-	-	-	-	-	-	-	**8**
Fieldpea	-	3	7	-	-	-	-	1	10	-	-	50	-	1	-	-	1	-	2	**75**
Finger Millet	-	-	1	-	-	-	-	-	40	-	-	-	-	-	-	-	-	-	-	**41**
Foxtail Millet	2	-	-	-	-	-	-	-	-	-	-	11	-	-	9	-	-	-	-	**22**
Garlic	-	-	1	-	-	-	-	-	14	-	-	-	-	-	-	-	-	-	-	**15**
Ginger	-	-	4	-	-	-	-	-	8	-	-	1	-	-	-	-	-	-	-	**13**
Gladiolus	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
Grapes	-	-	1	-	-	-	-	4	-	-	-	-	2	-	-	-	-	-	-	**7**
Green gram	1	4	6	-	-	-	-	-	8	1	-	12	-	-	-	-	-	-	4	**36**
Groundnut	-	-	3	-	-	-	-	-	19	-	-	5	-	-	-	-	-	-	1	**28**
Indian jujube (Ber)	-	-	2	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	**6**

Crop	Assam	Bihar	Chhattisgarh	Delhi	Goa	Haryana	Himachal Pradesh	Jammu & Kashmir	Jharkhand	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Manipur	Nagaland	Telangana	Uttar Pradesh	Uttarakhand	West Bengal	Total
Indian mustard (Karan Rai)	-	-	-	-	-	-	-	-	9	-	-	-	-	-	-	-	-	-	-	**9**
Indian Mustard (Sarso)	-	1	2	-	-	1	2	-	20	-	-	1	-	-	-	-	-	-	1	**28**
Isabgol	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
Jamun	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**4**
Jasmine	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
Jute	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	**2**
Kidney bean	-	2	-	-	-	-	2	-	4	-	-	-	-	1	-	-	-	-	1	**10**
Kodo Millet	-	-	-	-	-	-	-	-	-	-	-	97	-	-	-	-	-	-	-	**97**
Lentil	-	2	4	-	-	-	-	-	12	-	-	13	-	-	-	-	-	-	2	**33**
Linseed	-	6	4	-	-	-	-	-	11	-	-	19	-	-	-	-	-	-	1	**41**
Little Millet	-	-	-	-	-	-	-	-	-	-	-	78	-	-	-	-	-	-	-	**78**
Maize	-	1	12	-	-	-	4	-	50	-	-	125	1	-	6	-	-	-	1	**200**
Mango	-	1	2	-	-	-	-	-	10	-	-	-	-	-	-	-	2	-	-	**15**
Marigold	-	-	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**4**
Menthol Mint	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
Muskmelon	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
Neem	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	**1**
Nutmeg	-	-	-	-	-	-	-	-	-	4	4	-	7	-	-	-	-	-	-	**15**
Okra/Lady's Finger	-	-	14	-	-	-	-	-	6	-	-	8	-	-	-	-	-	-	1	**29**
Onion	-	-	3	-	-	-	-	-	7	-	-	-	-	-	-	-	-	-	-	**10**
Orchid	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	**1**

Crop	Assam	Bihar	Chhattisgarh	Delhi	Goa	Haryana	Himachal Pradesh	Jammu & Kashmir	Jharkhand	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Manipur	Nagaland	Telangana	Uttar Pradesh	Uttarakhand	West Bengal	Total
Papaya	-	-	7	-	-	-	-	-	8	-	-	1	-	-	-	-	-	-	-	**16**
Peach	-	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	**6**
Pear	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	**1**
Pearl Millet	-	-	-	-	-	-	-	-	7	-	-	1	-	-	-	-	-	-	-	**8**
Pigeon Pea	-	3	16	-	-	-	-	-	48	-	-	84	1	-	-	-	4	-	4	**160**
Pomegranate	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	**2**
Potato	-	-	4	-	-	-	-	-	7	-	-	-	-	1	-	-	-	-	1	**13**
Pumpkin	-	-	21	-	-	-	-	-	15	-	-	2	-	-	1	-	-	-	8	**47**
Rapeseed (Gobhi Sarson)	-	-	1	-	-	-	-	-	7	-	-	-	-	-	-	-	-	-	-	**8**
Rapeseed (Toria)	1	-	-	-	-	-	-	-	20	-	-	1	-	-	-	-	-	-	-	**22**
Rice	25	41	100	-	-	-	3	-	395	-	-	390	2	2	7	-	2	2	16	**985**
Ridge gourd	-	2	22	-	-	-	-	-	1	-	-	8	-	-	-	-	-	-	-	**33**
Rose	-	-	2	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	**2**
Sesame	-	1	4	-	-	-	-	-	15	-	-	28	-	-	-	-	-	-	9	**57**
Sorghum	-	-	3	-	-	-	-	-	2	-	-	44	-	-	-	1	-	-	-	**50**
Soybean	-	-	2	-	-	-	1	-	-	-	-	13	-	-	1	-	-	-	-	**17**
Sugarcane	-	-	2	-	-	-	-	-	6	-	-	-	-	2	-	-	-	-	-	**10**
Sunflower	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	**2**
Sweet Orange	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
Tomato	-	-	9	-	-	-	-	-	10	-	-	6	-	-	-	-	-	-	2	**27**
Turmeric	-	2	5	-	-	-	-	-	33	-	-	1	-	-	-	-	-	-	3	**44**

Crop	Assam	Bihar	Chhattisgarh	Delhi	Goa	Haryana	Himachal Pradesh	Jammu & Kashmir	Jharkhand	Karnataka	Kerala	Madhya Pradesh	Maharashtra	Manipur	Nagaland	Telangana	Uttar Pradesh	Uttarakhand	West Bengal	Total
Vegetable Amaranth	-	-	7	-	-	-	-	-	2	-	-	1	-	-	-	-	-	-	-	**10**
Walnut	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	**4**
Watermelon	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**1**
Wheat	-	3	3	-	-	-	5	-	19	-	-	42	-	-	-	-	-	-	-	**72**
Grand Total	**30**	**84**	**462**	**1**	**1**	**1**	**25**	**65**	**974**	**5**	**4**	**1224**	**15**	**9**	**24**	**1**	**10**	**2**	**104**	**3041**

ANNEXURE VIII: CROPS UNDER REGISTRATION

S. no.	Crop	Botanical name
1	Acid Lime	*Citrus aurantifolia* Swingle
2	Almond	*Prunus dulcis*(Mill.) D.A. Webb
3	Apple	*Malus domestica* Borkh
4	Apricot	*Prunus armeniaca* L.
5	Bael	*Aegle marmelos* (L.) Correa
6	Banana	*Musa* spp.
7	Barley	*Hordeum vulgare* L.
8	Barnyard Millet	*Echinocloa frumentaceae* (Roxb.) Link
9	Betelvine	*Piper betle* L.
10	Bitter Gourd	*Momordica charantia* L.
11	Black pepper	*Piper nigrum* L.
12	Bottle Gourd	*Lagenaria siceraria (*Mol.*)* Standl.
13	Bougainvillea	*Bougainvillea Comm. Ex* Juss.
14	Brahmi	*Bacopa monnieri* L.Pennell
15	Bread wheat	*Triticum aestivum* L
16	Brinjal	*Solanum melongena* L.
17	Cabbage	*Brassica oleracea* L. var *capitata*
18	Canna	*Canna* L.
19	Carnation	*Dianthus caryophyllus* L.
20	Castor	*Ricinus communis* L.
21	Casurina	*Casuarina equisetifolia* L
22	Casurina	*Casuarina junghuhniana* Miq.
23	Cauliflower	*Brassica oleracea* L.var. *botrytis*
24	Cherry	*Prunus avium* L.
25	Chickpea	*Cicer arietinum* L.
26	Chilli, Bell Pepper and Paprika	*Capsicum annuum* L.
27	China Aster	*Callistephus chinensis* (L.)Nees.
28	Chir Pine	*Pinus roxburghii* Sargent
29	Chrysanthemum	*Chrysanthemum* spp.
30	Coconut	*Cocos nucifera* L.
31	Common/ Sweet Buckwheat	*Fagopyrum esculentum*
32	Coriander	*Coriandrum sativum* L.
33	Cucumber	*Cucumis sativus* L.
34	Custard apple / Sugar apple	*Annona squamosa* L.
35	Damask Rose	*Rosa damascena* Mill
36	Deodar	*Cedrus deodara* (Roxb.) G.Don
37	Dicoccum wheat	*Triticum dicoccum* L.
38	Diploid cotton	*Gossypium arboreum* L.
39		*Gossypium herbaceum* L.
40	Durum wheat	*Triticum durum* Desf.
41	Elephant Foot Yam	*Amorphophallus paeoniifolius*

S. no.	Crop	Botanical name
42	Eucalyptus	*Eucalyptus camaldulensis* Dehnh.
43		*Eucalyptus tereticornis* Sm.
44	Faba bean	*Vicia faba* L.
45	Fenugreek	*Trigonella foenum graecum* L.
46	Fieldpea	*Pisum sativum* L.
47	Finger Millet	*Eleusine coracana* (L.) Gaertn.
48	Foxtail Millet	*Setaria italic* (L.) Beauv
49	Garlic	*Allium sativum* L.
50	Giant SwampTaro	*Cyrtosperma chamissionis/C.merkusii*
51	Ginger	*Zingiber officinale* Rosc.
52	Gladioulus	*Gladioulus* L.
53	Gobhi sarson	*Brassica napus* L.
54	Grapes	*Vitis* spp.
55	Groundnut	*Arachis hypogaea* L.
56	Guava	*Psidium guajava L.*
57	Indian Gooseberry	*Emblica officinalis Gaertn*.
58	Indian jujube (Ber)	*Ziziphus mauritiana* Lamk.
59	Indian mustard	*Brassica juncea* L. Czern & Coss
60	Isabgol	*Plantago ovata* Forsk
61	Jamun/Black plum	*Syzygium cumini* (L.) Skeels.
62	Japanese Plum	*Prunus salicina* L.
63	Jasmine	*Jasminum auriculatum*. L.
64		*Jasminum multiflorum* L.
65		*Jasminum sambac* L.
66	Jatropha	*Jatropha curcas* L.
67	Jute	*Corchorus olitorius* L.
68		*Corchorus capsularis* L.
69	Kalmegh /King of Bitters	*Andrographis paniculata* (Burm.f.) Wall. ex Nees
70	Karan rai	*Bracissa carinata* A Braun
71	Karanj	*Pongamia pinnata* (L.) Pierre.
72	kidney bean	*Phaseolus vulgaris* L.
73	Kodo Millet	*Paspalum scorbiculatum* L.
74	Lentil	*Lens culinaris* Medik
75	Linseed	*Linum usitatissimum* L.
76	Litchi	*Litchi chinensis* Sonn.
77	Little Millet	*Panicum sumatrense* Roth. Ex. Roemer And Schultes
78	Maize	*Zea mays* L.
79	Mandarin	*Citrus reticulata* Blanco
80	Mango	*Mangifera indica* L.
81	Marigold	*Tagetesspp.* L.
82	Menthol mint	*Mentha arvensis* L.
83	Mulberry	*Morus spp.*
84	Mungbean	*Vigna radiata* (L.) Wilczek

S. no.	Crop	Botanical name
85	Muskmelon	*Cucumis melo* L.
86	Neem	*Azadirachta indica* A. Juss.
87	Noni	*Morinda citrifolia* L.
88	Nutmeg	*Myristica fragrans* Houtt.
89	Okra	*Abelmoschus esculentus* (L.) Moench.
90	Onion	*Allium cepa* L.
91	Orchid	*Cattleya* Lindl.
92		*Phalaenopsis* Blume
93		*Oncidium* Sw.
94		*Paphiopedilum Pfitz.*
95		*Vanda*
96		*Dandrobium*
97		*Cymbidium*
98	Other *Triticum* species	
99	Papaya	*Carica papaya* L.
100	Peach	*Prunus persica* L Batsch.
101	Pear	*Pyrus communis* L.
102	Pearl millet	*Pennisetum glaucum* (L.) R.Br.
103	Periwinkle	*Catharanthus roseus* L.
104	Pigeonpea	*Cajanus cajan* (L.) Millsp.
105	Pomegranate	*Punica granatum* L
106	Potato	*Solanum tuberosum* L.
107	Proso Millet	*Panicum maliaceum* L.
108	Pumpkin	*Cucurbita moschata* Duch. ex Poir.
109	Rajgeera(the King's grain) or Ramdana(Lord Rama's grain)	*Amaranthus hypocondricus*
110		*Amaranthus cruentus*
111		*Amaranthus caudatus*
112		*Amaranthus edulis*
113	Rapeseed(toria)	*Brassica rapa* L.
114	Rice	*Oryza sativa* L.
115	Ridge gourd	*Luffa acutangula* (L.) Roxb.
116	Rose	*Rosa* spp.*(*other than *R.damascena)*
117	Safflower	*Carthamus tinctorius* L.
118	Sesame	*Sesamum indicum* L.
119	Small cardamom	*Elettaria cardamomom* Maton
120	Sorghum	*Sorghum bicolor* (L.) Moench
121	Soybean	*Glycine max* (L.) Merrill
122	Spinach beet	*Beta vulgaris var. bengalensis* Roxb.
123	Strawberry	*Fragaria x ananasan* Duch.
124	Sugarcane	*Saccharum* L.
125	Sunflower	*Helianthus annuus* L.
126	Sweet Orange	*Citrus sinensis* (L.) Osbeck
127	Taro	*Colocasia esculenta*

S. no.	Crop	Botanical name
128	Tartary/ Bitter Buckwheat	*Fagopyrum tataricum*
129	Tea	*Camellia sinensis*
130		*Camellia assamica*
131		*C. assamica* ssp *lasiocalyx.*
132	Tetraploid cotton	*Gossypium hirsutum* L.
133		*Gossypium barbadense* L.
134	Tomato	*Lycopersion lycopersicum* (L.) Karsten ex.Farw.
135	Tuberose	*Polianthes tuberose* L.
136	Turmeric	*Curumma longa* L.
137	Urdbean	*Vigna mungo* (L.) Hepper
138	Vegetable Amaranth	*Amaranthus tricolor* L.
139	Walnut	*Juglans regia* L.
140	Watermelon	*Citrullus Lanatus* (Thunb.) Mansf.

ANNEXURE IX: CERTIFICATES OF REGISTRATION ISSUED DURING 2016–17

S. no.	Registration Number			Denomination	Applicant Name	Type of Variety
1	125	of	2016	HPW 249 (Asmi)	CSK Himachal Pradesh Krishi Vishvavidyalaya	New
2	126	of	2016	MRDC 223	Maharashtra Hybrid Seeds Company Limited	Extant (VCK)
3	127	of	2016	RCHB 708 Bt	Rasi Seeds Pvt Ltd	Extant (VCK)
4	128	of	2016	PMS 28 A	Indian Council of Agricultural Research	New
5	129	of	2016	PMS 28 B	Indian Council of Agricultural Research	New
6	130	of	2016	Dhania	Phool Singh	Farmer
7	131	of	2016	Kudai Vazhai	Poovai Uzhavar Mandrom	Farmer
8	132	of	2016	Kavuni	Kulipirai Uzhavar Mandrom	Farmer
9	133	of	2016	Karung Kuruvai	Sangai Uzhavar Mandram	Farmer
10	134	of	2016	Jeeraga Samba	Sangai Uzhavar Mandram	Farmer
11	135	of	2016	Bindli	Gram Panchayat Haripura	Farmer
12	136	of	2016	Sada Jhuli	Dr. Debal Deb	Farmer
13	137	of	2016	SR-1	Sunda Ram Verma	Farmer
14	138	of	2016	Mohini	Gram Panchayat Pasholy	Farmer
15	139	of	2016	MRDC 222	Maharashtra Hybrid Seeds Company Limited	Extant (VCK)
16	140	of	2016	IG7806	Monsanto India Limited	New
17	141	of	2016	NS-222	Nirmal Seeds Pvt Ltd	Extant (VCK)
18	142	of	2016	RCH 111 Bt	Rasi Seeds Pvt Ltd	Extant (VCK)
19	143	of	2016	Nirmal-2(NTL-2)	Nirmal Seeds Pvt Ltd	Extant (VCK)
20	144	of	2016	Guda Maharata	Bulu Gouda	Farmer
21	145	of	2016	Ekchhupi	Himadri Nayak	Farmer
22	146	of	2016	Bhangar	Ajay Kumar Mohapatra	Farmer
23	147	of	2016	Nuapada Sinapali PUAGI	Manulal Majhi	Farmer

S. no.	Registration Number			Denomination	Applicant Name	Type of Variety
24	148	of	2016	Deogarh-MAYURKANTHA	Brajamohan Sahu (B)	Farmer
25	149	of	2016	Butia	Dusa Munda	Farmer
26	150	of	2016	Kandha Bhuta	Bishu Prasad Rout	Farmer
27	151	of	2016	Gadakati	Sunadhar Dalai	Farmer
28	152	of	2016	Kakudia	Pradeep Ku Majhi	Farmer
29	153	of	2016	Asam Chudi	Trinath Bemal	Farmer
30	154	of	2016	Khakhariya	Som Panchayat	Farmer
31	155	of	2016	Mayin Sarson	Sonaram Bediya	Farmer
32	156	of	2016	C/MAC-23	Ankur Seeds Pvt Ltd	New
33	157	of	2016	Ambika (NACH-12)	Nirmal Seeds Pvt Ltd	Extant (VCK)
34	158	of	2016	SV-385	M/S Shakti Vardhak Hybrid Seeds Pvt Ltd	Extant (VCK)
35	159	of	2016	MIM 603	Monsanto India Limited	Extant (VCK)
36	160	of	2016	MIM 103	Monsanto India Limited	Extant (VCK)
37	161	of	2016	SURYATEJ (SSFH-41)	Safal Seeds & Biotech Ltd	Extant (VCK)
38	162	of	2016	MIM 312	Monsanto India Limited	New
39	163	of	2016	27P31	Pioneer Overseas Corporation	New
40	164	of	2016	AGIASAL	Sudarshan Sai Painkara	Farmer
41	165	of	2016	Kendumudi-1	Manglu Gupta	Farmer
42	166	of	2016	90 Number	Sudarshan Sai Painkara	Farmer
43	167	of	2016	Kalia Lendi	Sukaldhar Madhi	Farmer
44	168	of	2016	Malkangiri-Maharajpali-ASSAM CHUDI	Muta Sodi	Farmer
45	169	of	2016	Malkangiri-Jharapalli-RATANCHUDI	Debaraj Padiami	Farmer
46	170	of	2016	Jhulpa	Deba Madkami	Farmer
47	171	of	2016	Bansi Local	Surender Kumar	Farmer
48	172	of	2016	Kartika	Jyoti Prashad Baruah	Farmer

S. no.	Registration Number			Denomination	Applicant Name	Type of Variety
49	173	of	2016	Jeng Xariah	Jyoti Prashad Baruah	Farmer
50	174	of	2016	Swetasri	Jyoti Prashad Baruah	Farmer
51	175	of	2016	Shaket Sarso	Shyam Chandra Lala	Farmer
52	176	of	2016	DHORAMUDRIYA	Mohanlal	Farmer
53	177	of	2016	Gopal Bhog	Mohanlal	Farmer
54	178	of	2016	PATANIA JULLI	Mohanlal	Farmer
55	179	of	2016	Panbudi (Goindi)	Sudarshan Sai Painkara	Farmer
56	180	of	2016	Karhani Sardega	Sudarshan Sai Painkara	Farmer
57	181	of	2016	Kajali Boonde	Angad Pradhan	Farmer
58	182	of	2016	SURENDRO	Angad Pradhan	Farmer
59	183	of	2016	LUCHAI	Mohanlal	Farmer
60	184	of	2016	Kanakmasuri	Unga Kobasi	Farmer
61	185	of	2016	Tipoya	Satya Dev Singh	Farmer
62	186	of	2016	Shitla Uphar (DVR-1)	Indian Council of Agricultural Research	Extant (Notified)
63	187	of	2016	Shitla Jyoti (DVR-2)	Indian Council of Agricultural Research	Extant (Notified)
64	188	of	2016	SVG 04-2440	M/S Shakti Vardhak Hybrid Seeds Pvt Ltd	New
65	189	of	2016	SV-202	M/S Shakti Vardhak Hybrid Seeds Pvt Ltd	New
66	190	of	2016	SV-318	M/S Shakti Vardhak Hybrid Seeds Pvt Ltd	New
67	191	of	2016	SVH-8	M/S Shakti Vardhak Hybrid Seeds Pvt Ltd	New
68	192	of	2016	SVG 04-75	M/S Shakti Vardhak Hybrid Seeds Pvt Ltd	New
69	193	of	2016	SV-200	M/S Shakti Vardhak Hybrid Seeds Pvt Ltd	New
70	194	of	2016	MHTM 256	Maharashtra Hybrid Seeds Company Limited	Extant (VCK)
71	195	of	2016	SV-45	M/S Shakti Vardhak Hybrid Seeds Pvt Ltd	New
72	196	of	2016	AKUL-Bal	Sankar Sahani	Farmer
73	197	of	2016	Tewan Dhan	Chatur Bediya	Farmer
74	198	of	2016	Barabali	Dashrath Bediya	Farmer

S. no.	Registration Number			Denomination	Applicant Name	Type of Variety
75	199	of	2016	Neta Kalani	Gandura Oraon	Farmer
76	200	of	2016	Bageri Sona	Subhash Kumar	Farmer
77	201	of	2016	Safed lalak	Ahlad Bediya	Farmer
78	202	of	2016	Lauhonchi (Dehati)	Tribhuvan Munda	Farmer
79	203	of	2016	Sindoor Sal	Chatur Bediya	Farmer
80	204	of	2016	Digambar Dhan-1	Digambar Bediya	Farmer
81	205	of	2016	Tulsi Manjar	Situ Oraon	Farmer
82	206	of	2016	Chhota Dahiya	Situ Oraon	Farmer
83	207	of	2016	Boga	Mehandi Hasan	Farmer
84	208	of	2016	DUDH KANDAR	Ashok Kumar Singh	Farmer
85	209	of	2016	Damru Baba-3	Babita Gagrai	Farmer
86	210	of	2016	Kari Jeera (Sonachur)	Ashok Kumar Singh	Farmer
87	211	of	2016	Barhabali	Sonaram Bediya	Farmer
88	212	of	2016	Hadrasal Dhan	Sonaram Bediya	Farmer
89	213	of	2016	Bhajna Baba-6	Kulmati Devi	Farmer
90	214	of	2016	KESAR JAVANPHOOL	Vallan Singh Kesar	Farmer
91	215	of	2016	Bachakolma (Dehati)	Tribhuvan Munda	Farmer
92	216	of	2016	Goda	Jhari Bediya	Farmer
93	217	of	2016	Kodha Phool	Soheria Bediya	Farmer
94	218	of	2016	JHULI	Durga Ch. Bhoi	Farmer
95	219	of	2016	Tilasar	Ashok Kumar Singh	Farmer
96	220	of	2016	Gudika Baba	Subni Gagrai	Farmer
97	221	of	2016	Jarli Baba	Mangal Singh Kerai	Farmer
98	222	of	2016	Zeera Baba	Suryamani Gagrai	Farmer
99	223	of	2016	Balamsar	Situ Oraon	Farmer
100	224	of	2016	KPH-199	Kaveri Seed Company Ltd	New
101	225	of	2016	MANDAKINI (OR 2077-4) [IET-	Orissa University of Agriculture & Technology	New

S. no.	Registration Number			Denomination	Applicant Name	Type of Variety
				17847]		
102	226	of	2016	KPH-371	Kaveri Seed Company Ltd	New
103	227	of	2016	KARAN-2(Co-0118)	Indian Council of Agricultural Research	New
104	228	of	2016	LUNA SANKHI (IET 21237)	Indian Council of Agricultural Research	New
105	229	of	2016	PRATAP QPM HYBRID-1(EHQ-16)	Indian Council of Agricultural Research	New
106	230	of	2016	LG 32-81 (Yuvraj Gold)	Bisco Biosciences Pvt Ltd	New
107	231	of	2016	NP-124-8(IET 22110)	Nuziveedu Seeds Ltd	New
108	232	of	2016	Gangaur(GNG-1581)	Indian Council of Agricultural Research	New
109	233	of	2016	NP 209(IET 22225)	Nuziveedu Seeds Ltd	New
110	234	of	2016	CSV 26(SPV-1829)	Indian Council of Agricultural Research	New
111	235	of	2016	BH-1576(DHM-111)	Indian Council of Agricultural Research	New
112	236	of	2016	Pusa Prachi(HI 1563)	Indian Council of Agricultural Research	New
113	237	of	2016	PHULE DHANWANTARY (Rh.arb.02-1)	Mahatma Phule Krishi Vidyapeeth	New
114	238	of	2016	BIO 605	DCM Shriram Limited	New
115	239	of	2016	NMH-920	Nuziveedu Seeds Ltd	New
116	240	of	2016	NMH-803	Nuziveedu Seeds Ltd	New
117	241	of	2016	Pant Shankar Makka-1	Indian Council of Agricultural Research	New
118	242	of	2016	PMH 5(JH 3110)	Indian Council of Agricultural Research	New
119	243	of	2016	PHULE ANMOL (RAC-024)	Mahatma Phule Krishi Vidyapeeth	New
120	244	of	2016	P1864(X8F984)	Pioneer Overseas Corporation	New
121	245	of	2016	PKV KABULI-4	Dr. Panjabrao Deshmukh Krishi Vidyapeeth	New
122	246	of	2016	JROM-1 (PRADIP)	Indian Council of Agricultural Research	New
123	247	of	2016	HM-12 (HKH 313)	Indian Council of Agricultural Research	New

S. no.	Registration Number			Denomination	Applicant Name	Type of Variety
124	248	of	2016	JRCM-2 (PARTHO)	Indian Council of Agricultural Research	New
125	249	of	2016	Vivek Maize Hybrid 45 (FH 3483)	Indian Council of Agricultural Research	New
126	250	of	2016	DHM 119 (BH4062)	Indian Council of Agricultural Research	New
127	251	of	2016	Bisco x 1 (Bisco 506)	Bisco Biosciences Pvt Ltd	New
128	252	of	2016	CR Dhan 701 (IET 20852) (CRHR 32)	Indian Council of Agricultural Research	New
129	253	of	2016	KMH-25K45 (2700) (BUMPER)	Kaveri Seed Company Ltd	New
130	254	of	2016	P3522 (X35A019)	Pioneer Overseas Corporation	New
131	255	of	2016	CR Dhan 601 (IET 18558)	Indian Council of Agricultural Research	New
132	256	of	2016	NP 218 (IET 22218)	Nuziveedu Seeds Ltd	New
133	257	of	2016	Indam 200-017 (IET 20419)	Indo-American Hybrid Seeds (I) Pvt Ltd	New
134	258	of	2016	NPH 924-1 (IET 21255)	Nuziveedu Seeds Ltd	New
135	259	of	2016	Pant Sankul Makka-3 (D 131)	Indian Council of Agricultural Research	New
136	260	of	2016	Co 0403	Indian Council of Agricultural Research	New
137	261	of	2016	KARAN 9 (Co 05011)	Indian Council of Agricultural Research	New
138	262	of	2016	Co 0237	Indian Council of Agricultural Research	New
139	263	of	2016	SONAL (NO 3114) (IET 18299)	Nuziveedu Seeds Ltd	New
140	264	of	2016	NIRMAL-2530 (NTH-2530)	Nirmal Seeds Pvt Ltd	Extant (VCK)
141	265	of	2016	J 1061	Maharashtra Hybrid Seeds Company Limited	New
142	266	of	2016	RCH 2 Bt	Rasi Seeds Pvt Ltd	Extant (VCK)
143	267	of	2016	NIRMAL-2257 (NTH-2257)	Nirmal Seeds Pvt Ltd	Extant (VCK)
144	268	of	2016	Rajeshwari (Phule T-0012)	Indian Council of Agricultural Research	New
145	269	of	2016	CSH-27 (SPH-1644)	Indian Council of Agricultural Research	New
146	270	of	2016	NP 107-5 (IET 22753)	Nuziveedu Seeds Ltd	New

S. no.	Registration Number			Denomination	Applicant Name	Type of Variety
147	271	of	2016	CSH 30 (SPH 1655)	Indian Council of Agricultural Research	New
148	272	of	2016	Luna Barial (IET 19472)	Indian Council of Agricultural Research	New
149	273	of	2016	HQPM-4	Indian Council of Agricultural Research	New
150	274	of	2016	Pusa Hybrid-20 (DBHL-20)	Indian Council of Agricultural Research	New
151	275	of	2016	KDMH-017	Krishidhan Seeds Pvt. Ltd.	New
152	276	of	2016	DBW 88	Indian Council of Agricultural Research	New
153	277	of	2016	BIO 10107 I	DCM Shriram Limited	Extant (VCK)
154	278	of	2016	Bajaura Makka (L 201 Composite)	Indian Council of Agricultural Research	New
155	279	of	2016	PMH 6 (JH 31292)	Indian Council of Agricultural Research	New
156	280	of	2016	Co 6	Indian Council of Agricultural Research	New
157	281	of	2016	CSV 27 (SPV-1870)	Indian Council of Agricultural Research	New
158	282	of	2016	Motigold (NP 1024)	Nuziveedu Seeds Ltd	New
159	283	of	2016	Indira Aerobic (R1570-2649-1-1546-1) (IET 21686)	Indira Gandhi Krishi Vishwavidyalaya	New
160	284	of	2016	BH-1620 (DHM-113)	Indian Council of Agricultural Research	New
161	285	of	2016	Astha gold	Sandeep Goel	New
162	286	of	2016	BHOJNA BAB: H-4	Majendra Hembrum	Farmer
163	287	of	2016	KOYA-4	Nilmani Gagrai	Farmer
164	288	of	2016	Gadur Sela	Dharohar samiti	Farmer
165	289	of	2016	Bhursi Dhan	Dharohar samiti	Farmer
166	290	of	2016	Dokra Mecha	Dharohar samiti	Farmer
167	291	of	2016	Kadam Phool	Dharohar samiti	Farmer
168	292	of	2016	Kundai Dati	Dharohar samiti	Farmer
169	293	of	2016	Bhata Mokdo	Dharohar samiti	Farmer
170	294	of	2016	Rani Kajar	Dharohar samiti	Farmer

S. no.	Registration Number			Denomination	Applicant Name	Type of Variety
171	295	of	2016	Mehar Dhan	Dharohar samiti	Farmer
172	296	of	2016	Bodi	Dharohar samiti	Farmer
173	297	of	2016	LOKATI MAHI	Dharohar samiti	Farmer
174	298	of	2016	AAL SAKAR	Dharohar samiti	Farmer
175	299	of	2016	Sandur Singa	Dharohar samiti	Farmer
176	300	of	2016	Kata Mehar	Dharohar samiti	Farmer
177	301	of	2016	Mujani Dhan	Dharohar samiti	Farmer
178	302	of	2016	Rajnigandha	Tulsi Mahto	Farmer
179	303	of	2016	Kolhin Khosa	Bharat Bediya	Farmer
180	304	of	2016	G 4568960	Monsanto Holding Pvt Ltd	New
181	305	of	2016	ARKA BOLD	Indian Council of Agricultural Research	Extant (VCK)
182	306	of	2016	Chauli Baba	Jwala Kora	Farmer
183	307	of	2016	Harikhunta Dhan	Shankar Bediya	Farmer
184	308	of	2016	Hajra Khuta	Andu Bediya	Farmer
185	309	of	2016	Sugandha	Virendra Kumar Chaurashia	Farmer
186	310	of	2016	Lal Sitasal	Gandura Oraon	Farmer
187	311	of	2016	Dhadhmaini Dhan	Jhabulal Kumhar	Farmer
188	312	of	2016	Tulsi Makul	Anand Manjhi	Farmer
189	313	of	2016	Nardaha	Ashok Kumar Singh	Farmer
190	314	of	2016	DEV DHAN	Burunga Oraon	Farmer
191	315	of	2016	Sita Sal Dhan	Karam Bediya	Farmer
192	316	of	2016	Baraun Goda Dhan	Tulsi Mahto	Farmer
193	317	of	2016	Jeera Bhog	Kartik Mahto	Farmer
194	318	of	2016	BIO 6488 BGI	DCM Shriram Limited	Extant (VCK)
195	319	of	2016	MEIFLEMINGUE	Moerheim Roses & Trading India Pvt Ltd	Extant (VCK)
196	320	of	2016	BA-1031	Nuziveedu Seeds Ltd	Extant (VCK)
197	321	of	2016	FN-9006	Nuziveedu Seeds Ltd	Extant (VCK)

S. no.	Registration Number			Denomination	Applicant Name	Type of Variety
198	322	of	2016	KCH-36 BG II	Kaveri Seed Company Ltd	New
199	323	of	2016	KCH-311 BG II	Kaveri Seed Company Ltd	New
200	324	of	2016	GNLC-1	Ankur Seeds Pvt Ltd	New
201	325	of	2016	BA-1003	Nuziveedu Seeds Ltd	Extant (VCK)
202	326	of	2016	NTF 9011	Nuziveedu Seeds Ltd	Extant (VCK)
203	327	of	2016	27P63 (IET 21832)	Pioneer Overseas Corporation	Extant (Notified)
204	328	of	2016	Kufri Garima (MS/99 - 1871)	Indian Council of Agricultural Research	New
205	329	of	2016	CoH (M)7 (CMH 08-287)	Indian Council of Agricultural Research	New
206	330	of	2016	BCT 3501	Bayer Bioscience Pvt Ltd	Extant (VCK)
207	331	of	2016	REETA (IET 19969)	Indian Council of Agricultural Research	New
208	332	of	2016	CoH (M) 10 (CMH 08-433)	Indian Council of Agricultural Research	New
209	333	of	2016	DBW 90	Indian Council of Agricultural Research	New
210	334	of	2016	CoH (M) 9 (CMH 08-350)	Indian Council of Agricultural Research	New
211	335	of	2016	CoH (M)8 (CMH 08-292)	Indian Council of Agricultural Research	New
212	336	of	2016	KUFRI GAURAV (JX 576)	Indian Council of Agricultural Research	New
213	337	of	2016	Gujarat Junagadh Okra Hybrid-3 (GJOH-3) (JOH-05-9)	Junagadh Agricultural University	Extant (Notified)
214	338	of	2016	MGD 101	University of Agricultural Sciences	Extant (Notified)
215	339	of	2016	DRH-775 (IET 19741)	Metahelix Life Sciences Limited	Extant (Notified)
216	340	of	2016	AAU OJ-1 (Tarun)	Assam Agricultural University	Extant (Notified)
217	341	of	2016	Bhima Kiran (NRCOG-597)	Indian Council of Agricultural Research	Extant (Notified)
218	342	of	2016	Bhima Red (KEL-2) (B-780-5-3-1)	Indian Council of Agricultural Research	Extant (Notified)
219	343	of	2016	VL Soya-65	Indian Council of Agricultural Research	Extant (Notified)
220	344	of	2016	Agrifound Parvati-2 (G-408)	National Horticultural Research & Development Foundation	Extant (Notified)

S. no.	Registration Number			Denomination	Applicant Name	Type of Variety
221	345	of	2016	Yamuna Safed-8 (G-384)	National Horticultural Research & Development Foundation	Extant (Notified)
222	346	of	2016	NRC 86 (Ahilya 6)	Indian Council of Agricultural Research	Extant (Notified)
223	347	of	2016	SL 525	Indian Council of Agricultural Research	Extant (Notified)
224	348	of	2016	SL-688	Indian Council of Agricultural Research	Extant (Notified)
225	349	of	2016	Rathna (GPU-48)	Project Co-ordinator (Small Millets)	Extant (Notified)
226	350	of	2016	VL Soya 59	Indian Council of Agricultural Research	Extant (Notified)
227	351	of	2016	Kashi Vardaan (VRO-25)	Indian Council of Agricultural Research	Extant (Notified)
228	352	of	2016	VL Soya 63	Indian Council of Agricultural Research	Extant (Notified)
229	353	of	2016	NTH-3031	Nuziveedu Seeds Ltd	Extant (VCK)
230	354	of	2016	HR 411120R	DCM Shriram Limited	Extant (VCK)
231	355	of	2016	SV-22	M/S Shakti Vardhak Hybrid Seeds Pvt Ltd	New
232	356	of	2016	Pratap Kanchan-2 (WC-236(Y)	Indian Council of Agricultural Research	New
233	357	of	2016	MHTM 401	Maharashtra Hybrid Seeds Company Limited	Extant (VCK)
234	358	of	2016	KCH-172 BGII	Kaveri Seed Company Ltd	New
235	359	of	2016	SLFH-7777	Sungro Seeds Private Limited	Extant (VCK)
236	360	of	2016	MHTM 301	Maharashtra Hybrid Seeds Company Limited	Extant (VCK)
237	361	of	2016	PM80105R	DCM Shriram Limited	Extant (VCK)
238	362	of	2016	OK-184	Nuziveedu Seeds Ltd	New
239	363	of	2016	NOKH-1001	Nuziveedu Seeds Ltd	New
240	364	of	2016	NOKH-1004	Nuziveedu Seeds Ltd	New
241	365	of	2016	OK-372	Nuziveedu Seeds Ltd	New
242	366	of	2016	OK-169	Nuziveedu Seeds Ltd	New
243	367	of	2016	Shyam Jira	Sanjay Kumar Das	Farmer
244	368	of	2016	PANIKULANGARA GREEN BOLD NO.1	Joy Peter	Farmer

S. no.	Registration Number			Denomination	Applicant Name	Type of Variety
245	369	of	2016	PANIKULANGARA GREEN BOLD NO.2	Joy Peter	Farmer
246	370	of	2016	ELA (ELARAJAN)	K.J. Benny	Farmer
247	371	of	2016	WONDER CARDAMOM	Sabu Varghese	Farmer
248	372	of	2016	THIRUTHALI	T. P. Joseph	Farmer
249	373	of	2016	Pepper Thekkan	T.T. Thomas	Farmer
250	374	of	2016	AGALI PEPPER	George Kalluvellil Varkey	Farmer
251	375	of	2016	KUMBUCKAL SELECTION	K.T. Varghese	Farmer
252	376	of	2016	Pusa Gautami (HD 3086)	Indian Agricultural Research Institute	New
253	377	of	2016	DWR 1006	University of Agricultural Sciences	Extant (Notified)
254	378	of	2016	UAS 347	University of Agricultural Sciences	Extant (Notified)
255	379	of	2016	UAS-446	University of Agricultural Sciences	Extant (Notified)
256	380	of	2016	NC-62	Nuziveedu Seeds Ltd	Extant (VCK)
257	381	of	2016	NC-181	Nuziveedu Seeds Ltd	Extant (VCK)
258	382	of	2016	OK-199	Nuziveedu Seeds Ltd	Extant (VCK)
259	383	of	2016	NC-172	Nuziveedu Seeds Ltd	Extant (VCK)
260	384	of	2016	NC-91	Nuziveedu Seeds Ltd	Extant (VCK)
261	385	of	2016	NC-1108	Nuziveedu Seeds Ltd	Extant (VCK)
262	386	of	2016	NCS-9028 Bt2	Nuziveedu Seeds Ltd	Extant (VCK)
263	387	of	2016	NC-174	Nuziveedu Seeds Ltd	Extant (VCK)
264	388	of	2016	AC-1207	Asian Agri Genetics Ltd	Extant (VCK)
265	389	of	2016	PC-P3812	Prabhat Agri Biotech Ltd	Extant (VCK)
266	390	of	2016	NC-167	Nuziveedu Seeds Ltd	Extant (VCK)
267	391	of	2016	NC-106	Nuziveedu Seeds Ltd	Extant (VCK)
268	392	of	2016	NC-170	Nuziveedu Seeds Ltd	Extant (VCK)

S. no.	Registration Number			Denomination	Applicant Name	Type of Variety
269	393	of	2016	So7H878 BGII	Monsanto Holding Pvt Ltd	Extant (VCK)
270	394	of	2016	NCS 955 Bt	Nuziveedu Seeds Ltd	Extant (VCK)
271	395	of	2016	NC-1171	Nuziveedu Seeds Ltd	Extant (VCK)
272	396	of	2016	PC-P711	Prabhat Agri Biotech Ltd	Extant (VCK)
273	397	of	2016	AC-1910	Asian Agri Genetics Ltd	Extant (VCK)
274	398	of	2016	NC-185	Nuziveedu Seeds Ltd	Extant (VCK)
275	399	of	2016	NC-113	Nuziveedu Seeds Ltd	Extant (VCK)
276	400	of	2016	NC-47	Nuziveedu Seeds Ltd	Extant (VCK)
277	401	of	2016	NC-90	Nuziveedu Seeds Ltd	Extant (VCK)
278	402	of	2016	Omkar Bt (NCS 950 Bt)	Nuziveedu Seeds Ltd	Extant (VCK)
279	403	of	2016	NOKH-1003	Nuziveedu Seeds Ltd	New
280	404	of	2016	FN-9003	Nuziveedu Seeds Ltd	Extant (VCK)
281	405	of	2016	DI62459	DCM Shriram Limited	Extant (VCK)
282	406	of	2016	LR62216	DCM Shriram Limited	Extant (VCK)
283	407	of	2016	MACS 6478	Indian Council of Agricultural Research	New
284	408	of	2016	FN-9017	Nuziveedu Seeds Ltd	Extant (VCK)
285	409	of	2016	MHOK 55	Maharashtra Hybrid Seeds Company Limited	Extant (VCK)
286	410	of	2016	US 314 (IET 21777)	Seed Works International Pvt Ltd	Extant (VCK)
287	411	of	2016	DBW 107	Indian Council of Agricultural Research	New
288	412	of	2016	KAVERI RICE-4	Kaveri Seed Company Ltd	New
289	413	of	2016	NCS-9014 Bt2	Nuziveedu Seeds Ltd	Extant (VCK)
290	414	of	2016	NC-156	Nuziveedu Seeds Ltd	Extant (VCK)
291	415	of	2016	Gujarat Musk Melon-3 (GMM-3)	Anand Agriculture University	Extant (Notified)
292	416	of	2016	Anand Bottle Gourd	Anand Agriculture University	Extant

S. no.	Registration Number	Denomination	Applicant Name	Type of Variety
		1 (ABG 1)		(Notified)
293	417 of 2016	Gujarat Cucumber 1	Anand Agriculture University	Extant (Notified)
294	418 of 2016	Gujarat Vegetable Chilli-121 (ACS97-2)	Anand Agriculture University	Extant (Notified)
295	419 of 2016	Anand Pumpkin 1 (AP 1)	Anand Agriculture University	Extant (Notified)
296	420 of 2016	Gujarat Vegetable Chilli 101 (GVC 101)	Anand Agriculture University	Extant (Notified)
297	421 of 2016	GUJARAT ANAND OKRA 5 (GAO-5)	Anand Agriculture University	Extant (Notified)
298	422 of 2016	Pusa Pachheti (HD 3059)	Indian Agricultural Research Institute	New
299	423 of 2016	HD 3090 (Pusa Amulya)	Indian Agricultural Research Institute	New
300	424 of 2016	GPU 67	Project Co-ordinator (Small Millets)	Extant (Notified)
301	425 of 2016	Kashi Ageti (VRPE-25)	Indian Council of Agricultural Research	Extant (Notified)
302	426 of 2016	DWRUB-52	Indian Council of Agricultural Research	Extant (Notified)
303	427 of 2016	Bhima Omkar (AC 200)	Indian Council of Agricultural Research	Extant (Notified)
304	428 of 2016	Gujarat Tomato –2 (GT-2)	Anand Agriculture University	Extant (Notified)
305	429 of 2016	Kashi Harit (IVPK-226)	Indian Council of Agricultural Research	Extant (Notified)
306	430 of 2016	DWRUB 64	Indian Council of Agricultural Research	Extant (Notified)
307	431 of 2016	DWRB 91	Indian Council of Agricultural Research	Extant (Notified)
308	432 of 2016	Kashi Madhu (IVMM-3)	Indian Council of Agricultural Research	Extant (Notified)
309	433 of 2016	Pusa Wheat-111 (HD-2932)	Indian Council of Agricultural Research	Extant (Notified)
310	434 of 2016	Pusa Anmol (HI 8737)	Indian Council of Agricultural Research	Extant (Notified)
311	435 of 2016	DWRB-92	Indian Council of Agricultural Research	Extant (Notified)
312	436 of 2016	GDW-1255	Indian Council of Agricultural Research	Extant (Notified)
313	437 of 2016	DWRB 101	Indian Council of Agricultural Research	Extant (Notified)

S. no.	Registration Number			Denomination	Applicant Name	Type of Variety
314	438	of	2016	DGGV-2	University of Agricultural Sciences	Extant (Notified)
315	439	of	2016	DWRB 73	Indian Council of Agricultural Research	Extant (Notified)
316	440	of	2016	Pusa Thenmalai (HW 5216)	Indian Council of Agricultural Research	Extant (Notified)
317	441	of	2016	FN-9018	Nuziveedu Seeds Ltd	Extant (VCK)
318	442	of	2016	JP 168	Jay Prakash Singh	Farmer
319	443	of	2016	JP 153	Jay Prakash Singh	Farmer
320	444	of	2016	JP 164	Jay Prakash Singh	Farmer
321	445	of	2016	JP 157	Jay Prakash Singh	Farmer
322	446	of	2016	JP 133	Jay Prakash Singh	Farmer
323	447	of	2016	Bhata gada khuta	Dharohar Samiti	Farmer
324	448	of	2016	Bandi Goyandi	Dharohar Samiti	Farmer
325	449	of	2016	Kurso Bhog	Dharohar Samiti	Farmer
326	450	of	2016	Batiya	Dharohar Samiti	Farmer
327	451	of	2016	Aasam Karin	Dharohar Samiti	Farmer
328	452	of	2016	Karanj gada khuta	Dharohar Samiti	Farmer
329	453	of	2016	Madras chudi	Dharohar Samiti	Farmer
330	454	of	2016	Kanhai	Dharohar Samiti	Farmer
331	455	of	2016	Kakad gado	Dharohar Samiti	Farmer
332	456	of	2016	Rakhi dhan	Puran Singh	Farmer
333	457	of	2016	Saraiya	Sudarshan Sai Painkara	Farmer
334	458	of	2016	Kawa pakhi	Dharohar Samiti	Farmer
335	459	of	2016	Pandki guda	Dharohar Samiti	Farmer
336	460	of	2016	Mandeya	Linguram Thakur	Farmer
337	461	of	2016	Mahu kuchchi	Linguram Thakur	Farmer
338	462	of	2016	Khuti dhan-2	Dharohar Samiti	Farmer
339	463	of	2016	Gurmasiya umri	Dharohar Samiti	Farmer
340	464	of	2016	Hirwa dhan	Dharohar Samiti	Farmer

S. no.	Registration Number			Denomination	Applicant Name	Type of Variety
341	465	of	2016	Lanke shri	Dharohar Samiti	Farmer
342	466	of	2016	Motiloor	Dharohar Samiti	Farmer
343	467	of	2016	Pill kormel	Dharohar Samiti	Farmer
344	468	of	2016	Bagdi chudi	Dharohar Samiti	Farmer
345	469	of	2016	Kurlu dhan	Dharohar Samiti	Farmer
346	470	of	2016	Jatiya	Dharohar Samiti	Farmer
347	471	of	2016	Sonpuri	Dharohar Samiti	Farmer
348	472	of	2016	Darba chudi	Linguram Thakur	Farmer
349	473	of	2016	Ramjeera (Padigaon)	Bhojram Manji	Farmer
350	474	of	2016	Barharya khuta	Dharohar Samiti	Farmer
351	475	of	2016	Bahal binjo	Dharohar samiti	Farmer
352	476	of	2016	Kanakbas	Shri Sundar Sai	Farmer
353	477	of	2016	Khut kesari	Dharohar samiti	Farmer
354	478	of	2016	VEERHULI	Vishnudev Chekha	Farmer
355	479	of	2016	Jhunni Prasad	Samaylal Rajware	Farmer
356	480	of	2016	Chind Jhopa	Dharohar Samiti	Farmer
357	481	of	2016	Sargi Phool	Dharohar Samiti	Farmer
358	482	of	2016	RANG GADA KHUTA	Dharohar Samiti	Farmer
359	484	of	2016	Jadega	Dharohar Samiti	Farmer
360	485	of	2016	Paunri Satka	Dharohar Samiti	Farmer
361	486	of	2016	Masoor Dhan	Dharohar Samiti	Farmer
362	487	of	2016	Mundari Chudi	Dharohar Samiti	Farmer
363	488	of	2016	Adanga Dhan	Dharohar Samiti	Farmer
364	489	of	2016	Tangan	Dharohar Samiti	Farmer
365	490	of	2016	Ghoda Chavar	Dharohar Samiti	Farmer
366	491	of	2016	Kokodi	Dharohar Samiti	Farmer
367	492	of	2016	Kari Grass	Dharohar Samiti	Farmer

S. no.	Registration Number			Denomination	Applicant Name	Type of Variety
368	493	of	2016	Munda Ghotiya	Dharohar Samiti	Farmer
369	494	of	2016	Til Kormel	Dharohar Samiti	Farmer
370	495	of	2016	Kudai Phool	Dharohar Samiti	Farmer
371	496	of	2016	Jondra	Dharohar Samiti	Farmer
372	497	of	2016	Pakhiya	Dharohar Samiti	Farmer
373	498	of	2016	GOYANDI	Dharohar Samiti	Farmer
374	499	of	2016	Kandul Kati	Dharohar Samiti	Farmer
375	500	of	2016	Kukdi Muhi	Dharohar Samiti	Farmer
376	501	of	2016	Mancha	Dharohar Samiti	Farmer
377	502	of	2016	Paat Dhan	Dharohar Samiti	Farmer
378	503	of	2016	Mundiya	Dharohar Samiti	Farmer
379	504	of	2016	Kera Phool	Dharohar Samiti	Farmer
380	505	of	2016	KALA UMRI	Dharohar Samiti	Farmer
381	506	of	2016	Dandar Dhan	Dharohar Samiti	Farmer
382	507	of	2016	KUMDA PHOOL	Dharohar Samiti	Farmer
383	508	of	2016	LAL PANJA DHAN	Baaleshwar	Farmer
384	509	of	2016	Madiya Dhan	Dharohar Samiti	Farmer
385	510	of	2016	KALA MALI	Dharohar Samiti	Farmer
386	511	of	2016	BYGANI DHAN	Dharohar Samiti	Farmer
387	512	of	2016	KORCHO BANDI	Dharohar Samiti	Farmer
388	513	of	2016	Sona Kanan	Dharohar Samiti	Farmer
389	514	of	2016	Motiya	Dharohar Samiti	Farmer
390	515	of	2016	GONGAL	Dharohar Samiti	Farmer
391	516	of	2016	Ban Kena	Dharohar Samiti	Farmer
392	517	of	2016	Bavdi	Dharohar Samiti	Farmer
393	518	of	2016	Manki Dhan	Dharohar Samiti	Farmer
394	519	of	2016	Babai Buta	Indhra Samrath	Farmer
395	520	of	2016	Gadha Khuta 1	Dharohar samiti	Farmer

S. no.	Registration Number			Denomination	Applicant Name	Type of Variety
396	521	of	2016	Sakta-1	Dharohar samiti	Farmer
397	522	of	2016	Jela	Dharohar samiti	Farmer
398	523	of	2016	Hardi Gathi	Dharohar samiti	Farmer
399	524	of	2016	PHOOL MECHA	Dharohar samiti	Farmer
400	525	of	2016	GADHA KHUTA-2	Dharohar samiti	Farmer
401	526	of	2016	Amri Dhan	Dharohar samiti	Farmer
402	527	of	2016	Pharsa Phool	Dharohar samiti	Farmer
403	528	of	2016	UMRI CHUDI	Dharohar samiti	Farmer
404	529	of	2016	Tiki Chudi	Dharohar samiti	Farmer
405	530	of	2016	Kapur Saay	Dharohar samiti	Farmer
406	531	of	2016	Mudariya Dhan	Dharohar samiti	Farmer
407	532	of	2016	Barangi	Dharohar samiti	Farmer
408	533	of	2016	Lal Barangi	Dharohar samiti	Farmer
409	534	of	2016	Lalu Chaudah	Dharohar samiti	Farmer
410	535	of	2016	Hansa Dubraaj	Dharohar samiti	Farmer
411	536	of	2016	KUKDA MAOOR	Dharohar samiti	Farmer
412	537	of	2016	Kava Kor	Dharohar samiti	Farmer
413	538	of	2016	Ilayachi	Dharohar samiti	Farmer
414	539	of	2016	Kari Barai	Dharohar samiti	Farmer
415	540	of	2016	Badekhuji	Dharohar samiti	Farmer
416	541	of	2016	Meso Dhan	Dharohar samiti	Farmer
417	542	of	2016	Bharampatii	Dharohar samiti	Farmer
418	543	of	2016	Tama Koni	Dharohar samiti	Farmer
419	544	of	2016	Raami Pareva	Dharohar samiti	Farmer
420	545	of	2016	Bhurkund	Dharohar samiti	Farmer
421	546	of	2016	Dumar Phool	Dharohar samiti	Farmer
422	547	of	2016	Bassa Bhog	Dharohar samiti	Farmer
423	548	of	2016	Lodhiyari	Dharohar samiti	Farmer

S. no.	Registration Number			Denomination	Applicant Name	Type of Variety
424	549	of	2016	Banspati-1	Dharohar samiti	Farmer
425	550	of	2016	Dhangri Kajar	Dharohar samiti	Farmer
426	551	of	2016	Karela	Dharohar samiti	Farmer
427	552	of	2016	Potekhuji	Dharohar samiti	Farmer
428	553	of	2016	Aajam Lali	Dharohar samiti	Farmer
429	554	of	2016	Baakti Chudi	Dharohar samiti	Farmer
430	555	of	2016	Devmati	Daulat Ram	Farmer
431	556	of	2016	Godadani Dhan	Anil Painkara	Farmer
432	557	of	2016	PAIN BUDI Kuriya	Shiv Shankar Singh Painkara	Farmer
433	558	of	2016	Ganga Chur	Ghanshyam	Farmer
434	559	of	2016	Satra Safri	Rajkumar Rajwade	Farmer
435	560	of	2016	KUDARFUL	Shri Rambriksh Sai	Farmer
436	561	of	2016	Loundhi	Shri Jagdish Singh	Farmer
437	562	of	2016	DANDRAS	Shiv Shankar Singh Painkara	Farmer
438	563	of	2016	KARHANI GHUGHARA	Shri Bal Sai Rajwade	Farmer
439	564	of	2016	GODA DHAN	Mukund Sai	Farmer
440	565	of	2016	Dhaniya Ful	Kripa Sai	Farmer
441	566	of	2016	Nadiya RSO	Dharohar samiti	Farmer
442	567	of	2016	Bhata Kanhi	Dharohar samiti	Farmer
443	568	of	2016	Photki	Dharohar samiti	Farmer
444	569	of	2016	Dongar Kabri	Dharohar samiti	Farmer
445	570	of	2016	Sona Saari	Dharohar samiti	Farmer
446	571	of	2016	Sakta-2	Dharohar samiti	Farmer
447	572	of	2016	Moha	Dharohar samiti	Farmer
448	573	of	2016	Aadan Chilya	Dharohar samiti	Farmer
449	574	of	2016	Kosam Jhoya	Dharohar samiti	Farmer
450	575	of	2016	Hari Chudi	Dharohar samiti	Farmer

S. no.	Registration Number			Denomination	Applicant Name	Type of Variety
451	576	of	2016	Bandi Luchai	Dharohar samiti	Farmer
452	577	of	2016	Dhavda Phool	Dharohar samiti	Farmer
453	578	of	2016	Bhalu Dubraj	Dharohar samiti	Farmer
454	579	of	2016	Bhata Dubraj	Dharohar samiti	Farmer
455	580	of	2016	Banspati-2	Dharohar samiti	Farmer
456	581	of	2016	Nani Chudi	Dharohar samiti	Farmer
457	582	of	2016	Hiran Bako	Dharohar samiti	Farmer
458	583	of	2016	Bhata Khuji	Dharohar samiti	Farmer
459	584	of	2016	Para	Dharohar samiti	Farmer
460	585	of	2016	Bans Kathia	Dharohar samiti	Farmer
461	586	of	2016	Lal Mokdo	Dharohar samiti	Farmer
462	587	of	2016	Bansmukhi	Dharohar samiti	Farmer
463	588	of	2016	Jondara Nagdi	Dharohar samiti	Farmer
464	589	of	2016	Hardi Gardhi-1	Dharohar samiti	Farmer
465	590	of	2016	Bhakva	Dharohar samiti	Farmer
466	591	of	2016	Kurloo Kabri	Dharohar samiti	Farmer
467	592	of	2016	Jurandi	Dharohar samiti	Farmer
468	593	of	2016	Gadha Khuta	Dharohar samiti	Farmer
469	594	of	2016	Sendur Singa	Dharohar samiti	Farmer
470	595	of	2016	Kasi Kaaman	Linguram Thakur	Farmer
471	596	of	2016	Dokra Muchcha	Linguram Thakur	Farmer
472	597	of	2016	Leem Phool	Linguram Thakur	Farmer
473	598	of	2016	Lal Hajari	Linguram Thakur	Farmer
474	599	of	2016	Arend Kadamphool	Arend Krishak Samudaye	Farmer
475	600	of	2016	JHILLI DHAN-1	Sileshwar Kindo	Farmer
476	601	of	2016	Rudra Dhan	Arend Krishak Samudaye	Farmer
477	602	of	2016	ALSENGA DHAN	Arend Krishak Samudaye	Farmer
478	603	of	2016	Janjale Dhan	Arend Krishak Samudaye	Farmer

S. no.	Registration Number			Denomination	Applicant Name	Type of Variety
479	604	of	2016	Arend Karhani	Arend Krishak Samudaye	Farmer
480	605	of	2016	Godadani Dhan-1	Bhudhna Ram	Farmer
482	1	of	2017	Arakhuta Dhan	Maniram Bediya	Farmer
483	2	of	2017	Badka Dhan	Samu Bediya	Farmer
484	3	of	2017	Smb- RATANCHUDI	Janardan Pradhan	Farmer
485	4	of	2017	MAGURA-S	Panchnan Barik	Farmer
486	5	of	2017	JANGLIJATA-K	Ajit Kumar Biswal	Farmer
487	6	of	2017	Ganjam-KALAJIRI	Nilanchal Muni	Farmer
488	7	of	2017	Raigada-RATAN CHUDI	Kachindra Nundruka	Farmer
489	8	of	2017	Kamal dhani	Ram Kishun Sai	Farmer
490	9	of	2017	Arend kalajeera	Arend Krishak Samudaye	Farmer
491	10	of	2017	Dabar Dhan	Dayalu Marar	Farmer
492	11	of	2017	Dhan sathiya	Ramchandra Maravi	Farmer
493	12	of	2017	Nandel	Simdu Sai	Farmer
494	13	of	2017	HANUMAN BHOG	Shri Rambriksh Sai	Farmer
495	14	of	2017	Rohit	Mritunjay Kumar	Farmer

ANNEXURE X: ACRONYMS

AICRP	All India Coordinated Research Project
BAU	Birsa Agricultural University
BMC	Biodiversity Management Committee
BCIL	Biotech Consortium India Limited
CAG	Comptroller and Auditor General of India
CARI	Central Agricultural Research Institute
CBD	Convention on Biological Diversity
CMD	Chairman-cum-Managing Director
CSIR	Council of Scientific and Industrial Research
CHES	Central Horticultural Experiment Station
CSSRI	Central Soil Salinity Research Institute
DAC	Department of Agriculture & Co-operation
DUS	Distinctiveness, Uniformity and Stability
EVRC	Extant Variety Recommendation Committee
ETL	Economic Threshold Level
GATT	General Agreement on Tariffs and Trade
IARI	Indian Agricultural Research Institute
ICAR	Indian Council of Agricultural Research
ICFRE	Indian Council of Forest Research & Education
IINDUS	Indian Information System as per DUS guidelines
IPGRI	International Plant Genetic Resources Institute (Bioversity International)
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
KAU	Kerala Agriculture University
KVK	Krishi Vigyan Kendra

NASC	National Agricultural Science Centre
NGO	Non-Governmental Organization
NORV	Notified and Released Varieties of India
NSAI	National Seed Association of India
NRCPB	National Research Centre on Plant Biotechnology
NSRTC	National Seed Research and Training Centre
MSEZ	Mangalore Special Economic Zone Limited
OECD	Organization for Economic Co-operation and Development
PS	Principal Scientist
PD	Project Director
PGR	Plant Genetic Resources
PPV&FRA	Protection of Plant Varieties and Farmers' Rights Authority
PVE	Plant Variety Examiner
PVIS	Plant Variety Information System
PVJ	Plant Variety Journal of India
R&D	Research and Development
RTI	Right to Information
SAO	Senior Accounts Officer
SAU	State Agricultural Universities
STO	Senior Technical Officer
TRIPS	Trade-Related Aspects of Intellectual Property Rights
UPOV	International Union of Protection of New Varieties of Plants
VCK	Variety of Common Knowledge
WTO	World Trade Organization

Approved in 28th Meeting (Agenda item No. 13) of Protection of Plant Varieties and Farmers' Rights Authority held on 22nd November, 2017 at New Delhi

Protection of Plant Varieties and Farmers' Rights Authority

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