सत्यमेव जयते

ANNUAL REPORT

2019-20

Protection of Plant Varieties and Farmers' Rights Authority

(A Statutory Authority Created by an Act of Parliament)

Department of Agriculture, Co-operation & Farmers' Welfare

Ministry of Agriculture and Farmers' Welfare, Government of India

NASC Complex, DPS Marg, New Delhi-110012

www.plantauthority.gov.in

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Preface and Acknowledgements

I have great pleasure in presenting the Annual Report for the year 2019-20 of the Protection of Plant Varieties and Farmers' Rights Authority (PPVFRA), a Statutory Body established by the Govt. of India in 2005 after the Parliament enacted PPV&FR Act in 2001.

PPVFRA not only regulates the intellectual property regimes on plant varieties in India, it also to protects the rights of the plant breeders as well as the farmers being the only Authority in the World to protect both inventor (the plant breeder) and user (the farmer) under one umbrella. This is the most significant deviation from the International Union for Protection of New Plant Varieties (UPOV) Geneva based plant variety protection systems elsewhere in the world. The overall goal of the Authority is to see that farmer is able to choose from large number of varieties with an assured performance of the variety with a right to claim compensation if the variety fails, while the plant breeder is encouraged to maximize his business that works as an incentive for him to invest more in developing newer varieties focusing on overcoming the problems faced by the farmers in the current varieties in trade. The Authority has also been assigned with the responsibility of recognizing deserving farm communities or farmers for their contributions towards conserving and improving traditional plant genetic resources. While openness of the system allows the protection of the breeders' rights to individual plant breeders, farmers, public institutions and private institution alike, enabling a competitiveness in quality and pricing to the benefit of user farmer, it also provides for a redressal mechanism to the right holder plant breeder to claim damages caused due to infringement of the breeders' rights by unauthorized seed growers and seed sellers. These provisions can be most gainfully used by both breeders along with their agents for selling, producing, marketing, exporting and importing protected variety seed/seeding materials as well as the consumer farmers to lead to a win-win situation thereby enabling the farmers in doubling their incomes from the plant variety source which is the cherished goal of our honorable Prime Minister Shri Narendra Modi.

During reporting period, the Authority received 204 applications in respect of 32 crop species. Highest number of applications is received in Rice (37) followed by Maize hybrids (25), Potato (24), Tetraploid cotton hybrids (22), Pearl millet hybrids (15), Tomato (12), Chilli (11), Wheat (10) etc. Out of 204 applications, 123 applications were filed by private sector, 71 applications were filed by public sector and only 10 by farmers. This significantly differed from the number of applications received in the last year where, out of 592 applications, as many as 465 (78.5%) belonged to those filed as farmers varieties compared to 10/206 during this year (less than 5%). Being unaware of the concept of uniformity and genetic stability, it is unfortunate that a large number of these have been found to be genetic mixtures beyond acceptable levels. This was owing to the direct seed submission directly without technical verification for the basic requirements which are most crucial to be established in the DUS testing. Finding this as an inevitable and an obviously likely gap which needs to be filled before converting the submissions into successful registration for protection of farmers' varieties, the Authority decided to introduce the procedure of verification of uniformity and genetic purification processes of such candidate varieties of farmers either by State Agricultural Universities or ICAR crop specific institutes before these are submitted to the Authority for protection. This is the reason for lower number of farmers variety applications received this year since over three hundred of such applications have been returned with a direction issued to the applicant as well as the SAUs or ICAR institutes before these applications are formally accepted to overcome their needless rejection and loss of such valuable materials and farmers' efforts in conserving the same. This is a quality upgraded positive development. In 22 more crop species out of the 158 crop species, with the termination of the extended period for protection of extant varieties by breeders, farmers will now be able to be

exposed to newer varieties only instead of those already in cultivation with the exception of farmers' varieties which is expected to enable faster adoption competitively on the basis of features of value to combat the climate change phenomenon or pests and diseases as the new varieties in these species are more likely to be equipped for the purpose than existing varieties.

I am extremely happy to place on record that this year a more than double the number of 430 varieties were registered for protection comprising 119 Farmers' varieties, 84 New varieties, 13 Essentially Derived Varieties, 133 varieties of common knowledge and 82 extant notified varieties. Compared to this, the year 2918-19 had only 184 varieties registered showing enhancement by 235%. Similarly, highest number of certificates were issued for cereals (161) followed by vegetables (131), fibre crops (60), fruits (41) and legumes (25). The Registry and its dedicated staff deserve appreciations for this.

I take this opportunity to place on record my gratitude to the Hon'ble Union Minister of Agriculture and Farmers Welfare, Sh. Narendra Singh Tomar for the guidance and unrestricted support to the Authority recognizing it for being the only Statutory Body operating in the Ministry. I am also equally grateful to Shri Sanjay Agrawal, Secretary, Department of Agriculture, Co-operation & Farmers Welfare for his ever-willing support, positive developmental guidance and for the interest he showed in considering the complexity in the IPRs related to live plant materials under this Act to provide or assure of reforms that we have proposed. I express my sincere gratitude to Shri B Pradhan, Additional Secretary and Financial Adviser, Department of Agriculture, Co-operation & Farmers Welfare who engaged himself in long and involved discussions related to funding or other financial power related aspects. Dr Dolly Chakrabarty, Additional Secretary, DACFW extended active support to the Authority. In Shri Ashwani Kumar, Joint Secretary (Seeds) the Authority found a genuine supporter who was also willing to listen patiently to the issues in proper perspective and discuss without any hesitation taking help of his experience in dealing with autonomous units or PSUs for absorbing the needs of an 'out of department' Statutory Body.

I gratefully acknowledge the contributions of the Hon'ble members of the Authority which also included ex-officio, the Commissioners of Agriculture and Horticulture, Deputy Director General (Crop Sciences) and Joint Secretary (Seed) from the Ministry of Agriculture & Farmers Welfare and other officers who served on various committees/task forces with dedication which have helped the Authority in scaling new horizons and setting new standards.

I also thank Secretary DARE and Director General, Indian Council of Agricultural Research (ICAR), leaders of DUS centres of ICAR, State Agricultural Universities (SAUs), Council of Scientific and Industrial Research (CSIR), Indian Council of Forest Research and Education (ICFRE) and other Research Institutions for providing continuous support to the Authority.

The technical wing of the Seed Division with Shri M Gunasekaran, Assistant Commissioner along with his team was prompt in dealing with the connectivity required on technical matters between administrative ministry and the Authority. I also take this opportunity to acknowledge the cooperation and help extended by Dr A K Singh, Director, ICAR-Indian Agricultural Research Institute (IARI) and Dr Kuldeep Singh, Director, ICAR-National Bureau of Plant Genetic Resources (NBPGR) for successfully shouldering various responsibilities entrusted by the Authority.

I acknowledge with thanks the services of State Bank of India and Syndicate Bank for their financial services. I am grateful to CAG team for their timely auditing, guidance and direction. I thank the CAG for organizing timely audit of the organization and am grateful to the team for putting in extra in order to correctly assess the documentations recorded by the understaffed procurement and IFD units, though without slightest of compromise. The Annual Account of the Authority has been audited and submitted to CAG within prescribed time schedule.

The roles played by Dr R C Agrawal who relinquished his office in November 2019 as Registrar General and as Member Secretary of the Authority have been monumental and are missed even more obviously as the Authority has not been able to get a replacement with the consequence of not a single Authority meeting being held during the year 2020 so far owing to the post being a Statutory post whose job cannot be given to any other official for executing the same responsibilities of judicial as well as statutory work for legal validity of the orders or OMs. The two Registrar(s), Dr Ravi Prakash and Dr T K Nagarathna stood by my side to deal with the several technical protocols development in DUS testing, priority to workshops with the investigators at the 150 locations in the country so that the data generated are consistent and dependable followed by large number of procedural modifications typically as required in the Act so that the decisions of the Authority on plant varieties become globally acceptable and relevant. These involved hard work and ability to convince the investigators at the centres as well as applicant breeders or legal representatives of the applicants. I appreciate their ungrudging and whole hearted trust they reposed in me, honed their own expertise and effected consensus decisions in the sole interest of the Authority as a regulatory, judicial and statutory body, by taking full responsibility. To change from the routine is by nature something Their teams spent long periods in skill enhancement and knowledge upgradation training almost on a daily basis while appreciating every protocol or its necessity while negotiating with the submitted applications and seed materials. Joint Registrar Shri Dipal Roy Choudhury, as the most experienced technical staff of this Authority needs to be given special appreciation for maintaining the Gene Bank as well as providing full support in any responsibility including independent assessment of applications of cotton and rice crops based on his long experience and expertise. Shri Uma Kant Dubey, Shri Ravinder Singh Sengar and Shri P S Malviya, the three Deputy Registrars have provided support as required, with the both Shri Dubey and Shri Sengar filling in for administrative and other non-technical roles due to lack of staff, which is gratefully acknowledged. Both Drs Ajay Kumar Singh and D S Pilania carried out extraordinary work taking care of the enormous responsibility of handling extremely confidential materials, generating the hybrids as well as carrying out tests on these at the Shivamogga branch under the able leadership of Dr T H Gowda, Consultant Deputy Registrar. I also have a special appreciation for the voluntary and ever-willing support provided by Shri Raj Ganesh, the legal advisor of the Authority, another of the oldest employees of the Organization commendably while carrying out his responsibilities as the legal advisor with brilliant inputs at all levels from litigations to notifications. He also lent his committed service for the organization standing in as Finance Advisor also for most part of the year of reporting which has come handy for the new Finance Advisor Shri Vipin Tyagi who is in position at the time this report is being compiled. Shri Raj Ganesh also coordinated in compiling this report in dual languages as well as for drafting when needed by putting in extra hours and days. My gratitude goes to him and his team.

This report could not have been completed without the inputs including data submissions by the Principal Investigators from main and Cooperative centres of each of the over 130 DUS centres whose tremendous contribution as additional work over and above their crop improvement research is gratefully acknowledged in supporting this national duty on behalf of the Authority. The inputs from Drs R C Agarwal, Ravi Prakash, T K Nagarathna, D R Choudhury, Raj Ganesh as

well as the Registry Assistants and other staff working with them are gratefully appreciated in compiling this report. The computer assistants Shipra Mathur, Aravind Rai, Sanjay Gupta, Nitesh Verma and Shyam Narayan provided all database compilation as well as retrieval support. All the registry assistants and data entry operators also chipped in with timely handling of applications in a systematic manner which is also acknowledged. The office assistants and MTSs at HQ as well as branch offices served the Authority amicably, carrying out their assigned tasks.

(**K V Prabhu**)

Chairperson
Protection of Plant Varieties & Farmers' Rights Authority, New Delhi

Executive Summary

The "Protection of Plant Varieties and Farmers' Rights Act" (53 of 2001) is a unique Act which conforms to the provisions of UPOV 1978 Convention and fulfills the spirit of International Treaty on Plant Genetic Resources for Food & Agriculture. It also strikes a balance between the rights to breeders and the farmers as per the national requirement. The Authority, since its establishment in the year 2005, has been consistently improvising the system of registering the plant varieties, connecting the stakeholders, encourage innovation in seed sector, acknowledge the contribution by the farmers/communities towards conservation of plant genetic resources and making them available to plant breeders, established a National Gene Fund, build and maintain gene banks etc.

Till the time of going for printing, the Government of India has notified 161 crop species on the recommendations of PPV&FR Authority for plant variety registration. During the reporting period, the Authority notified *Melia* crop species commonly known as Malabar Neem. In the year 2019-20, the Authority received a total of 204 applications belonging to three categories of farmers' (10), new (62) and extant (132) varieties. Out of 204 applications, 123 applications were filed by private sector, 71 applications were filed by public sector and 10 by farmers. Under extant notified category, 56 applications were received, 76 under extant VCK, 62 under New and 10 under farmer's variety category were also filed for registration. During 2019-20, 204 applications were received in respect of 32 crop species. Highest number of applications is received in Rice (37) followed by Maize hybrids (25), Potato (24), Tetraploid cotton hybrids (22), Pearl millet hybrids (15), Tomato (12), Chilli (11), Wheat (10) etc. In 22 crop species notified earlier, the time limit for registration under extant variety (extant notified varieties under Section 5 of seeds Act, 1966 and extant varieties about which there is common knowledge) category expired during the year under report wherein, only farmers varieties and new varieties are admissible for protection.

In the annual year of 2019-20, a total of 430 certificates of registration were issued involving applications received prior to 2016. Excluding the Farmers' varieties (119), other categories including new varieties (84), EDV (13) and varieties of common knowledge (133) and extant notified varieties (82) plant varieties were registered. Similarly, highest number of certificates were issued for cereals (161) followed by vegetables (131), fibre crops (60), fruits (41) and legumes (25).

The Authority has the responsibility of performing the noble task of honorng the farmers and communities engaged in conserving traditional varieties or their wild relative species which have traditional values due to special use or commercial demand in the society, with awards, rewards and recognitions for having saved these genomes to enable their usage by breeders. Sh Narendra Singh Tomar, Hon'ble Minister for Agriculture & Farmers Welfare, Government of India conferred Plant Genome Saviour Community Awards to five communities; Plant Genome Saviour Farmer Rewards to three farmers and Plant Genome Saviour Farmer Recognition to six farmers from different states of India. Shri Parshottam Rupala and Shri Kailash Choudhary, Minister(s) of State for Agriculture & Farmers Welfare, Government of India; Shri Sanjay Agarwal, Secretary, DAC&FW, Ministry of Agriculture & Farmers Welfare, Government of India; Dr. Trilochan Mohapatra, Secretary, DARE, Ministry of Agriculture & Farmers Welfare,

Government of India & Director General, ICAR; Dr. K. V. Prabhu, Chairperson, PPV&FR Authority, Government of India and Dr. R. C. Agrawal, Registrar General, PPV&FR Authority, Government of India, also graced the occasion. An exhibition showcased the agro biodiversity being conserved by the Awardees.

During the reporting period, two Authority meetings were held. In the 31st meeting of the Authority held on 30th April, 2019, issues related to the revision of DUS test guidelines of Pearl Millet and Sorghum, creation of new posts cater to increased pending, amendments in certificate of registration, restoration of special policy for career advancement and proposal for conducting awareness programmes/ workshops were approved. In the 32nd Meeting of the Authority, held on 25th September, 2019 DUS test guidelines of crop species pointed gourd, crossandra and cowpea, annual fee return form, Recruitment Rules for the post of Financial Advisor, Draft Annual Report 2018-19 and Annual Accounts 2018-19 were approved.

The Legal Cell of the Authority pursued the cases filed in different Courts. During the reporting period, 29 cases were pending against the Authority and six cases (W.P. (C) No. 10203 of 2015, W.P. (C) No. 6470 of 2013, W.P. (C) No. 6208 of 2014, LPA 63 & 64 of 2020 and O. A. No. 190 of 2015,) were disposed of. . Other notifications were published in the Gazette of India regarding amendment relating to Renewal fee vide Gazette Notification S.O. 863(E) dated November 20, 2019.

During the reporting period, the Authority received 15 applications either directly from the applicant or transferred from other departments seeking information under RTI Act, 2005. The information sought was made available within the stipulated period. There are no appeals pending before the first Appellate Authority or Chief Information Commissioner (CIC).

Owing to timely support by the nodal Seed Division of the Department of Agriculture, Cooperation and Farmers Welfare, it was possible to provide funds to various public (Central or State Government) institutions in time for conducting DUS testing at notified centres, DUS on parents and hybrid testing at Shivamogga Branch, and 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.

An international Workshop on "DUS testing of Wheat and Barley" under the aegis of Indo German Bilateral Cooperation on Seed Sector was organized at ICAR-IIWBR, Karnal on 19th February, 2020 to 20th February, 2020 under the chairmanship of Dr. K. V. Prabhu, Chairperson, PPV&FRA, New Delhi and co-chaired by Dr. G. P. Singh, Director, ICAR-IIWBR, Karnal. ICAR-Directorate of Rapeseed-Mustard Research also hosted the International workshop on "DUS testing of Rapeseed-Mustard" on 13th -14th February, 2020. The workshop was organized jointly by Protection of Plant Varieties and Farmers' Right Authority (PPV&FRA), New Delhi under Ministry of Agriculture and Farmer's Welfare, Government of India and The Federal Ministry of Food and Agriculture (BMEL) Germany.

The Authority received Rs. 5509.76 lakhs as grants in aid from DAC&FW, Ministry of Agriculture and Farmers Welfare during the year 2019-20 and utilized Rs. 5244.81 lakhs after adjustment of Rs. 50.15 lakhs of previous year leaving a balance of Rs. 315.10 lakhs. The Annual Account of the Authority has been audited and submitted to CAG within prescribed time schedule.

The Authority has to implement some more provisions within the Act and complete the registration process for protection of varieties in time. However, there are a few functional inadequacies due to lack of manpower, financial and administrative powers since last four years.

The annual accounts of the Authority for the year 2019-20 was finalized and audited within the prescribed time schedule and placed before both the houses of the Parliament within statutory time limit. The Annual Report of Authority is being forwarded in time to the Department of Agriculture, Cooperation & Farmers Welfare for placing before both the Houses of Parliament.

Chapter 1: Introduction

Plant Varieties are vital for the survival of human beings and higher animals as they serve as producers of food, fibre, fodder, forest and raw materials for industries. Traditional plant breeders, including farming community/forest dwellers, nurture & these diversity, made selection from primary plant genetic resources or adapted naturalized plant varieties such as land races to produce plants of use since millennia. After the science behind the plant 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 germplasm, support long term research and development that enhance agricultural productivity, promote plant breeding in public/private sector and provide high quality 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 76 member states as part of the UPOV convention including regional associations like EU, OAPI. 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 the 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 PPV&FR Act is based on the option under TRIPS Agreement for a member country to protect the rights of plant breeders *sui generis* system by enactment by legislation if they would not opt for UPOV (International Union for Protection of New Varieties of Plants, Geneva) Convention, and is also unique in the sense that it concurrently recognizes the rights of plant breeders, farmers (including their right as plant breeders), farming communities and researchers who breed new varieties as well as those already bred and existing prior to protection (extant). 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 PPV&FR Authority is a Statutory Body established by the Parliament of India through the PPV&FR Act of 2001. 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 a Chairperson and fifteen members as on 31st March, 2020 along with a Registry appointed by the Authority and an Appellate Body currently integrated into IPAB (Intellectual Property Rights Appellate Board) with the Authority's technical member.

1.4 PLANT VARIETY REGISTRATION

The PPV&FR Authority has finalized the distinctiveness, uniformity and stability (DUS) test guidelines for registration of 158 crop species covering cereals, pulses, millets, oilseeds, spices, vegetables, flowers, medicinal and aromatic plants and fibre crops and 3 more crop species for varieties under extant categories totaling to 161. The Authority has issued 430 certificates of registration for plant varieties (under new, extant and farmers' variety category) during the reporting year 2019-20. To facilitate more applications seeking plant varieties protection from 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 CATEGORIES OF PROTECTION OF PLANT VARIETIES

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(also a part of extant 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 to 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 varieties 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 facilitates 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 BREEDERS' RIGHTS

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.

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.

1.8 REGISTRATION OF PLANT 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

1.9 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. 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**:**

1.9.1 Protection Period and Crops

A total of 161 crop species are presently eligible for protection (Annexure VII). The total period of protection for field crops is of 15 years with 6 years of protection at the time of registration renewable to next 9 years, whereas that of trees and vines is for 18 years with 9 years of protection at the time of registration renewable to next 9 years. The extant varieties notified are given a protection for 15 or 18 years for field crops or trees and vines respectively, from date of notification under Seeds Act, 1966.

1.10 AWARD/REWARDS TO FARMERS'/FARMING COMMUNITIES

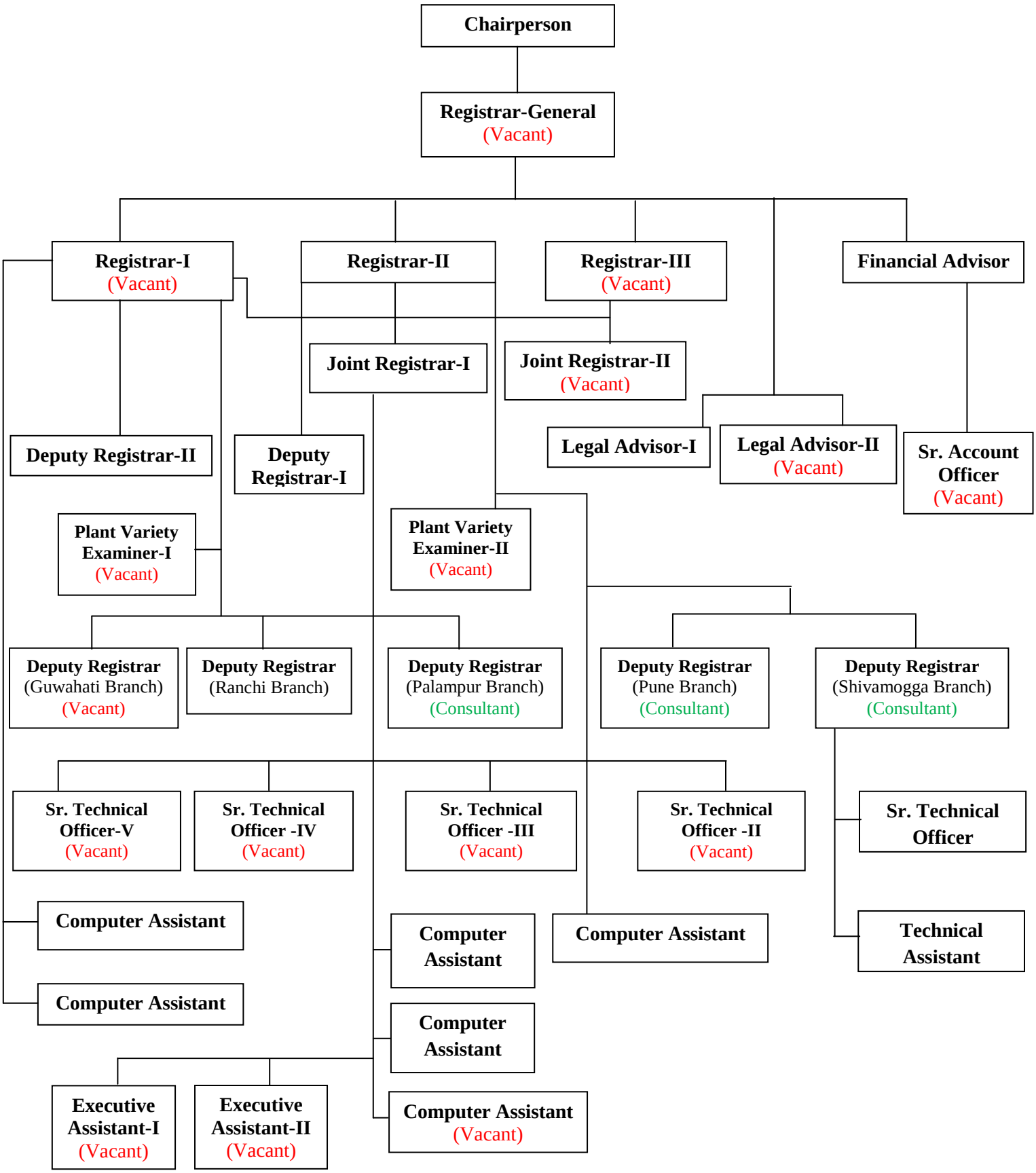
Section 45(2) of the Act reads with Rules 70 (2) (a) of PPV&FR Rules, 2003 provides for support and reward, to farmers, communities of farmers, particularly the tribal and rural communities engaged in conservation, improvement and preservation of genetic resources of economic plants and their wild relatives, 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 twenty 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/ subject matter specialist.

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 memento 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 by Chairperson/Secretary of the concerned Panchayat Biodiversity Management Committee or Concerned District Agricultural Officer or Director
Plant Genome Saviour Farmers' Rewards	Ten farmers are rewarded every year. Each reward includes a citation, a memento and cash of Rs. 1.5 lakh.	

Plant Genome Saviour Farmers' Recognitions	Twenty farmers are rewarded every year. Each reward includes a citation, a memento and cash of Rs. 1 lakh.	of Research of Concerned State Agriculture University or Concerned District Tribal Development Officer

1.11. ORGANISATIONAL CHART



Chapter 2: Plant Varieties Registry

2.1 PUBLICATION OF DUS TEST GUIDELINES FOR CROP SPECIES

During 2019-20, DUS guidelines have been developed for three crop species and published in *Plant Variety Journal of India* as mentioned in Table 2 totalling to 158 crop species for which Authority has developed DUS guidelines and notified in Gazette of India. Registrations are now open for plant variety protection under *PPV&FR Act, 2001* for the varieties under these different crop species.

Table 2: DUS test guidelines developed for different crop species during 2019-20.

Sl. No.	Crop & Species	PVJ Publication details
1	Pointed Gourd (*Trichosanthes dioica* Roxb.)	March to August, 2019 (Vol-13 No.3-8)
2	Crossandra (*Crossandra infundibuliformis* (L.) Nees.)	September, 2019 (Vol-13 No.9)
3	Cowpea (*Vigna unguiculata* (L.)	October, 2019 (Vol-13 No.10)

2.2 NUMBER OF APPLICATIONS RECEIVED

Category	Public Sector	Private Sector	Farmers
New	12	50	-
Extant Notified	46	10	-
Extant VCK	13	63	-
Extant Farmers	-	-	10
EDV	-	-	-

During 2019-20, total of 204 applications were received for registration with major applications from cereals, vegetables and fiber crops (Table 3).

Table 3: Total number of applications received (crop group-wise)

Crop Group	Total	Crop Group	Total
Cereals	94	Oilseeds	3
Cucurbits	3	Spices	2
Fibre Crops	23	Sugar Crops	5
Fruits	17	Vegetables	51
Legumes	6		
		Grand Total	204

Highest number of applications is received for Rice (37), Maize (25), Potato (24), Tetraploid cotton (22), Pearl millet (15), Tomato (12), Chilli (11), Wheat (10) etc. (Table 4)

Table 4: Total number of applications received (crop-wise)

S.No.	Common Name	Total	S.No.	Common Name	Total	S.No.	Common Name	Total
1	Rice	37	**12**	Sugarcane	5	**23**	Bottle Gourd	1
2	Maize	25	**13**	Guava	3	**24**	Cauliflower	1
3	Potato	24	**14**	Black gram	2	**25**	Chickpea	1
4	Tetraploid Cotton	22	**15**	Durum Wheat	2	**26**	Groundnut	1
5	Pearl Millet	15	**16**	Garlic	2	**27**	Indian mustard (Sarso)	1
6	Tomato	12	**17**	Green gram	2	**28**	Jute	1
7	Chilli	11	**18**	Mango	2	**29**	Kidney bean	1
8	Wheat	10	**19**	Okra/Lady's Finger	2	**30**	Mulberry	1
9	Banana	5	**20**	Apple	1	**31**	Ridge gourd	1
10	Barley	5	**21**	Bell Pepper	1	**32**	Sunflower	1
11	Grapes	5	**22**	Bitter Gourd	1	**Grand Total**		204

Out of 204 applications, 123 applications were filed by private sector, 71 applications were filed by public sector and 10 by farmers. Under extant notified category, 56 applications were received, 76 under extant VCK, 62 under New and 10 under farmer's variety category were also filed for registration. During 2019-20, 204 applications were received in respect of 32 crop species.

2.3. REPORTS OF BRANCH OFFICES OF THE REGISTRY

2.3.1 Branch Office, Guwahati

During the reporting year 2019-20 the Guwahati Branch office was headed by Sh. Phool Singh Malviya, Deputy Registrar (PPV&FRA Ranchi Branch Office) holding an additional charge of Guwahati Branch Office. The Branch Office is supported by one Data Operator and one Multi Tasking Staff on outsourcing basis.

The applications were sent to Dr. Prakash Borah, Assam Agricultural University, The Director, ICAR Research Complex for NEH Region, Nagaland, ICAR-NEH, Region, Umiam,

Meghalaya, Dr. Arunima Deb Choudhury, SSEAEP, Paramananda Bhawan, MG Road, Nangaon, Assam, Dr. BP Baruah, Chief Scientist, Karimganj, Jorhat, Assam and all KVK of North East for new registration process for farmers varieties & seed testing on 30th July, 2019.

The branch office collaborated with the Assam Agricultural University centre at Biswanath Chariali for organizing the National Citrus Meet- 2020 from 09/01/2020 to 12/01/2020 with the aim of highlighting the large extent of genetic diversity in the species existing in the region, with characteristic features and values in culinary and medicinal usage with industrial applications. In addition, the centre participated in disseminating the commercial potential by protecting the IP on native diversity in crop plants or their wild relatives with ASSOCHAM in the program, Emerging Northeast in Guwahati in February 2020.

Photograph of Participation of Deputy Registrar, Guwahati Branch Office for awareness programme during 2019-2020:

Regional workshop at Biswanath Chariali Agriculture College AAU for National Citrus Meet- 2020

ASSOCHAM to Emerging Northeast at Maniram Dewan Trade Centre, Guwahati

2.3.2. Branch Office, Ranchi

During the reporting period Branch office Ranchi has made followings achievements: New & Extant Varieties applications: 01 New & 05 Extant varieties applications also received at branch office Ranchi in which all farmers variety applications were sent for DUS Testing and other Extant Variety applications were submitted with all guidelines to headquarter for further processing. Incomplete applications were returned to applicants.

- **Plant Genome Saviour Farmer Reward applications:** During the reporting period Branch office Ranchi has also received **08** applications of Plant Genome Saviour Farmers Reward (PGSC) applications 2017-18 from their jurisdiction, which were sent to Head office for further processing.
- **Seed samples: 58 seed/plant samples** of different crops for DUS and Grow out Test (GOT) and sent to the Plant Varieties Registry.

- **Co-ordination for submitting fee:** Branch office Ranchi also efforts for submitting of different fee i.e. Annual fee, Renewal fee & DUS fee etc from Institutes.

DUS Centre review dated: 25.04.2019

DUS Centre Review meeting and Project status meeting dated: 26.04.2019

Participation in Odisha University of Agricultural and Technology (OUAT) Farmers Fair-2020 & Regional Workshop on PPV&FRA

2.3.3. Branch Office, Shivamogga

2.3.3.1 Technical Progress report of Branch Office, Shivamogga

Applications received for Registration under PPV&FR Act, 2001.

Total 07 applications along with seeds were received from farmers for cotton, sorghum, green gram and black gram crops under various categories and after preliminary examination same were forwarded to the Head Office for further necessary action.

Table 5: The details of applications received and forwarded are as under:

Crop	**No of applications**
Cotton	04
Sorghum	01
Green gram	01
Black gram	0 1
Total	**07**

2.3.3.2 DUS characterization, Hybridisation and rejuvenation programme:

This centre is designated for DUS test centre of Parental material of Agri and horticultural crops. Accordingly **t**he following projects were taken for DUS characterization, hybridisation and rejuvenation during the *Kharif* and Rabi season, 2019 and summer 2020 (**Table 6)**

Sl.No.	Title of the project	Principal Investigator
1.	Stability Assessment Hybrid Seed Production/DUS characterization of Parental Lines for Cereals (except Maize &Rice), Pulses and Vegetable crops"	Dr.T.K.Nagarathna Registrar, PPV&FRA, New Delhi
2.	Hybrid Seed Production/ DUS characterization and testing of Parental lines of Maize and Oil Seeds Crop	Dr. Ravi Prakash Registrar, PPV &FRA, New Delhi
3.	Stability Analysis/Hybrid Seed Production/DUS characterization of Parental Lines for Rice and Cotton	Sh. Dipal Roy Choudhury Joint Registrar, PPV &FRA, New Delhi

2.3.3.3 List of parental seed material received for DUS characterization and Hybridization programme in different crops received during the 2019-2020 (Table 7)

Kharif and Rabi 2019			Summer season 2020		
Sl.No	**Crops**	**No of entries/parents /inbreeds/tested received**	**Sl.No**	**Crops**	**No of entries/parents /inbreeds/tested received**
1	Maize	109	1	Watermelon	04
2	Paddy	20	2	Okra	16
3	Cotton	16	3	Chilly	14
4	Green gram	05	4	Tomato	14
5	Pearl millet	04	5	Sunflower	02
6	Sorghum	01	6	Mustard	05

Progress of **"Stability assessment, Hybrid Seed Production, DUS characterization of Parental lines for Cereals (except maize & rice), Pulses and Vegetable crops**". The project has been handled from financial year 2019-20 with the budge outlay of Rs. 232.11lakh at PPV&FR Branch office, Shivamogga (Code no. PPV/Internal/02/2019-20)

Major activities

- Recruitment of Senior Research Fellow (03), Technical Assistant (01) and Multi-Tasking Staff (01) has been done to carry out different project activities such as crossing of parents and generation of F_1 hybrids, DUS testing of parental lines, maintenance of reference varieties *etc.*

- Hybrid seed production and DUS characterization of candidate varieties of sorghum (01), pearl millet (04), watermelon (04), okra (16), chilli (14), tomato (14) and green gram (05) was carried during 2019-20.

Infrastructure facilities under the project

- Creation of irrigation facility with laying irrigation pipeline (HDPE) from farm pond to PPV&FRA experimental plots at UAHS, Shivamogga was initiated. Digging of channels, laying of irrigation pipeline and construction of pump house is under progress.
- Office renovation and aluminium partitioning with civil works involving electrification, partition, window panelling and wall panelling has been allotted to contractor recognized by the UAHS, Shivamogga.
- Providing chain link fencing to 13.5 acre experimental field at PPV&FRA branch office, Shivamogga has been allotted to contractor recognized by the UAHS, Shivamogga
- For installation of CCTV surveillance system to PPV&FRA branch office as well as experimental plots, an estimate for approval has been sought from estate office of UAHS, Shivamogga.
- One desktop computer has been purchased by Head office through GEM and two computers with a printer are provided to Branch Office, Shivamogga.

Farm equipments *viz*, Brush/Grass cutter and battery operated power sprayer with required technical specifications have been added to cart on GEM platform.

2.3.3.4. DUS Project on "Hybrid Seed Production/ DUS characterization and testing of Parental lines of Maize and Oil seeds" at PPV & FRA, DUS centre Shivamogga

A project entitled "Hybrid Seed Production/ DUS characterization and testing of Parental lines of Maize and Oil seeds" was started during July,2019 at PPV & FRA Branch office, Shivamogga at cost of Rs. 79.14 lakhs for three years. The Project was handled by Dr. Ravi Prakash, Registrar as Principal Investigator along with Sh. R.S. Sengar, Deputy Registrar, Dr. Ajay Kumar Singh, PVE and Dr. D.S. Pilania, TA respectively as Co-Principal Investigators of the project.

During the reporting period 2019-20 under DUS project at PPV & FRA Shivamogga Branch Office, in addition to the mandated Branch activities, it has also been designated by the PPV & FR Authority, New Delhi to conduct DUS test evaluation of parental lines of different agricultural and horticultural crop species and production of hybrids thereof for the candidate varieties applied for registration and protecction under the PPV & FR Act, 2001. The hybrid seeds produced at this Centre are compared against the hybrid seed of the candidate hybrid deposited by the applicant for conformity of uniformity. In this regard wherein registration activities for Maize and Oilseeds crop species fall under the jurisdiction of Dr. Ravi Prakash, Registrar, PPV & FRA, New Delhi, during the reporting year, various entries of Maize, sunflower and mustard were taken up for DUS test as well as production of hybrids. During the later part of the reporting year for smooth handling and efficient work output under these crop species all three species were accommodated. Under the project two Senior Research Fellows namely Sh. Chethan. K. G and

Sh. Prasanna Sakhare and one Technical Assistant Ms. Pallavi K. R. were recruited for handling the crops.

The details of information and activities done during the reporting year under these crops are as under:

(A). MAIZE (*Zea mays* L.; 2n=20): During *Kahrif* 2019, branch office Shivamogga centre received 218 entries (*i.e.*, 109 male parents + 109 female parents along with 16 reference lines) for DUS testing of parental lines and hybridization of respective parents. Out of 218 entries, 38 entries were VCK & 180 entries were under New category. Each hybrid combination consisting two paired rows i.e. two rows of female parent and two rows of male parent with twenty plants in each row of 4 m length with a spacing of 70 x 20 cm. 16 reference lines were sown in two replication. These entries were sown as per the approved plan and in each entry ten plants were selected and DUS observations were recorded. All prescribed crop management practices and pest control measures were taken up timely and also as and when required for raising the healthy crop.

Out of 109 hybrid combinations hybrid were produced for 103 as for the remaining hybrid combinations either male or female entries did not germinated at all after multiple times of sowing. The table of events during the cropping season is as under (Table 8):

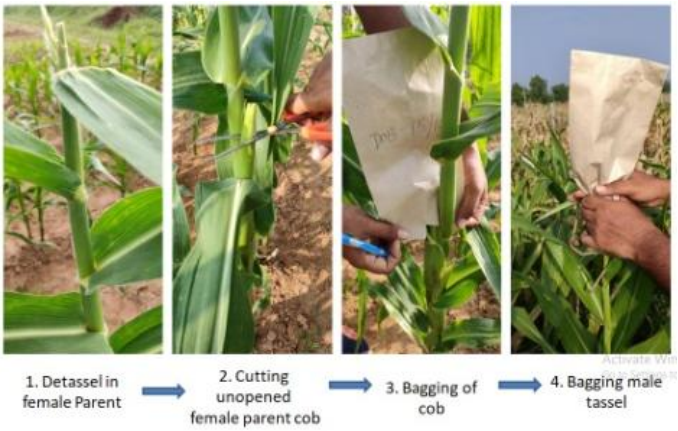
S. No.	Particulars	Date
1	Date of first and second sowing	25-07-2019 and 02-08-2019
2	Bagging of cobs, tassel and hybridization and selfing programme	18-09-2019 to 13-11-2019
3	Harvesting of matured cobs	25-11-2019 to 20-12-2019

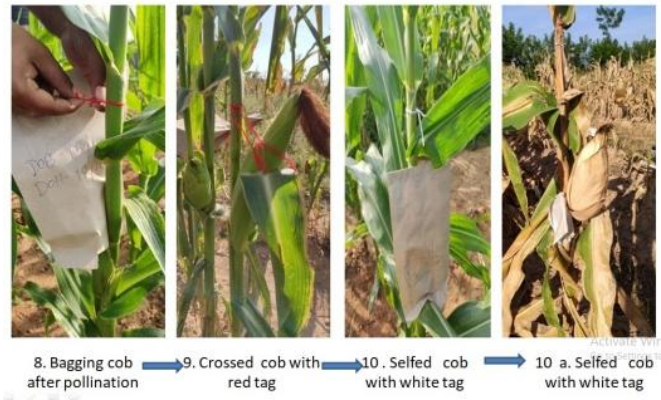
Photographs of Maize crop during various crop growth stages






Photographs showing Maize Hybridization and selfing procedures being carried out at Shivamogga





(B). SUNFLOWER (*H. annuus*) (2n=34): During *Rabi*-2019, branch office Shivamogga centre received 2 ABR entries (*i.e.*, 2 A lines + 2 B lines + 2 R lines) along with 06 reference lines for DUS testing of parental lines and hybridization of respective parents. The entries were sown as per the approved plan with three replications. All ABR lines were sown in 3 rows each *i.e.*, three rows for A line, three rows for B line and three rows for R line with 10 plants in each row of 3 m length with a spacing of 60 x 30 cm. The same spacing was followed for 06 reference lines too. In each entry ten plants were selected and DUS observations were recorded. DUS Characters were observed and recorded during every growth stages on all parental lines as per DUS test guidelines published by the PPV & FRA. All prescribed crop management practices and pest control measures were taken up timely and also as and when required for raising the healthy crop.

Table 9: The table of events during the cropping season is as under:

S. No.	Particulars	Date
1	Date of sowing	09-12-2019
2	Bagging, selfing & hybridization programme	03-02-2020 to 20-02-2020
3	Harvesting and Threshing of matured heads	23-03-202020 and 26-03-2020

Photographs of hybridization and selfing activities in Sunflower

Bagging for hybridization

Seed set of a hybrid

Recording DUS observation

A complete seed set of a hybrid

(C). **MUSTARD (*Brassica juncea* L. Czern & Coss, n=18):** During *Rabi*-2019, branch office Shivamogga centre received 5 ABR entries (i.e., 5 A lines + 5 B lines + 5 R lines) along with 16 reference lines for DUS testing of parental lines and hybridization of respective parents. The entries were sown as per the approved plan with three replications. All ABR lines were sown in 3 rows each *i.e.*, three rows for A line, three rows for B line and three rows for R line with 33 plants in each row of 5 m length with a spacing of 60 x 15 cm. The same spacing was followed for 16 reference lines too. In each entry ten plants were selected and DUS observations were recorded.DUS Characters were observed and recorded during every growth stages on all parental lines as per DUS test guidelines published by the PPV & FRA. All prescribed crop management practices and pest control measures were taken up timely and also as and when required for raising the healthy crop.

Table 10: The table of events during the cropping season is as under:

S. No.	Particulars	Date
1	Date of sowing	09-12-2019
2	Bagging, selfing & hybridization programme	20-01-2020 to 26-02-2020
3	Harvesting of matured siliquas	16-03-2020 to 23-03-2020

During the course of hybridization and maintenance activities it was observed that there is no availability of pollen in any of the corresponding B lines. The same was confirmed by bagging of flowers of B lines separately. At the same time pollen fertility tests were also conducted to confirm the same. Alternatively confirmation under the microscope was also attempted by conducting the pollen viability test with Acetocarmine stain. In response to the above raised issue a visit of team comprising of following team members visited the DUS/ hybridization plot at Shivamogga on 06/02/2020.**Team members included** Dr.

D. K. Yadav, HOD, Seed Sceience & Technology, IARI & ADG (Seeds), ICAR, New Delhi, Dr. Ravi Prakash, Registrar and PI, PPV & FR Authority, New Delhi and Dr. Girish R. C. as representative of the applicant. The team also confirmed the non availability of pollen in any of the B lines. Accordingly, selfing of 'B' line and maintenance of 'A' line (by crossing of A line x B line) couldn't worked out due to the sterility of 'B' line. Hence F_1^s and selfing of 'R' line only were attempted.

Photographs of Mustard crop during various crop growth stages


Sowing


Thinning


Recording of DUS observations


Harvesting of crossed siliqua


Nipping


Bagging for selfing and hybridization

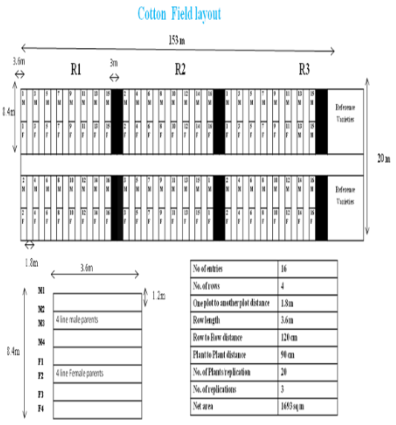

Bulk threshing


Cleaning

Photographs of Mustard Field Visit by the Expert Team lead by Dr. D.K. Yadav, HOD, Seed Science & Technology, IARI & ADG (Seeds), ICAR, New Delhi

2.3.3.5. DUS and Hybridization activities in Cotton at PPV & FRA, Shivamogga


Recording observations



During the reporting year, entries of Cotton were taken up for DUS test as well as production of hybrids accommodated under project entitled "Hybrid seed production/ DUS characterization and testing of parental lines of Rice and Cotton". Project was led by Mr. Dipal Roy Choudhury, Joint Registrar as Principal Investigator along with Dr. Ajay Kumar Singh, PVE and Dr. D.S. Pilania, TA respectively as Co-Principal Investigators of the project. Under the project, Senior Research Fellow, Dr. Nagaraju CH and Technical Assistant, Ms. Shilpa were recruited for handling the crops. The details of information and activities done during the reporting year under Cotton crop are as under:

During *Kharif* 2019, branch office Shivamogga centre received 47 entries (*i.e.*, 16 male parents + 16 females) which comprised of 29 entries of *Gossypium hirsutum*, one of *G. barbadense* and two of *G. arboreum* along with 15 reference for DUS testing of parental lines and hybridization of respective parents. All the parental lines were sown in three replications with each hybrid combination consisting eight rows: four rows of female parents and four rows of each male parent with five plants in each row of 3.6 m length with a spacing of 120 x 90 cm. These entries were sown as per the approved plan and in each entry ten plants were selected and DUS observations were recorded. All prescribed crop management practices and pest control measures were taken up timely and also as and when required for raising the healthy crop.

Pollination

- Selfing, emasculation and crossing was initiated after square formation
- Manual emasculation was done by chosen healthy flower buds of female between 3.00 to 5.00 pm one day before anthesis.
- Corolla was removed along with anther column by giving shallow cut at base of the bud with thumb finger nail by twisting in out jerk action. If any anthers present were carefully removed without causing any damage to ovary
- Fully opened flowers ready for anthesis were selected from male parents and ripen anthers were dusted sufficiently on the emasculated stigma of the female parent on the subsequent morning between 9.00 to 11.00 am.
- The pollinated buds were bagged and labelled.
- Selfing of parental lines and reference varieties was performed by placing butter paper bangs on un opened flowers.

More than 250 crosses were made in each hybrid combinations in order to get sufficient F_1 hybrid seeds, which will be used for next year DUS trial. Due to incessant rain, boll drops were also observed. All generated F_1 hybrids were submitted to HQ, PPV&FRA, New Delhi.

DUS Observations:

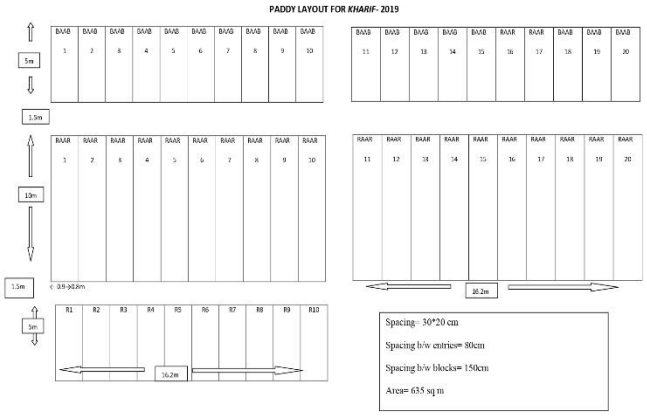
- Totally 31 and 37 DUS observations are there in diploid and tetraploid cotton respectively
- Ten plants in each entry were selected at random for recording DUS observations according to DUS guidelines at specified stages
- Data was entered in field record book and the same has been entered in the soft copy as per format received from head office

Lilliput Ginner for delinting

Technical staff and Co-PI also visited UAS, Dharwad during DUS monitoring of Cotton which was chaired by Dr S A Patil, Fmr Director, IARI-ICAR and Former Vice Chancellor , UAS, Dharwad.

DUS and Hybridization activities in Rice at PPV & FRA, Shivamogga

During *Kharif* 2019 the Centre received 20 entries from Authority for hybridization and DUS characterization as per DUS guideline. Accordingly, the trial was planned and conducted and Only one replication could be planted due to insufficient land available for Rice DUS testing. All the agronomic management practices were followed to raise the good crop.



Nursery sowing

- Staggered nursery sowing of R lines was done for three times with one week interval to get the synchronization between A and R lines
- Normal sowing were done for B lines
- Nursery were raised timely and transplanting was done at appropriate stage of plants

Transplanting

B Line (Maintainer line): (AxB Block) One block for B Lines (25 plants) were planted in 5 meter row length to get the sufficient quantity of seeds of B Line.

- A Line (Male Sterile line): (AxB Block) Planting was made in BAAB manner to get the sufficient quantity of seeds of A Line each having 25 plants in 5 mt length
- Hybridisation Block (AxR Block) Another block was planted with A and R lines with 10 meter row length (50 plants in each line). Plants of staggered dates were mixed before transplanting to get synchronization between A and R line in RAAR manner

DUS Observations:

All the DUS observations were recorded as per DUS guideline in the field record book by the project staff at appropriate stage and same was reciprocated to the excel data sheet (format received from Authority). However, in some entries, mixed panicle types were observed.

Erecting of iron poles and Pollination Barriers

To avoid contamination from foreign pollens before flowering, entry wise iron poles and Tarpauline barriers with 7 feet height was arranged in the field and maintained till harvesting.

Techniques used for hybridization/crossing

Pollination was started from last week of October 2019 and it was continued till the availability of flowers and pollens. The manual pollination method was adopted and pollination was done regularly between 10:30 am to 12:30 pm every day.

Visit of Technical Staff: On 25.11.2019 and 26.11.2019; Dr. D.S.Pilania, Co-PI of the project, Shri Venkatesh Kumar, SRF and Miss. Rashmi K.P. Registry Assistant, participated in the DUS monitoring of Rice at ICAR-IIRR, Hyderabad and gained knowledge on DUS descriptors and how to identify the off types, stage of identification of off types etc.

Harvesting

Harvesting was done entry wise and line wise (A, B & R lines) with proper levelling to avoid any mixture. Reference varieties also harvested separately.

Threshing and cleaning of seeds

After harvesting, line wise manual threshing was started and continued till the last entry. Afterwards the seeds were cleaned and many times seeds kept for sun drying to optimise the moisture content and to avoid the storage pest attack.

Seed submitted to Authority

After completion of DUS observation on grains entry wise seed were packed in waterproof Seed packets/envelopes /properly labelled and weigh and submitted to National Gene Bank of PPV&FRA, New Delhi.

2.3.4. Branch Office, Palampur

Training cum Awareness Programme regarding Protection of Plant Varieties and Farmers Rights was conducted w.e.f 28-07-2019 to 30-07-2019 in "Ujjwal Himachal Pradesh" Chamba Exhibition Programme. In this programme farmers/ representatives of farmers were made aware of the PPV & FR Authority, various activities carried out by the PPV & FR Authority. A television talk through local channel to sensitized farmers of Chamba Distt. H.P was delivered to guide farmers to register their local varieties with the Authority which will go a long way to conserve available Agro Biodiversity of the region. The Branch Office also facilitated about registration of farmers varieties and farmers rights among the local farmers.

2.3.5. Branch Office, Pune:

Activities

Submitted proposal of Extant Notified variety of Sunflower Phule Bhaskar to PPV&FRA, New Delhi **s**ubmitted proposal of New variety of Chickpea Phule Vikrant to PPV&FRA, New Delhi Received by speed post two proposals of farmers' varieties of onion from the NIF, Gandhinagar, Gujarat for registration under PPV&FRA 2001. The details of proposals are 1. Onion var "Sona – 40" of farmer Shri Balasaheb Nanabhau Pisore (09822991112) At post Wadgaon Daula, Dist Beed, Maharashtra, Pin 414203 and 2. Onion var "Sandip Pyaz" of farmer Shri Sandip Vishram Ghole, At post Patas, Tahsil Daund, Dist Pune, Pin 412219, Maharashtra state, It is seen that these onion varieties of farmers are tested at DrBSKKV, Dapoli, hence, it is necessary to obtain the endorsement of the Director of research, DrBSKKV, Dapoli along with their certification of purity and uniformity. In addition a fresh seed of 100 gm. of each variety along with seed test reports will be collected from them for further submission to the PPV&FRA, N. Delhi. Submitted proposal of Extant variety of Garlic Phule Baswant (P.B.SEL.-2) to PPV&FRA, New Delhi Submitted proposal of Extant Notified variety of Okra Phule Vimukta to head office Submitted proposal of New variety of Garlic KVK ANTA GARLIC-1 to head officeShri. Shirish Kothare and Shri. Amit Podol from Golden Harvest Fruit Genetics, Nashik company visited Br. office Pune regarding registration of International varieties of Grapes (Volconi 1500, Volconi 1831 and Volconi 1782) from Israel

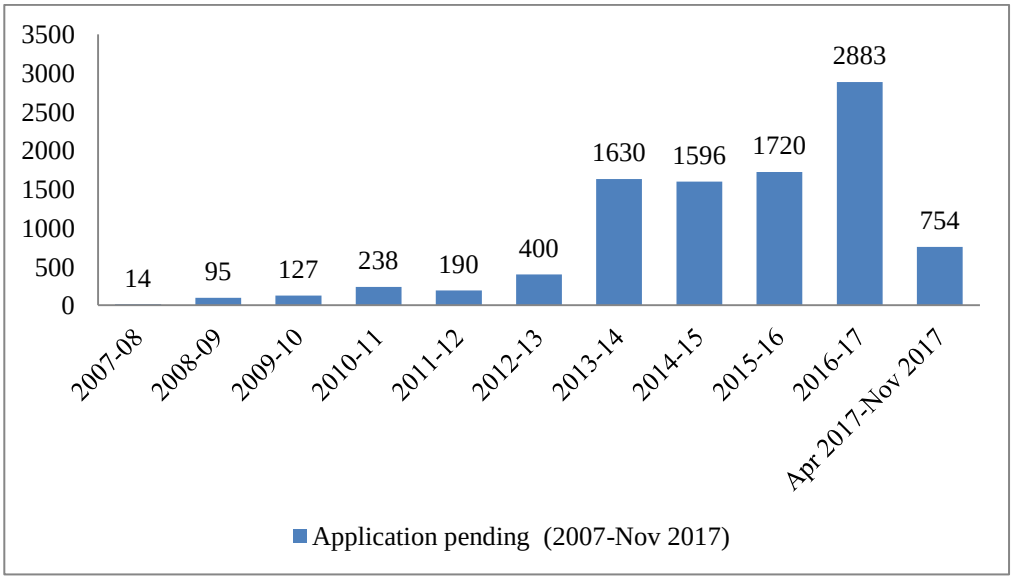
2.4 REGISTRATION OF VARIETIES

During 2019-20, registration process is completed and certificates were issued for 430 varieties under different crop species (Fig) with maximum number of certificates issued under Extant VCK (133) followed by Farmers category (118), Extant-Notified (82), New Variety (84), EDV (13). Similarly, highest number of certificates were issued for cereals (160) followed by vegetables (131), fibre crops (60), fruits (41) and legumes (25), Oilseeds (06), Sugar crops (03), Spices (02), Flowers (01) and Cucurbits (01).

Table 11: No. of certificates issued crop group-wise (2019-20)

Crop group	No. of certificate issued	Crop group	No of certificate issued
Cereals	160	Legumes	25
Cucurbits	01	Oilseeds	06
Fibre crops	60	Spices	02
Fruits	41	Sugar crops	03
Flowers	01	Vegetables	131
		Total	**430**

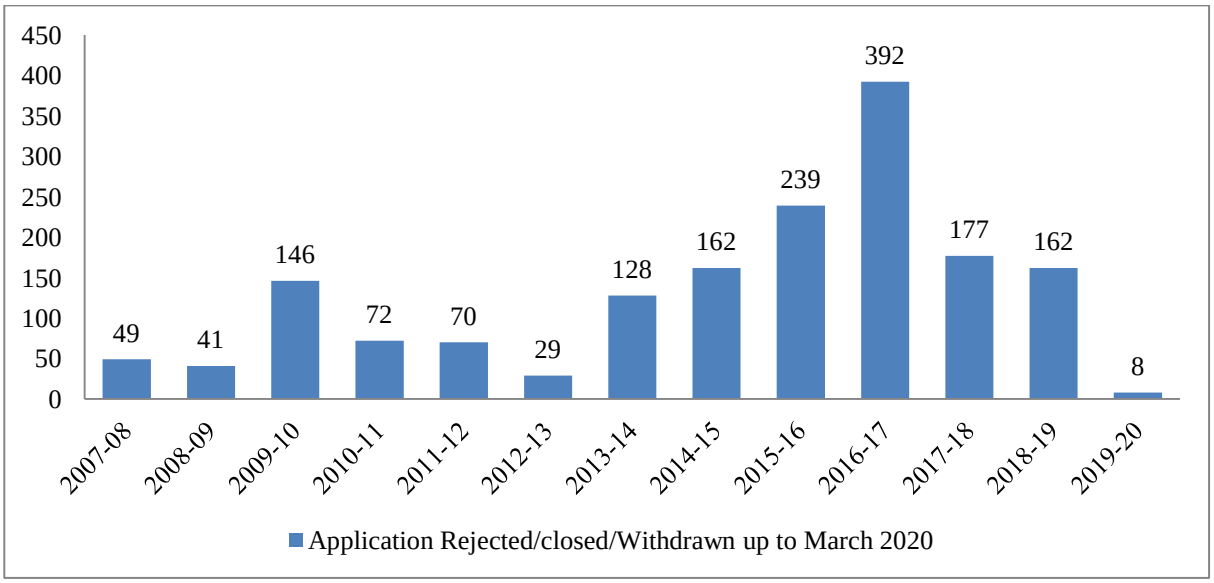
Details of pendency of application (year-wise)



Reasons for pending applications:

1. Lack of manpower more particularly lack of creation of technical posts in lower and middle level to process the registration of plant varieties.
2. Lack of space to engage more technical staff to Registry section
3. Due to incomplete applications lacking necessary documents by the applicants and delay in response to query letters by the applicants (this issue is with old applications received by the Authority till 2017).
4. Plant Variety Right takes a longer gestation period to obtain IPR than other IPR due to field testing and analysis of the same and also as well verifying on field that the hybrid applied has been obtained from parental lines submitted and hence it takes a lot of maintenance of variety at field level as well as maintenance and continuity of records and since every document is statutory in nature it requires a formation of a cadre of officials of Technical Assistant Senior Technical Officer, Plant Variety Examiner, Deputy Registrar and Joint Registrar.
5. There is currently no cadre and all posts are isolated in nature whereas other IPR offices have cadre and hence formulation of a cadre of officials with promotional avenues would ensure maintenance of records and continuity of work. Since, this is lacking there has been enormous delay as the work is conducted through outsourced staff who out of lack of job security are always in search of greener pastures which affect the continuity of work and resultant delay.

Details of applications Rejected/Rejected/Closed/Withdrawn (year-wise)



2.5. List of crop species whose time limit for registration under extant variety notified under Section 5 of Seeds Act, 1966 and extant varieties about which there is common knowledge category have expired

In the following crop species under extant variety category (other than farmers' variety), the time-limit for filing application for registration has expired. Only applications for new category are being accepted.

S.No.	Crops species	Date of expiry
1	Black Pepper	30.04.2019
2	Small Cardamom	
3	Indian Mustard	
4	Rapeseed	
5	Sunflower	
6	Safflower	
7	Castor	
8	Sesame	
9	Linseed	
10	Groundnut	
11	Soybean	
12	Potato	
13	Garlic	
14	Onion	
15	Tomato	
16	Brinjal	

17	Cabbage	02.12.2019
18	Cauliflower	
19	Lady's Finger	
20	Rose	
21	Mango	
22	Chrysanthemum	

Chapter 3: DUS Test Centers

3.1 DUS TESTING CENTERS ESTABLISHED UNDER SECTION 19 OF PPV&FR ACT 2001 AND RULE 29 (7) of PPV&FR RULES, 2003 IN GOVERNMENT OWNED NATIONAL AGRICUTLURAL RESEARCH SYSTEM.

During the period under report 364 candidate varieties representing 40 crop speices were tested for DUS characterization and evaluation at 42 centres in the country. These centres are established at locations most suitable either under Central Government or State Government owned agricultural research systems comprising the ICAR, CSIR, DBT, UGC, SAU or CAU. Dedicated research staff and support is provided at each centre to operate for the testing and evaluation procedures required under the Act, in project mode with the approval of the Authority. The major results are enumerated as follows:-

3.1.1 ICAR-INDIAN INSTITUTE OF RICE RESEARCH, HYDERABAD

A total of 16 candidate varieties for DUS tests in rice were evaluated in the first year during kharif 2019 against 30 reference varieties at IIRR, Hyderabad. In addition, 25 new varieties against 36 reference varieties under second year of testing, 5 VCKs against 10 reference varieties and DUS characterization of 12 Farmers' varieties were included in the DUS testing following DUS Test Guidelines. Out of the all farmers varities included in the DUS testing, 4 of them failed to germinate and therefore no data was recorded.

Crops	New		VCK	FV	Date of monitoring
	1st year entries	2nd year entries			
Rice	**16**	**25**	**5**	**12**	25-26th Nov, 2019

Monitoring of DUS tests in rice was conducted under the Chairmanship of Dr. B.C. Viraktamath, Former Director, ICAR-IIRR, Hyderabad; Dr. Ch. Damodar Raju, Principal Scientist, PJTSAU; Dr. L.V. Subba Rao, Principal Scientist & Nodal Officer and Mr. Dipal Roy Choudhury, Joint Registrar, PPV& FRA as members visited the ICAR-IIRR farm at ICRISAT, Patancheru campus during 25-26th November, 2019 and monitored the DUS tests conducted during kharif season, 2019. The team critically examined the traits claimed by the applicants vis-a-vis the data recorded by the project staff. However suggested the inclusion of IR 58025A (the major doner for many CMS lines) in the DUS testing whenever any CMS line is in the DUS testing. Further the team suggested planting the example varieties depicting each of the DUS traits for ready reference.

Table 12: Varieties under maintenance/characterized:

Crops	Name or No of varieties under maintenance breeding in 2019-20
Rice	320 varieties under maintenance breeding

Sensitization workshop on Registration of Extant Notified Varieties was conducted on 24th October, 2019 for AICRIP co-operating centers and private seed industry personnel. As many as 50 participants from different co-operating centers and private seed industry interacted during the said meeting. Filling of the application for registration was demonstrated in detailed to all the participants. Further it was informed to them to expedite the filling the ENVs for registration.

3.1.2 ICAR-NATIONAL RICE RESEARCH INSTITUTE, CUTTACK

The experiment was carried out in Kharif season 2019 for DUS testing which had several unique results. The claimed grouping characters of candidate and VCKs did match to a considerable extent with that of applicants. These morphological to biochemical analysis data were computerized. The reference varieties which were grown alongside the candidate varieties and the VCKs fulfilling the claimed characters were conserved in Gene bank. The data recorded in proper format were sent to the Authority.

I. Ist Yr Testing: A set of 16 candidate varieties and 33 reference varieties were also received for the 1st year testing of the DUS testing. This set was sown in the nursery on 18.06.2019 and transplanted on 23.07.2019 in the prescribed field.

II. A set of 05 VCKs and 13 reference varieties were received for conducting DUS testing. This set was sown on 18.06.2019 and transplanted on 23.07.2019 in the field.

III. Ist Yr Testing: A set of (33 farmers' varieties of which 3 did not germinate) were sown on 18.06.2019 and transplanted on 25.07.2019 in the prescribed field.

IV. IInd Yr Testing:

- A set of 26 candidate varieties of rice were received along with 41 reference varieties for 2nd year DUS testing. These varieties were sown in the nursery on 18.06.2019 and transplanted on 23.07.2019 in two randomized blocks as per the standard recommended DUS test guideline.

- Another set of (234 farmers' varieties, of which 3 did not germinate) farmers' varieties were sown on 18.06.2019 and transplanted on 26.07.2019.

Crops	New		VCK	FV		Date of monitoring
	1st year entries	2nd year entries		1st year entries	2nd year entries	
Rice	16	26	5	30	231	11.11.2019

The crop stand was good as evident from the Monitoring report. For the first year testing, Institute received 16 candidate varieties which were tested along with 33 reference varieties. A total of 14 varieties were with colourless coleoptile, whereas, 2880/3780, 2884/2054 were with green coleoptiles. All varieties were with white decorticated grain colour. Most of the tested varieties were with very short stem length (<91cm), out of this 2884/2075 was found to be short stem length (91-110cm) whereas 2884/2058 was found to be medium stem length(111-130cm). Among all these varieties only 2 varieties had awn i.e., 2880/3780 and 2884/2880. 2884/2052 was with maximum 1000 grain weight i.e. 32.0 gm. 15 varieties had medium grain length (8.6-10.5 mm), whereas only 1 variety i.e., 2880/3780 was having short grain length (6.1-8.5 mm). Almost all the varieties were with medium (11-20) panicle number per plant whereas only one variety 2884/2074 was with maximum panicle number per plant. 4 varieties were found to be positive of phenol colouration of the grain. Another variety 2884/2056 showed highest percentage of amylase i.e. 24.90 followed by 2884/2880 with an amylase percentage of 23.025.

Five (5) VCKs were tested against 13 reference varieties. Out of these varieties 4 had colorless coleoptiles only one variety 2884/2070 had purple coleoptile. 4 Varieties were with very short stem length (<91cm) out of these, 2884/2065 was with short stem length. All these varieties had no awn. Variety with maximum 1000 grain weight was 2884/2070 (28gm) followed by 2884/2069 (24gm). Variety with minimum 1000 grain weight was 2884/2066(11g). 2884/2070 had maximum grain length of 10.40mm followed by 2884/2069 (8.88mm). All varieties had medium number (11-20) of panicles per plant. One variety, 2884/2066 had short panicle (16-20cm), 2884/2065 and 2884/2068 had medium panicle length (21-25cm), 2884/2069 and 2884/2070 had long panicle length (26-30cm). 4 varieties were found to be positive of phenol except 2884/2065. All varieties showed medium percentage of amylase i.e. 25.125, 21.75 and 20.925.

A Set of 30 farmers' varieties were tested and all the data by morphological to biochemical analysis were carried out. Variety wise with purple colour coleoptiles was found to be 5, 25 varieties had colorless coleoptile. Among all the varieties 3 had awns. 4 varieties were with maximum stem length (131-150cm), 11 varieties had medium stem length (111-130cm) whereas 10 varieties had short stem length (91-110cm) and 5 varieties has very short stem length (<91cm). Varieties having purple coleoptiles had stigma, node, internodes and tip colour purple. Varieties like 2881/2174, 2876/3369 and a farmer variety MUNDGA MIXTURE had long awns (3-4cm). Farmer Variety MUNDGA MIXTURE had the highest 1000 grain weight among all the farmers' varieties. 2880/4297 and 2880/4296 had high grain length i.e. 10.38 mm and 10.25 mm,

respectively. Similarly, 2877/2656 (6.19mm) and 2880/4298 (6.42mm) had shortest grain length. Variety 2880/4297 had comparatively high number of panicles per plant (>20). Amylase percentage was high in varieties like 2883/2094 (26.55). In this farmers variety list only 2 varieties were aromatic i.e 2877/2656 and 2883/2265.

3.1.3 ICAR-INDIAN AGRICULTURAL RESEARCH INSTITUTE (REGIONAL STATION), KARNAL

- DUS testing of 21 Farmers varieties (FVs) along with 18 Reference varieties (RVs) were undertaken during *Kharif* 2019 at ICAR-Indian Agricultural Research Institute, Regional Station, Karnal. The two FVs were characterised and 19 FVs were under IInd year testing. Apart from these 20 reference varieties were also maintained during *Kharif* 2019.

- The nursery for FVs and RVs were sown on 14th June 2019 and transplanting was done on 17th July 2019. For varietal maintenance of reference varieties, the nursery was sown on 20th June 2019 and transplanting was done on 22nd July 2019.

- Fertilizer was applied @ 100 kg N, 40 kg P_2O_5, 30 kg K_2O and 15 kg Zinc Sulphate (monohydrate) per hectare.

- The FVs were raised in paired rows. Observations were recorded at various stages as per DUS Test guidelines. Where ever off-types were observed clear-cut such plants were recorded and noted.

- Field data (Characteristic nos. 01 to 49) and laboratory data (Characteristic nos. 50 to 57) was recorded for 21 Farmer varieties along with 18 reference varieties. For recording of 5 chemical characteristics (Ch. no. 58-62), the samples of FVs and RVs were sent to Nodal Officer (DUS), ICAR- IIRR, Hyderabad.

Farmers' Varieties (FVs) under IInd year testing during Kharif 2019					
S. No	**Reg. No.**	**FV Denomination**	**S. No**	**Reg. No.**	**FV Denomination**
1	Reg/2018 /88	Virat	11	Reg/2017/1686	Kaothuni Dhan (GKSS Dhan-7)
2	Reg/2018/84	Maniratnam	12	Reg/2017/1687	Kaonovi Dhan (GKSS Dhan-8)
3	Reg/2018/87	Khushboo-100	13	Reg/2017/1688	Gita Dhan (GKSS Dhan-9)
4	Reg/2018/86	Sikandar-01	14	Reg/2017/1689	Janlia Dhan (GKSS Dhan-10)
5	Reg/2018/85	Vasundhara Damini Gold	15	Reg/2018/68	Bartia Dhan
6	Reg/2017/1681	Batesh Dhan (GKSS Dhan-1)	16	Reg/2018/119	S-101
7	Reg/2017/1682	Bankuwa Dhan (GKSS Dhan-2)	17	Reg/2018/120	S-35
8	Reg/2017/1683	Dudhiya / Dudh Dhan (GKSS Dhan-3)	18	Reg/2018/121	S-45
9	Reg/2017/1684	Lal Dhan (GKSS Dhan-5)	19	Reg/2017/1664	Lal Chawal
10	Reg/2017/1685	Langudi Dhan (GKSS Dhan-6)			

Mainly variants/off-types in different FVs were observed in Ch. 2 (Basal leaf: Sheath color), Ch. 37 (Spikelet: Color of tip of lemma), Ch. 39 (Panicle: Awns), Ch. 53 (Phenol reaction of lemma) and Ch. 57 (Decorticated grain: color) etc.

3.1.4 TNAU, COIMBATORE

Table 13: Details of DUS testing of candidate varieties in 2019-20

Crops	New varieties		VCK	FV	Date of monitoring
	1st year entries	2nd year entries			
Rice	-	-	-	6*	19.12.2019
Sunflower	-	-	42	-	-

*****DUS characterization was done for the entries *viz*., 2884/2079, 2876/2871 and 2883/2685. Three entries viz., 2883/2683, 2883/2864 and 'Ratansagar' recorded NIL germination.

3.1.4.1 Rice entries tested during 2019-20

Six rice entries viz., 2884/2079, 2876/2871, 2883/2685, 2883/2683, 2883/2684 and Ratansagar were received from PPV & FRA, New Delhi for DUS characterization / testing during 2019-20. The DUS characterization for the three entries viz., 2884/2079, 2876/2871 and 2883/2685 were conducted and documented. However, the entries viz., 2883/2683, 2883/2864 and Ratansagar didn't germinate in the nursery and therefore, we couldn't able to conduct the characterization for these entries. In this regard, the rice seeds were sown in the nursery on 01.10.2019 and transplanted in the main field on 24.10.2019. The crop management practices were followed as per the recommendations. For maintenance purpose, 14 varieties were raised and characters were also recorded.

Table 14: Rice entries characterized as per DUS guidelines

S. No.	Rice entries for DUS testing	Status
1.	2884/2079	Characters documented
2.	2876/2871	Characters documented
3.	2883/2685	Characters documented
4.	14 maintenance varieties	Characters documented

Key observations of the Monitoring team:

Mr. Dipal Roy Choudhary, Joint Registrar, PPV & FRA, New Delhi visited the DUS testing field of rice on 19.12.2019. The Professor and Head cum Principal Investigator and Associate Professor (SST) cum Co-Principal Investigator (DUS scheme), Department of Seed Science and Technology, TNAU, Coimbatore accompanied the Joint Registrar. The following comments were made during the visit.

- The layout of the trial was proper as per the DUS guidelines.
- The field was well maintained and the crop performance was also good.
- The data was observed in correct stage of the crop.
- The farmers may be encouraged to come forward for registering the varieties so as to protect the traditional varieties.
- The crop may be raised little early so as to complete the DUS testing within the stipulated period.

3.1.4.2 Sunflower entries tested during 2019-20

The seeds of the following 42 sunflower varieties, parental lines and hybrids received from IIOR, Hyderabad for DUS testing during the year 2019-20 were sown in the field on 02.01.2020. The recommended package of practices was followed. The plant and seed characters were recorded for all the entries and documented.

Table 15: Details of sunflower entries tested

S.No.	Entries for DUS testing					Status
	Varieties	**Hybrids**	**A lines**	**B lines**	**R lines**	
1.	TAS - 82	COH 3	ARM - 243A	CMS - 7-1-B	6D - 1	Characters were documented for all the entries. Documentation of seed oil content is in progress.
2.	Morden	DRSH- 1	CMS - 7-1-A	CMS - 17B	859 - R	
3.	Surya	HSFH – 848	CMS - 10A	CMS -91B	AK1R	
4.	TNAUSUF 10 (CO 3)	KBSH - 1	CMS - 17A	CMS - 234B	P61R	
5.	TNAUS UF 7 (CO 4)	KBSH - 41	CMS- 91A		R -64NB	
6.	COSFV - 5	KBSH - 42	CMS - 103A		RHA -1 -1 -1	
7.	DRSF - 108	KBSH - 44	CMS - 234A		RHA - 95C-1	
8.	DRSF - 113	KBSH- 53	CMS - 335A		RHA- 271	
9.		NDSH - 1			RHA - 272	
10.		NDSH - 1012				
11.		PSFH - 118				
12.		RSFH - 130				
13.		RSFH - 1887				
Total	**8+13+8+4+9 = 42**					

Table 16: Varieties under maintenance / characterized: 14

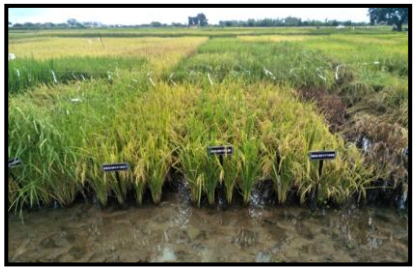
Crop	Name or No. of varieties under maintenance breeding in 2019-20
Rice	Chamansal, Cottondora, DRR, DRR Dhan 2, Dula 1, GK114, GK121, Himalaya, Karuka, KRH2, Kanjoorrimatta, MTU1010, NP9369, US 282.

Seeds of the above varieties were sown in the nursery on 01.10.2019 and the seedlings were transplanted on 24.10.2019. Characterization and documentation of plant morphological characteristics was completed and documented.

Plan for 2020-21:

- DUS characterization / testing of rice and sunflower varieties.
- Maintenance breeding / characterization of reference collection in rice and sunflower.
- Digitalization of database.
- Maintenance of DUS testing infrastructures.
- Encouraging the farmers to register the traditional or farmers varieties.

3.1.5 INDIRA GANDHI KRISHI VISHWAVIDYALAYA, RAIPUR



DUS trials for the year 2019-20 at Indira Gandhi Krishi Vishwavidyalaya, Raipur-492012 (Chhattisgarh) included 27 entries which were tested for the 2nd year and 18 entries (out of which three entries did not germinate) tested for the 1st year. Total 12 check/reference varieties *viz.*, Badsabhog sel-1, Swarna, TCDM-1, Indira Sugandhit Dhan -1, IGKV R-1, IGKV R-2, Indira Aerobic-1, Karma Mashuri, Indira Barani Dhan-1, Poornima, Mahamaya and Bamleshwari were used in experiment for further evaluation and comparison. The test entries and check/reference varieties were sown in replicated trials (three replications) by following the paired row method. Nursery sowing was done on 21-June-2019 and 25 days old seedlings were transplanted on 16-July-2019. Spacing between plant to plant was maintained to be 15cm and row to row spacing was 20 cm.

Fig. Transplanting of rice seedlings during *Kharif* 2019-20

Unique DUS character expressions:

- All the 27 entries were tested in 2nd year showed uniformity and stability for germination and other DUS characters. Entries *viz,* REG/2017/1820 and REG/2017/1046 showed high number of productive tillers (8-11) owing to their high grain yield. Entries performing well for earliness were REG/2017/2400, REG/2017/1265 and REG/2017/1093.
- Entries having short stem length with medium culm thickness were REG/2017/1093 (69-71 cm), REG/2016/2188 (72-74 cm) and REG/2016/2189 (74-75 cm).
- Spikelet colour of stigma was found to be unique purple coloured in REG/2016/2176, REG/2017/1093 and REG/2017/1265.
- Entries *viz.*, REG/2016/2211, REG/2016/2212 and REG/2017/128 showed uniqueness for having long panicles (30-34 cm.)
- Two entries *viz.*, REG/2016/2218 and REG/2016/2176 were distinctive for having red decorticated grain colour. REG /2017/2400 had unique dark purple trait of decorticated grain colour.
- REG/2016/2211 showed uniqueness for basmati type long grains and REG/2016/2188 had distinctive bold grain type (more grain breadth).
- Entries performing unique for intermediate amylose contents (20-25%) in the grains were REG/2016/2176, REG/2016/2180, REG/2016/2188, REG/2016/2199, REG/2016/2214, REG/2016/2218, REG/2017/1820, REG/2017/128, REG/2017/1093, REG/2018/538. Moreover, following three entries *viz.*, REG/2016/2211(28.7%), REG/2016/2184 (28%) and REG/2016/2181(27.5%) have high amylose content (>25%) in the grains.
- REG/2017/1265 had early maturity, thick culm with medium stem height (99-100 cm) and high amylose content (26.2%)
- REG/2016/2211 apart from being high yielding had distinctive characters like short stem (86-87 cm), high panicle length (30-31 cm) with 9-10 productive tillers, medium culm thickness and high amylase content.

3.1.6 ICAR-NEH RESEARCH STATION, LAMPHELPET, MANIPUR

During 2019-20, first year DUS characterization was carried out for two farmer varieties of rice with code 2876/2668 and 2876/2672 along with five reference varieties namely, Mahamaya, Prasanna, Nidhi, RC maniphou-7 and RC Maiphou-10. The experiment was carried out in randomized complete block design with three replications under rainfed lowland transplanted condition.

Table 17:Details of DUS testing of candidate varieties in 2019-20.

Crop sp	New		VCK	Ref.
	1st year entries	2nd year entries		
Rice	2 (Entries received in 2019-20)	-	0	5

Table 18: Varieties under maintenance/characterized:

Mandated Crop Species	Name or No of varieties under maintenance breeding in 2019-20	Source of varieties under maintenance breeding	Data Submission (Maintenance Breeding)
Rice	6 landraces + 2 released varieties	Own	Not yet submitted

The seeds of the entries were received late (July end) as the right time for wet land nursery sowing is first fortnight of June. Observations were recorded for 48 morphological characters and 14 post harvest characters. In comparison to reference varieties, entry 2876/2668 found distinct for eleven traits namely, presence of leaf anthocyanin, leaf coloration of auricles (light purple), stem length (131-150 cm), presence of anthocyanin coloration of internodes etc. Entry 2876/2672, was distinct for seven traits namely leaf coloration of auricles (light purple), erect Culm attitude, yellow spikelet colour of stigma, weak secondary branching, absence of grain phenol reaction of lemma etc. Both the varieties were uniform in their characteristics across three replications.

REG 2876/2672 REG 2876/2672 REG/2876/2668

Grain: Phenol reaction of lemma an Entry and Decorticated grain: shape and colour

Training cum Awareness programmer conducted, publications and other significant achievements.

- A lecture on "*Characterization of farmers' varieties of rice for distinctness, Uniformity and Stability*" was delivered at National Indigenous Seed Festival 2019 during October 12-14-2019 at Central Agricultural University, Imphal organized by All Manipur Trained Medicinal and Aromatic Plants Promoters Consortium and Bharat Beej Swaraj Manch. The lecture was attended by progressive farmers across the country, NGOs and officials from agricultural university, Manipur University and other research institutes. During the discussion, there were several points raised such as:

- Same genotype grown at different environments may claimed to be distinct, as the distinctness of a variety is established even with variation for a single character.
- To claim the distinctness of the variety, farmers' does not know to record the characters and thus the farmers' varieties to be separated from other class of varieties in the registration guidelines

- There is a need for conscious efforts to identify the lacunae in mere morphological characterizaton and to avoid misuse of the benefits
- The number of awards received in Manipur state is very few as compared to enormous diversity present and there is need for more such awareness programmes.

➢ An awareness lecture on '*Protection of Plant varieties and Famers' Rights Act*, 2001' was organized in collaboration with Krishi Vigyan Kendra, Tamenglong at Haochong Village, Tamenglong district, Manipur on 2nd December, 2019. About 35 farmers attended the programme mostly the farm women. During the Programme, different lectures on the importance of varietal registration, procedure for the registration of the farmers' variety, successful examples of protected germplasm by the farmers/ communities from Manipur were highlighted. The pamphlets of PPV&FRA were distributed. Also, some of the hill rice varieties brought by the famers were collected along with filled up applications.

Table 19: 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	Reasons for pendency
			Extant Notified	New	VCK			
Rice	8	8	-	-	-	-	-	-

Plan for 2020-21

1. DUS characterization on 33 farmers' varieties of hill rice received from farmers of Tamenglong district under upland direct seeded condition.
2. To characterize any varieties of rice received from the authority
3. DUS characterization of the released varieties (8 No.) of ICAR, Manipur Centre
4. To conduct awareness programs on PPV & FRA especially in Hill Districts of Manipur.

3.1.7 ICAR NEH RS, NAGALAND

ICAR NEH RS, Nagaland Centre received 3 rice candidate varieties under PPV & FRA in 2019. These 3 varieties with trial code- 2877/2338, 2877/2339 & 2877/2319 were evaluated along with 3 check varieties, namely, RCM-9, Pusa Sughand-5 and IET 16313. Three candidate varieties along with three check varieties were evaluated for DUS characteristics during kharif season of 2019 at research farm of ICAR Nagaland, Medziphema. Data of the varieties along with the three checks were submitted.

A total of 100 land races along with four improved variety are under maintenance breeding.

A total of 85 rice landraces have been collected under PPV & FRA during 2019-20 from Phek, Kohima, Zunhoboto, Mokokchung and Tuensang districts of Nagaland.

3.1.8 MAHATMA PHULE KRISHI VISWA VIDYALAYA (COTTON), RAHURI

In year 2019-20 at DUS center for Cotton, Cotton Improvement Project MPKV, Rahuri there were one new Hybrid, one VCK and one EDV as a candidates varieties tested for first year and two new hybrids as candidates varieties tested for second year.

Table 20: Details of DUS testing of candidate varieties in 2019-20

New		VCK	IV/EDV	Date of monitoring
1st year entries	2nd year entries			
1	02	01	01	27/11/2019

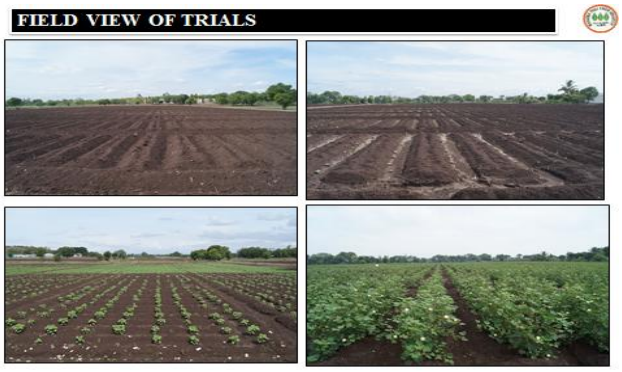
PPV& FRA, DUS Monitoring Team Visited to Farm pond on Dated : 27/11/2019

Likewise, 77 reference varieties received from Nodal officer, CICR, Coimbatore has been maintained at this centre. During the year 2019-20 Monitoring was conducted at this Centre on dated 27th Nov. 2019, under the Chairmanship of Dr. S. A. Patil, Fmr Vice Chancellor, UAS, Dharwad and members of monitoring team included Dr. K. Rathinavel, (Principal Scientist, CICR, Coimbatore), Dr. A.S. Jadhav (Head, Dept of Agril. Botany MPKV, Rahuri), Dr. R.S. Wagh (Coton Breeder, MPKV, Rahuri), Dr. V. Santhy, (Principal Scientist, CICR, Nagpur) and Mr. Dipal Roy Choudhury (Joint Registrar, PPV&FRA, New Delhi).

Table 21: Varieties under maintenance/characterized:

Mandated Crop Species	Name or No of varieties under maintenance breeding in 2018-19	Source of varieties under maintenance breeding own Others(mention)	Data Submission (Maintenance Breeding) Yes/No
Cotton	77	The 77 reference varieties received from Nodal officer, CICR, Coimbatore has been maintained at this centre.	Yes

All the observation were recorded and results were submitted in stipulated time with photograph of field. The performance of tested varieties was uniform, satisfactory and good upto harvesting.



- **Rainfall pattern during crop growth: 2019-20 at MPKV, Rahuri.**
  - Total Rainfall : 693.8mm
  - Total Rainy days: 43days
  - Average : 535mm
  - Excess : 22.89%
  - Dry spell : June , August-2019
  - Heavy rain: September and October -2019
  - Effect : Delayed sowing, Early drought and late season excess rain adversely effected on growth of cotton crop.

Table 22: 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 Extant Notified	New VCK	Certificates issued	Pending applications
Cotton	6	12	4 (Extent)	6 (VCK)	6 (Phule-492), (Phule-388) (Phule-688) (JLA-794) (Phule Dhanwantary) (Phule Anmol)	6 (RHH-0622), Phule Yamuna(RHC0717), Phule Rukhmai (RHCb-011) Phule Tarang (RHH-707) Phule Dhara (RHB-711) Phule Asmita (RHH-917)

3.1.9 ICAR- CENTRAL INSTITUTE FOR COTTON RESEARCH, REGIONAL STATION, NAGPUR

The trials for 2019-20 included two genotypes under first year testing, two under second year testing, one under Varieties of Common Knowledge, one under Essentially Derived Varieties along with reference varieties. The spacing and plant population was maintained as per the DUS Test guidelines. The recorded observations of plant, flower, boll, lint and seed characters have been compiled. The data on fiber quality testing is yet to be obtained since the CIRCOT substation at Nagpur is not yet fully operational. The presence of Bt protein was determined qualitatively by ELISA in seeds of EDV and IV. The

seeds of EDV showed positive and high level of expression for Bt protein where as it was negative for seeds of IV. Under unsprayed condition, the plants of IV as well as EDV were looking unhealthy with poor growth compared to sprayed condition. The boll damage was high for IV under sprayed and unsprayed condition where as the bolls were fresh for EDV under both sprayed and unsprayed condition.

Table 23:Details of DUS testing of candidate varieties in 2019-20

Crop sp	New		VCK	EDV	Date of monitoring
	1st year entries	2nd year entries			
1	2	2	1	1	28.11.2019

Table 24: Varieties under maintenance/characterized:

Mandated Crop Species	No of varieties under maintenance during the year
Cotton (Characterized and being maintained)	35 varieties: *G. hirsutum* 2 varieties: *G. barbadense* 24 varieties: *G. arboretum* 1 variety *G. herbaceum*

Thirty five *G. hirsutum* varieties, 2 *G. barbadense* varieties and 24 *G. arboreum* varieties have been characterized and are being maintained in smaller quantities by selfing. To reduce the labour involved with selfing each flower, mosquito nets were utilized to enclose few true to type plants for their maintenance. The 24 varieties of *G. arboreum* are also being multiplied and 500gm final seed is available in each variety.

Dr. S. A. Patil, Former Vice Chancellor, UAS, Dharwad and Director, IARI, New Delhi, Sh Dipal Roy Choudhury, Joint Registrar, PPV&FRA, New Delhi along with Dr. V. N. Waghmare, Director, ICAR-CICR, Nagpur and Dr. K. Rathinavel, Nodal Officer, ICAR-CICR, Coimbatore undertook monitoring of DUS Test Plot of ICAR-CICR, Nagpur on 28.11.2018. They expressed satisfaction with field maintenance and trait expression.

Plan for 2020-21

The entries tested during the first year shall be continued for testing in the second year and the character expression shall be compared. Genotypes submitted by PPV&FRA for first year, VCK and EDV shall also be tested. New traits such as thickness of boll rind and bract size (after fixing a specific growth stage) shall be studied for variability

3.1.10 ICAR- Central Institute for Cotton Research, Regional Station, Coimbatore

Table 25: Details of DUS testing of candidate varieties in 2019-20.

Crops	New		VCK	FV	EDV	IV	Date of monitoring
	1st year entries	2nd year entries					
Tetraploid cotton	4	7	1	Nil	Nil	Nil	19.12.2019

Table 26: Varieties under maintenance/characterized:

Crops	**Name or No of varieties under maintenance breeding in 2019-20**
Tetraploid cotton- *G. hirsutum*	Abadhitha, Sahana,Sumangala, G Cot. 12, MCU-10, MCU 5, GSHV112, ACP-71, 70 E, Acala glandless, AK 235, American Nectariless, Anjali, ARBH 813, Arizona super okra, Badnawar, Bhaghya, Bikaneri Nerma, BN, BN Red, BN-1, CA 116, CCH2623, CPD 423, CPD 428, CSH 19, Deviraj, DHY 286-1, DS 28F, 1054, F 1378, F 1861, F 320,F 505, F 846, G.Cot. 10, G.Cot. 100, G.Cot. 16, G.Cot.18, G.Cot.20, G.Cot.22, GL Co24-4, Gujarat 67, H 1098, H 1117, H 1157, H 1220, H 1226, H 1236, H 974, HLS 329, HS 6, J 34, Jalandar small boll, JK 35, JK4, JLH 168, K 34007, KC 2 KC 3, KEKCHI red, Kemp, Khanchana, Khandwa 2, Khandwa 3, L 604, LAHH 5, Laxmi, LH 1134, LH 2076, LH 2108, LH 372, LH 900, LRA 5166, LSS, Mahalakshm,i MCU 11, MCU 12, MCU 13, MCU 3, MCU 4, MCU 5 VT, MCU 8, MCU 9, MCU7, MDH 89, Mysore Vijaya, Narasimha, Narmada, NC 105, NC-61, NCH 11, NH 452, NH 545, NH 615, PG 6, PH 93, PHULE 492, PIL 8, PKV Rajat, Pratima, PRS 74, PUSA 8-6, RAJHH 769, Reba B 50, RHC 003, RHC004, RMPBS155, RS 2013, RS 810, RS 875, RST 9, SH 2379, Sivanandhi, Sowbhagya, Suman, Supriya, Surabhi, Suraj, SVPR 5, T 7, TCH 1716, Vagad kalyan, VC 21, Vikram, BN frego, PRS 72, G. HC 122-66, Extreme Okra, JCC 1, GLM 5, N-1, EC 344034, EC 344025, P-15-1, P-15, P-15 DP
Tetraploid cotton- *G.barbadense*	Suvin, SBYF 425, TCB 209, RSP 4, P4, Sujatha, RHC001
Diploid cotton-	AKA 8, AKA 8401, AKA5, Dhumad, DLSa 17, G.Cot.15, G.Cot.19,

G. arboreum	GMS Line, HD 107, HD 110-115, HD 226, HD 321, HD 432, Jawahar Tapti, JK 5, JLA 794, K 11, KR 111, KR 64, LD 210, L 327, LD 491, LD 694, NACH 12, PA 183, PA 402, Phule Anmol, Phule Dhanwantry, RAJDH 9, RG 18, RG 8, Y1, Veena, DS 5.
Diploid cotton-*G.herbaceum*	G.Cot. 23, G.Cot. 25, DDhc 11, Jayadhar, Raghavendra,

Publications made

1. Rathinavel, K.2019. Agro-morphological Characterization and Genetic Diversity Analysis of Cotton Germplasm (*Gossypium hirsutum* L.) *Int.J.Curr.Microbiol.App.Sci* *8*(2):2039-2057 (ISSN:2039-2057) (NAAS 2019 Score 5.38)
2. Rathinavel, K., H.Kavitha and C.Priyadharshini. 2019. Genetic diversity among the extant reference varieties of tetraploid cotton (*Gossypium hirsutum* L.) *J. Cotton Res. Dev.* 33 (2) 197-207(ISSN No. 0972-8619) (NAAS 2019 Score 4.69)

Table 27: 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 Extant			Certificates issued	Pending applications	Reasons for pendency
			Notified	New	VCK			
	16	6	3	1	-	6	1	Under process

Plan for 2020-21

The candidate varieties under new category tested during 2019-20 as the first year test shall be repeated for testing in the second year trial. Compilation of data received from the participating center and submitted to PPV&FRA. Documentation of reference varieties would be continued. Maintenance breeding and seed multiplication would be carried for further maintenance of extant varieties.

3.1.11 CCS HISAR AGRICULTURAL UNIVERSITY, HISAR

The trials for 2019-20 included 4 genotypes under first year testing and 2 under second year testing along with 22 reference varieties. The row to row spacing was 1.35m and 8 rows were planted which maintained plant population as per the DUS Test guidelines.

Table 28: Details of DUS testing of candidate varieties in 2019-20

Crop sp	New		VCK	Date of monitoring
	1st year entries	2nd year entries		
1	4	2	0	---

Table 29: Varieties under maintenance/characterized:

Mandated Crop Species	No of varieties under maintenance during the year	
Cotton (Characterized and being maintained)	35 varieties: *G. hirsutum* 3 varieties: *G. arboreum*	No. of Rows : 8 Replications : 3 Row length : 6 m Design : RBD Spacing : 90 cm x 60 cm

The recorded observations of plant, flower, boll, lint and seed characters have been compiled along withfibre quality parameters. The plants of IV as well as EDV were looking unhealthy with poor growth and high CUCLD infestation. 35 *G. hirsutum* varieties, 3 *G. arboreum* varieties other than the candidate varieties were maintained by selfing in the session 2019-20.

3.1.12 PAU REGIONAL STATION, BHATINDA

Table 30: Details of DUS testing of candidate varieties in 2019-20

Crops	Candidate varieties/hybrids/VCK	Reference Varieties
Cotton	NZ/TC/01,NZ/TC/03 NZ/TC/04,NZ/TC/06 NZ/TC/05,NZ/TC/07	JCC 1,F 1861,MCU 10,Khandwa 3,RS 810,H 1157 Laxmi,Pratima,F 1378,J 34,ACP 71,JLH 168,NH 452 Sumangala,NH 545,L 604,Kanchana,F 2228 (ZC) J K Tarzen,Bio seed 6588,Bio seed 6488

Key observations of the Monitoring team (1-2 points max):

1. The layout and maintenance of the trial was very good.
2. The crop growth and expression of morphological characters are good in most of the candidate varieties.
3. The data was recorded as per the DUS test guidelines and submitted.

Table 31: Varieties under maintenance/characterized:

Crops	Name or No of varieties under maintenance breeding
Cotton	Badnawar 1 (H), MCU 5, Abadhita, JK 4, JLH 168, AKA 7, Veena, GSHV 112, L 604, PKV Rajat, JCC 1, F 1861, MCU 10, Khandwa 3, RS 810, H 1157, Laxmi, Pratima, F 1378, J 34, ACP 71, JLH 168, NH 452, Sumangala, NH 545, L 604, Kanchana, F 2228 (ZC)

3.1.13 UNIVERSITY OF AGRICULTURAL SCIENCE (UAS), DHARWAD

Cotton: During 2019-20, Dharwad centre was alloted six (first year) and four (second year) candidate varieties for evaluation of DUS Characters. Sixty reference varieties were evaluated and maintained during 2019-20. The trials were laid out in RBD with 3 replications. Optimum plant population of 120 plants per replication was maintained in all the trial with the spacing of 90 x 60 cm (tetraploid) and 30x60 cm (diploid).

Sl. No	Crops	Number of reference varieties maintained
1	Cotton	60
2	Soybean	115
3	Groundnut	08
4	Sesame	43

Soybean:

One farmer variety along with 115 reference varieties was sown in randomized block design with three replications. Optimum plant population of 360 plants per replication was maintained in all the replications with the spacing of 45 x 10 cm. All the morphological, post harvest observations were recorded and biochemical tests have been conducted.

Sesame:

Twelve farmer's varieties along with forty three reference varieties were sown in RBD with three replications. Optimum plant population of 240 plants per replication was maintained in all the replications with a spacing of 45 x 15cm. All the morphological and post harvest observations were recorded timely.

Table 32: Number of varieties under DUS testing during 2019-20

Sl. No	Crop	Trial name	Number of Entries	Date of Sowing	Spacing (cm)
1	Cotton	Trial I (1st year Candidate)	6	29-07-2019	90 x 60
		Trial II (2nd year Candidate)	4	29-07-2019	
2	Soybean	Farmer variety	1	15-07-2019	30 x 10
3	Groundnut	Farmer variety + VCK	02 +01	16-07-2019	30 x 10
4	Sesame	Farmer varieties	8(old FVs)+ 4 (new FVs)	16-07-2019	45 x15

Technical Progress: Due to incessant rain, parts of some trials were affected due to inundation as per the following

1st year farmer varieties	2nd year farmer varieties	Reference varieties
2879/2267(RII&III), 2879/2312,2879/2314(RI-3plants II &III)	BHAGVATPUR TIL(RI-1plant) TILSURI LOCAL LAL (RI), PURANI TIL(RII),	RT-127, PKDS-12, NT-75, THILAK, NIRMALA, PKV-NT-13, RAMA, RT-54(RI-5 plants), TKG-306,RT-46,RT-127, RT-351, GT-4, GT-10,DS-1, SHWETA TIL -1, MT-75,AKT-64,

Table 33: Variations observed in characters

	Flower petal hairiness	Capsule arrangement	Capsule No/leaf axil	Seed coat colour
1st year farmer varieties	-	-	-	-
2nd year farmer varieties	-	TIL SURI LOCAL LAL	-	RAJNARAYANTIL,
Reference varieties	DSS-9	DSS-9, HT-2, HIMA ,JT-14,	JT-14	GT-10, PHULETIL-1,TARUN, HIMA, PKDS-11, SVPR-1, KANAK, TMV-3, YLM-11

Groundnut:

During 2019-20, one VCK and two farmer varieties along with eight reference varieties were sown in RBD with three replications with the spacing of 30 x 10cm. Recommended package of practices were followed to raise the healthy crop. Morphological and post harvest observations were recorded timely.

3.1.14 ICAR-CENTRAL RESEARCH INSTITUTE FOR JUTE AND ALLIED FIBERS, BARRACKPORE & CSRSJAF, BUD BUD BURDWAN, WB

During 2019-20, DUS testing could not be conducted due to lack of candidate variety. Reference collections of both *Corchorus olitorius* (30 varieties) and *Corchorus capsularis* (21 varieties) have been maintained through plant to progeny row method. Database of reference collections have been prepared taking observations during the maintenance of reference collection.

Table 34: Varieties under maintenance/characterised:

Mandated Crop Species	Name or No of varieties under maintenance breeding in 2019-20	Source of varieties under maintenance breeding own	Others (mention)	Data Submission (Maintenance Breeding) Yes/No
1) *Corchorus olitorius*	30 varieties	22	8 (SAUs & BARC)	Yes
2) *Corchorus capsularis*	21 varieties	14	7 (SAUs)	Yes

Table 35: 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 Extant Notified	New VCK	Certificates issued	Pending applications
C. olitorius	16	11	9	5	7	1
C. capsularis	11	8	7	3	6	-

Plan for 2020-21:

i. Maintenance of reference collection
ii. DUS characterization of one farmers' variety

3.1.15 LEAD DUS CENTRE FOR BETELVINE: INSTITUTE OF HORTICULTURAL RESEARCH, BENGALURU

The centre has maintained 40 varieties (4 released, 36 FV/VCK/germplasm) and recorded observations on eleven reference and twenty nine germplasm clones of betelvine grown under the support of *sesbania grandiflora* L. (Sesbania) at ICAR-IIHR experimental farm. Observations were recorded on six quantitative and 11 qualitative characteristics.

3.1.15A. COLLABORATING DUS CENTRE FOR BETELVINE : BCKV, KALYANI, WB

DUS collaborating centre has maintained 41 lines/varieties as reference varieties. The Center has received about 20 cuttings in cocopeat from Dr. Alice Tirkey at Andhra Pradesh Horticultural University 21st October,2020 and carried to Kalyani Planted on 22nd October, 2019. However all the cuttings are living condition. Normally, after planting betelvine is required at least two years to get its full-fledged growth condition which will be suitable for taking data for DUS Testing

3.1.16 DUS CENTRE FOR AONLA (INDIAN GOOSEBERRY): ICAR-CENTRAL INSTITUTE FOR SUBTROPICAL HORTICULTURE, LUCKNOW

ICAR-CISH, Lucknow is the Lead DUS centre has maintained and characterized 08 example varieties i.e. *NA-6, NA-7, NA-10, Kanchan, Krishna, Banarasi, Chakaiya, Francis*. **CHES, Godhra, Collaborating DUS Center for Aonla** has also maintained 11 example varieties viz., *Banarasi, Francis, Chakaiya, Kanchan (NA-4), Krishna (NA-5), NA-7, Anand -1, Anand -2 and NA-10* at DUS centre.

3.1.17 DUS CENTRE FOR BAEL: CENTRAL HORTICULTURAL EXPERIMENT STATION (CIAH-ICAR), GODHRA, GUJARAT

CHES, Godhra, Gujarat is the Lead DUS centre for Bael and maintained 12 example/reference varieties (*Goma Yashi, CISH-B-1, CISH-B-2, NB-16, NB-17, NB-5, NB-7, NB-9, Pant Aparna, Pant Shivani, Pant Sujata and Pant Urvashi*) at DUS centre. Application for 13 farmer's varieties is received out of which 5 FV from Chhattisgarh are under testing during current year.

3.1.17A. COLLABORATING DUS CENTRE FOR BAEL: CISH-LUCKNOW

CISH, Lucknow acted as Collaborating Centre for Bael and maintained 11 reference varieties. During the period under report 03 New Variety i.e. Thar Neelkant, Thar Divya and Goma Yashi were aided. Apart from that data on 06 Farmer's varieties registered by Authority from different district of Chhattisgarh state were also collected and presented. Data on remaining 07 varieties registered under PPV&FR Act, 2001 from Jharkhand and West Bengal will be collected during this year 2020.

3.1.18 DUS CENTRE FOR JAMUN: CENTRAL INSTITUTE FOR SUBTROPICAL HORTICULTURE, LUCKNOW

ICAR- Central Institute of Subtropical Horticulture, Lucknow acted as Lead centre for DUS testing and maintenance of example/reference varieties. A total of 40 accessions/varieties were collected and established in the field gene bank of ICAR-CISH, Lucknow. 10 accessions were characterized with physico-chemical characters. The data on Physico-chemical characteristics of jamun fruits showed significant differences and wide range of variability among 40 accession/varieties. ICAR-CIAH, Central Horticultural Experiment Station, Vejalpur, (Godhra), Panchmahal, Gujarat is the Collaborating Centre on Jamun, it has maintained 04 reference varieties of Jamun.

3.1.19 DUS CENTRE FOR GUAVA, CISH, LUCKNOW

During the year 127 example/reference varieties are maintained at DUS centre for all recommended cultural practices. Dus characterization of guava varieties (52) available in the field gene bank was continued as per DUS guidelines for the conduct of test for DUS in guava. Replanting and gap filling was performed to replace dead guava accessions due to wilt during 2019-20. On-site DUS testing of Two Farmer's varieties was continued by collecting DUS data. Two awareness programs were organized in the areas where farmers' guava varieties exist and require registration. Farmers were explained the importance and benefits of registration and its process.

3.1.20 DUS CENTRE FOR LITCHI: ICAR- NRC ON LITCHI GOVT. OF INDIA, MUSHAHARI, MUZAFFARPUR, BIHAR.

ICAR- NRCL, Muzaffarpur is the DUS testing centre for testing of Litchi. During the year centre has established DUS testing block and maintained 6 reference varieties. Total 19 germplasm were characterized as per DUS descriptor. On-site data of 02 new varieties of Litchi has been recorded. Conducted one training cum awareness programme on "Protection of Plant Varieties and Farmers' Rights Act, 2001" for the farmers of Eastern Uttar Pradesh. About 75 farmers were participated in the programme.

Mandated Crop Species	No of varieties under maintenance breeding in 2019-20
Litchi	75 (Accessions maintained)

3.1.21 LEAD DUS CENTRE FOR CUSTARD APPLE & PAPAYA: ICAR- INDIAN INSTITUTE OF HORTICULTURAL RESEARCH, HESSARAGHATTA LAKE POST, BENGALURU

NMK-1

IIHR, Bengaluru is the lead DUS centre for Custard Apple & Papaya and maintained/characterized 10 Custard Apple and 15 Papaya varieties as reference/example varieties. Out of eight on-site DUS testing of custard apple, One Candidate variety **NMK-1** has been completed during the previous year and final report also submitted to PPV & FRA. During 2019-20, five more on-site DUS testing have been completed from Chhattisgarh, Jharkhand and Madhya Pradesh. It has been found that all five farmers were maintaining single plant only and not multiplied or not planted with necessary plant population to conduct on-site DUS testing.

3.1.21A. COLLABORATING DUS CENTRE FOR BAEL : CISH-LUCKNOW

Tamil Nadu Agricultural University, Coimbatore is the collaborating DUS centre for Papaya 19 reference varieties has maintained and observed the traits in DUS field. The seeds of 17 papaya varieties were collected from previous year (2018 – 2019) reference varieties. The seeds of Arka Surya and Arka Prabath were collected from IIHR, Bangalore. During June, 2019, collected seeds of 19 reference varieties were sown in polybags under shade net house. The seedlings were maintained with proper care by regular monitoring of disease and pest incidence.

Table.36 List of reference varieties

1.	CO.1	6.	CO.6	11.	Pusa Giant	16.	Coorg Honey Dew
2.	CO.2	7.	CO.7	12.	Arka Surya	17.	Washington
3.	CO.3	8.	TNAU papaya CO.8	13.	ArkaPrabhath	18.	Sunrise Sole
4.	CO.4	9.	PusaNanha	14.	PAU selection	19.	Red Lady
5.	CO.5	10.	Pusa Dwarf	15.	Pant Papaya – 2		

3.1.22 DUS CENTRE FOR NUTMEG: DR. BALASAHEB SAWANT KONKAN KRISHI VIDYAPEETH, DAPOLI, RATANAGIRI, MAHARASHTRA

During the year 2019-20 the centre has maintained **22** reference varieties and **04** candidate farmers varieties i.*e. KHANOL'S -1, KHANOL'S -2, KHANOL'S -3, GEETAROSE* under DUS testing and recorded Morphological Data on **04** candidate farmers varieties as per onsite DUS Testing guidelines *i.e. KOCHUKUDY, MUNDATHANAM, POOTHARA, PULLAN.* The registered types **12** farmers varieties of Nutmeg planted at DUS centre i.*e. NUTMEG KELSHI- 1, VIMAL, SHARVARI, KANCHAN, KETKI, NAMITA, NEELKANTHA, SHRADDHA, KAJAL, KOCHUKUDY, PUNNATHANAM JATHY, CHERIPURATH NUTMEG VARIETY* .

3.1.23 DUS CENTRE FOR ARECANUT: ICAR-CENTRAL PLANTATION CROPS RESEARCH INSTITUTE, VITTAL, KARNATAKA

During the year 2019-20, Morphological/reproductive characters were recorded from 16 arecanut reference/example varieties which is to be maintained at DUS centre. Special character like total phenol content has been estimated in 32 arecanut accessions. Provided seednuts of DUS example/reference varieties to Collaborating Center (ICAR-CPCRI, Research Center, Kahikuchi, Guwahati, Assam) for recording observations.

3.1.24 LEAD CENTRE FOR CASHEW: ICAR-DIRECTORATE OF CASHEW RESEARCH, PUTTUR.

DUS centre of Cashewnut characterized and maintained total of 44 varieties. Digital database developed and a block of reference varieties (30 No.) has been established during the year 61 germplasm accessions has been assessed. 44 released varieties that are characterized for 68 characters are maintained in the National Cashew Field Gene Bank. The block of 30 reference varieties is maintained. Development of mobile based Digital Key app of cashew varieties for facilitating on-site DUS testing of cashew varieties.

3.1.25 DUS CENTRE FOR CHIRONJI AND TAMARIND: CENTRAL HORTICULTURAL EXPERIMENT STATION, ICAR- CENTRAL INSTITUTE FOR ARID HORTICULTURE, GODHRA, GUJARAT

DUS centre has maintained 10 genotypes/ cultivars of **Chironji** namely *Thar Priya, CHESC-1, CHESC-2 CHESC-3, CHESC-4 CHESC-5, CHESC-6 CHESC-8, CHESC-9, CHESC-10* and 11

Tamarind varieties namely *Goma Prateek, Pratisthan, T-263, PKM-1, Ajanta, DTS-1, Red Type, Sweet Type, Bantoor, Urigum* and *Thar Kiran* were maintained as reference varieties. The morphological characters like vegetative and fruiting attributes were recorded and characterized.

3.1.26 DUS CENTRE FOR MULBERRY: CENTRAL SERICULTURAL RESEARCH AND TRAINING INSTITUTE (CSR&TI), MYSURU.

CSRTI, Mysuru maintaining 34 example and 8 reference varieties for 35 characteristics were recorded as per DUS guidelines. 17 example varieties have been planted as per DUS guidelines during June, 2019. They are under establishment and regular maintenance is being undertaken. Saplings of another 14 varieties are in nursery and planting will be taken up in June 2020 (Rainy season). Attempts are under progress for grafting another eleven varieties which are poor survival and rooting.DUS test application for registration of extant mulberry varieties viz., V-1 and G-4 has been filed on 14.08.2019 under PPV&FR Act, 2001. Further, various information regarding mulberry varieties viz., AR-12, Sahana, G-2, RC-1 and RC-2 etc., has been collected for filing application under PPV&FR Act, 2001. Training was imparted to one scientist of CSRTI, Berhampore from 10.06.2019 to 15.06.2019 pertaining to DUS for establishing a co-nodal DUS centre at CSRTI, Berhampore, West Bengal.

3.1.27 CENTRE FOR POPLAR GERMPLASM: DEPTT. OF TREE IMPROVEMENT AND GENETIC RESOURCES, UHF, NAUNI, SOLAN

During the reporting period DUS centre has maintained 15 number of reference/example varieties and characterized. The details are as under:-

S. No.	Name of Clones	Source
1.	L-30/06	Lalkuan, Haldwani, Uttarakhand
2.	L-62/84	Lalkuan, Haldwani, Uttarakhand
3.	G-48	Lalkuan, Haldwani, Uttarakhand
4.	L-61/05	Lalkuan, Haldwani, Uttarakhand
5.	S_7C_{15}	WIMCO Seedling
6.	S_7C_8	WIMCO Seedling
7.	WSL22	WIMCO Seedling
8.	WSL39	WIMCO Seedling
9.	6503	Dept. of TIGR,UHF, Nauni
10.	5503	Dept. of TIGR,UHF, Nauni
11.	1007	Dept. of TIGR,UHF, Nauni
12.	L-200/86	Dept. of TIGR,UHF, Nauni
13.	PL-3	PAU, Ludhiana
14.	PL-6	PAU, Ludhiana
15.	PL-7	PAU, Ludhiana

3.1.28 DUS CENTRE FOR WILLOW GERMPLASM: DEPTT. OF TREE IMPROVEMENT AND GENETIC RESOURCES, UHF, NAUNI, SOLAN.

During the reporting period DUS centre has maintained 17 number of reference/example varieties and characterized. The details are as under:-

S. No.	Name of Clones	Species/hybrid	Collection Source
1.	**PN-731**	*S. nigra*	New Zealand
2.	**SE-63-016**	*S. jessoensis*	Italy
3.	**PN 227**	*S. matsudana*	UK
4.	**FLS**	*Salix tetrasperma*	Local collection
5.	**SI-64-017**	*S. alba*	Italy
6.	**SI-63-007**	*S. alba*	Italy
7.	**006/05**	*S. alba* cv. *caerulea*	UK
8.	**Ghagas**	*S. acmophylla*	Bilaspur (HP)
9.	**J 799**	*S. matsudana x S. alba*	UK
10.	**NZ-1140**	*S. matsudana* x *S. alba*	UK
11.	**131/25**	*S. babylonica x S. alba*	UK
12.	**J-194**	*S. matsudana x S. arbutifolia x S. matsudana*	UK
13.	**J-795**	*S. matsudana x S. alba*	UK

14.	**Austree**	*S. matsudana x S. alba*	UK
15.	**Kashmiri Local**	*Salix alba*	Jammu and Kashmir
16.	**V-99**	*Salix* x *rubens*	Croatia
17.	**DEVMATA**	*Salix tetrasperma*	Rajasthan

3.1.29 LEAD DUS CENTRE FOR CASURINA & EUCALYPTUS: IFGTB (ICFRE), COIMBATORE.

IFGTB, Coimbatore has maintained 60 clones of eucalyptus and more than 100 clones of casuarinas as reference/example varieties at DUS centre and periodically observed for the expression of various characters as per DUS guidelines. Samples of flowers, inflorescence and fruits were collected and observations were made. An image database was created for reference and recording.

3.1.29A. COLLABORATING DUS CENTRE FOR EUCALYPTUS: NAU, NAVSARI

NAU, Navasari is collaborating DUS centre for eucalyptus to develop DUS guidelines on ***E. urophylla*** and ***E. globules.*** Accordingly they have collected resource data for plantation and germplasm of proposed species with different stakeholder viz., Research Institute, State Forest Departments, universities and industries managing these species in the form of clones, hybrids and provenances.

3.1.30 DUS CENTRE OF BER: CIAH, BIKANER

DUS centre has maintained 25 varieties of Ber. During the reporting period On-site monitoring conducted on 20-24 February 2020 in the places of .Jaidurgakrishak club VPO, Lakhuri, Block Bimhanidih, District-Janjgeer-Champa andFarmers' field, Dhuma, Bilaspur for 147 candidate varieties out of which only 9 varieties fulfil the criteria as per DUS guidelines.

3.1.31 DUS CENTRE OF SWEET POTATO AND CASSAVA: ICAR-CTCRI, THIRUVANANTHPURAM.

ICAR-CTCRI, Thiruvananthapuram, Kerala acted as lead DUS centre

maintained 55 of cassava varieties (30 Released, 25 farmers varieties) and 52 of sweet potato varieties (40 Released, 12 farmers varieties) under maintenance breeding and conserved in the field. All the reference varieties were harvested and replanted. One farmer variety named Manna for registration.

3.1.31A. COLLABORATING DUS CENTRE FOR SWEET POTATO AND CASSAVA: ICAR-CTCRI, BHUBNESWAR, ODISHA

ICAR-Central Tuber Crops Research Institute, Regional Centre, Bhubaneswar, Odisha has maintained 43 Sweet Potato and 14 Cassava reference/ example varieties at DUS centre for testing of candidate varieties.

3.1.32 LEAD CENTRE: ICAR - INDIAN INSTITUTE OF MAIZE RESEARCH, NEW DELHI.

During reporting time 2019-20, 68 maize candidate entries was conducted during kharif 2019 at two locations namely New Delhi and Hyderabad. The 68 entries comprised of 45 hybrids, 22 inbred lines and 1 farmers' variety. In addition, observations were also recorded for 31 DUS descriptors in 31 reference hybrids/varieties and 20 reference inbred lines.

The 45 candidate hybrid entries comprised of 15 each of first and second year of testing. In addition DUS data was generated for 15 corresponding parental crosses of each of the entries being tested for second year to test the stability. Whereas the 22 candidate inbred lines entries comprised of eight each of first and second year of testing and six variety of common knowledge (VCKs).During 2019-20, data on 31 DUS traits was generated for 118 entries which includes both candidate entries and references of both hybrids, farmer's variety and inbred lines.The monitoring of DUS testing for maize was conducted at New Delhi on 11th September 2019.

3.1.32A. COLLABORATING DUS CENTRE FOR MAIZE : PJTSAU, HYDERABAD

PJTSAU, Hyderabad acted as Collaborating centre for Maize DUS testing, the centre has maintained 27 hybrid and 20 inbred Maize reference varieties. During the period the trial has been conducted and managed as per DUS guidelines. Data pertaining to trait 1 to 17 on standing crop have been recorded in the entire trial and for traits 18 to 31 on harvested crop is under progress. Majority of the entries expressed the traits as per claims made by respective breeders.

3.1.32B. COLLABORATING DUS CENTRE FOR MAIZE, KIDNEY BEAN AND SOYBEAN : VPKAS, ALMORA

Collaborating DUS Centre VPKAS, Almora maintained following crops reference and example varieties for conducting DUS testing.

S. No.	Crop	Number of Reference varieties
1	Kidney bean	22
2	**Maize**	**31**
4	**Soybean**	**95**
5	Rajmash	11
6	Barnyard millet	23
7	Finger millet	26
8	Foxtail millet	23

3.1.33 DUS TESTING CENTRE FOR ELEPHANT FOOT YAM & TARO : ICAR-CTCRI, BHUBNESWAR.

The centre has maintained 22 reference varieties of Taro & 18 reference of Elephant foot yam characterized under maintenance breeding as example/reference varieties and tested 02 lines of Taro candidate varieties under DUS testing.

Other then ICAR-CTCRI, The Directorate of Research, BCKV, Kalyani, West Bengal and ICAR Research Complex for NEH region Nagaland Centre, Nagaland acted as collaborating centre. BCKV centre maintained 23 of EFY and 26 of Taro varieties as example and reference varieties.

3.1.34 DUS TESTING CENTRE FOR ACID LIME, MANDARIN, SWEET ORANGE : ICAR- CCRI, NAGPUR.

During the reporting period ICAR-CCRI, Nagpur has maintained 07 Mandarin, 04 Sweet Orange and 06 Acid lime varieties as example and reference at DUS centre. During the year Mandarin 03 new varieties & 02 VCK candidate varieties were under DUS testing at the Centre for registration. On-site DUS testing were conducted for acid lime variety 'Phule Sharbati' and sweet orange variety 'Phule Mosambi' of MPKV, Rahuri and Kinnow variety PAU Kinnow – 1 at PAU Ludhiana.

3.1.35 DUS CENTRE: DEPARTMENT TEA RESEARCH ASSOCIATION, TOCKLAI EXPERIMENTAL STATION, JORHAT, ASSAM.

Tocklai Tea Research Institute, Assam, Jorhat is the Lead DUS centre for DUS testing of Tea. During the year centre has maintained total 204 tea varieties of North East India. The centre is responsible for Tea DUS testing, maintenance, and characterization of popular clones, reference and extant variety. Maintenance of 35 vegetative varieties of tea and 15 biclonal seed stocks is being done at TTRI, TRA. Two new tea clones viz. TTRI, TTRI-2, one seed variety TSS 1 and one extant variety TV31 were raised for characterize for DUS test as per national guideline for the conduct of test in respective categories. During the reporting period, a

number of 10,000 seedlings were produced and distributed to the planter and small tea growers of Assam. Tea seeds and seedling of released variety were grown in Borbhetta tea estate for evaluation of its growth and yield performance at tea estate area. Darjeeling Tea Research and Development Centre, Tea Board, Darjeeling, West Bengal and UPASI Tea Research Foundation, Tea Research Institute, Valparai, Coimbatore, Tamil Nadu is the Collaborating Centres for Tea.

3.1.36 "DUS CENTRE FOR TEMPERATE FRUITS AND NUTS": ICAR-CITH, SRINAGAR.

ICAR- CITH, Srinagar is the DUS testing centre for testing of various temperate horticulture fruits and nuts. During the year centre has maintained apple (32), pear (20), peach (21), plum (22), apricot (18), cherry (20) as reference varieties of temperate horticultural crops. During 2019-20 on-site DUS testing of five farmers's varieties including two apple varieties from Himachal Pradesh and three peach varieties from Ladakh region was done. The commercial and agronomic traits of farmer's varieties were collected and the data was submitted to PPV&FRA. During 2019-20 reference varieties of apple, pear, peach, plum, cherry and apricot were characterized as per the DUS descriptor.

3.1.37 LEAD DUS CENTRE FOR BANANA: ICAR- NATIONAL RESEARCH CENTER FOR BANANA, THOGAMALAI ROAD, TRICHY, TAMILNADU

The centre has conducted DUS test for 06 New, 30 VCK and 06 farmers candidate varieties of Banana and Total 42 varieties of Banana characterised under maintenance breeding as example/reference varieties (which included 30 reference accessions, 6 new accession and 6 farmers' varieties) Out of 42 accessions (which included 30 reference accessions, 6 new accession and 6 farmers' varieties) planted, DUS characterization has been completed for 32 reference accessions including one farmers' variety. 10 reference accessions remaining for characterisation and 05 FV namely Matti, Semmatti, Chingan, Thottu Chingan, Kudhiraival Chingan characterise as per DUS guidelines during current year 2020-21 to aid in varietal registration.

3.1.38 DUS CENTRE FOR NONI: CENTRAL ISLAND AGRICULTURAL RESEARCH INSTITUTE, PORT BLAIR.

DUS testing centre for Noni (*Morinda citrifolia),* CIARI, Port Blair has maintained 04 varieties *i.e.* CARI HD-6 (*CARI Sampda*),CARI-*Noni Saline -1 (CARI Rakshak),* CARI-TRA-1 (*CARI Noni Samridhi*), CARI-TRA (*CARI Noni Sanjivini*) as reference and example varieties.

Noni collection and conservation.

Extensive germplasm collection survey was carried out from unexplored Islands from South Andaman, North Andaman and Nicobar Districts. Collected four new noni accessions, seeds were extracted and sown in the nursery for production of seedlings and further growth and performance study at Garacharma Research farm.

3.1.39 DUS CENTRE FOR CORIANDER, FENUGREEK: ICAR-NATIONAL RESEARCH CENTRE ON SEED SPICES TABIJI, AJMER, RAJASTHAN.

ICAR- NRCSS, Ajmer is the Lead centre for seed spices crops and it has maintained 35 Coriander and 22 Fenugreek example / reference varieties. During reporting period 09 candidate farmers varieties of coriander were under DUS testing at DUS centre. Further they have also maintained 21 varieties of fennel and 09 varieties of Cumin to development of DUS guidelines.

3.1.39A. COLLABORATING DUS CENTRE FOR SEED SPICES, ISABGOL & KALMEGH : ICAR- DMAPR, ANAND, GUJARAT

ICAR- DMAPR, Anand act as a collaborating centre for seed spices and it is also maintained medicinal crops like Isabgol & Kalmegh. During reporting period 2019-20, it has maintained 11 Isabgol and 23 Kalmegh reference/example varieties under maintenance breeding for characterization. 11 Coriander farmer's candidate varieties under DUS testing at DUS centre was completed.

3.1.40 LEAD DUS CENTRE FOR MANGO, CISH, LUCKNOW.

ICAR-CISH, Lucknow is the Lead centre for DUS testing of Mango candidate varieties for registration and 410 Mango example/reference varieties are maintained under maintenance breeding programee. DUS test of 110 candidate Varieties and On-site DUS test of 25 candidate farmer's varieties for registration is in progress. 100 numbers of varieties submitted for registration, 37 varieties received at CISH, Lucknow for registration and 25 extant varieties also submitted for registration. ICAR-IIHR, Hesarraghatta, Bengaluru, Karnataka is the collaborating centre for DUS testing of mango varieties, it has also maintained 18 varieties of mango as reference/ example varieties to characterisation for fruit quantitative and qualitative characters.

3.1.41 DUS CENTRE FOR SUGARCANE (TROPICAL VARIETIES): ICAR-SUGARCANE BREEDING INSTITUTE (SBI), COIMBATORE, TAMIL NADU IS ACTING AS LEAD CENTRE AND ICAR-SBI RESEARCH CENTRE, AGALI (KERALA) IS COLLABORATING CENTRE.

The ICAR-Sugarcane Breeding Institute (SBI), Coimbatore, Tamil Nadu is acting as Lead Centre and ICAR-SBI Research Centre, Agali (Kerala) is the Collaborating Centre for conducting DUS test for tropical sugarcane varieties. The major activities carried out at both Centres during the year is maintenance of 233 tropical sugarcane reference varieties (RV) were maintained in field through clonal propagation and in disease free condition at Lead and Collaborating Centres (ICAR-SBI, Coimbatore and ICAR-SBI Research Centre, Agali). DUS test conducted for 3 FV namely, Desi 1, Desi 2 and Meitei Chu Angangba were carried out during 2019-20 season at both the Centres. Observations on 27 DUS traits were recorded and the tabulated data from both the Centres as per DUS guidelines.

3.1.42 DUS CENTRE FOR SUGARCANE (SUB-TROPICAL VARIETIES) : ICAR-INDIAN INSTITUTE OF SUGARCANE RESEARCH, LUCKNOW IS ACTING AS LEAD CENTRE AND ICAR –SUGARCANE BREEDING INSTITUTE, REGIONAL CENTRE, KARNAL (HARYANA) IS COLLABORATING CENTRE.

The ICAR-Indian Institute of Sugarcane Research, Lucknow is acting as Lead Centre and ICAR – Sugarcane Breeding Institute, Regional Centre, Karnal is the Collaborating Centre for conducting DUS test for tropical sugarcane varieties. The major activities carried out at both Centres during 2019-20 is maintenance of reference varieties of sugarcane.

- Synchronization of Reference Variety Collection at ICAR-IISR, Lucknow and SBIRC, Karnal: In the process of synchronization of the Reference Collection at the 02 Centres of sub-tropical India, the set of 14 varieties received from SBIRC, Karnal was multiplied and maintained at IISR, Lucknow.
- Maintenance of reference collection of sugarcane varieties: One hundred and sixty seven reference varieties of sugarcane were planted in DUS field for maintenance during spring season of 2020-21. 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) available with different research organization working on sugarcane. DUS characters are being recorded in reference collection as per the DUS Testing guidelines.
- DUS Testing Trial: The status of DUS Testing during 2019-20 was as below:
  1. Captan Basti (REG/2015/1586): Extremely low survival due to Red Rot disease. Again replanted in field for multiplication during 2019-20. The variety is susceptible to red rot and hence the survival is extremely low. Thus, no data was recorded.
  2. Sugam Katari (REG/2016/2323): As reported last year, the data collected on the morphological characters indicated that it is not a hybrid variety and may be a *Saccharum officinarum* germplasm. Thus, the applicant may be requested to send the material to ICAR-SBI, Coimbatore so that it can be tested along with the related reference varieties.
  3. Jeet Katari (REG/2016/2314): As reported last year, the data collected on the morphological characters indicated that it is not a hybrid variety and may be a *Saccharum officinarum* germplasm. Thus, the applicant may be requested to send the material to ICAR-SBI, Coimbatore so that it can be tested along with the related reference varieties.
  4. Pursa (REG/2017/1416): The first set of planting material received on 26.02.2019 was planted in field for multiplication during 2019-20. Again, second set of planting material was received during 2019-20. The crop from both the seed materials was planted separately in field during February, 2020 for observation.
  5. Paseri (REG/2016/929): Planting material for another farmers' variety Paseri was received during the year and it has been planted for multiplication and observation during 2020-21.

3.1.43 DUS CENTRE FOR COCONUT: ICAR-CENTRAL PLANTATION CROPS RESEARCH INSTITUTE, KASARAGOD,KERALA.

The DUS centre has maintained 11 coconut varieties as example and reference varieties. A new candidate variety was received for DUS testing at DUS centre. Maintenance breeding of field planted released/ extant coconut varieties and generation of data on DUS traits. For widening DUS descriptor database and refining DUS test guidelines, fruit characters were

recorded and documented in selected germplasm viz; BSIT, KPDT, LFT, MVT, NLGD, LAGT, SSGT and WCT.

3.1.44 DUS CENTRE FOR MENTHOL MINT, PERIWINKLE, DAMASK ROSE & BRAHMI: CSIR-CENTRAL INSTITUTE OF MEDICINAL & AROMATIC PLANTS, CIMAP CAMPUS, LUCKNOW.

DUS centre has maintained following example and reference varieties under maintenance/characterization.

S. No.	Crops	Name or Number of varieties under maintenance breeding in 2019-20	
		Number	Name of varieties
1	Menthol Mint	11	*Kosi, MAS-1, Kalka, Shivalik, Gomti, Himalaya, Sakashm, Kushal, CIMAP, Saryu, CIM Kranti, CIM Unnati*
2	Perwinkle	4	*Dhawal, Nirmal, Prabal, CIM-Sushil*
3	Damask Rose	4	*Ranisahiba, Noorjahan, Aligarh, Kanouj*
4	Brahmi	2	*CIM-Jagriti, Subodhak*

During the reporting period one candidate variety of menthol mint were under DUS testing at the centre for registration.

3.1.45 DUS CENTRE FOR SPICES BLACK PEPPER, SMALL CARDAMOM, GINGER AND TURMERIC: ICAR-INDIAN INSTITUTE OF SPICES RESEARCH, KOZHIKODE

ICAR-Indian Institute of Spices Research is the Lead DUS testing centre for black pepper, small cardamom, ginger and turmeric. The collaborating DUS centres are ICAR Research Complex for NEH Region,Umiam, Meghalaya for ginger and turmeric and Indian Cardamom Research Institute (Spices Board), Myladumpara, Kerala for small cardamom respectively. ICAR- IISR is also the collaborating centre for DUS testing in nutmeg. Major programmes implemented by the DUS centre was the maintenance of example varieties of black pepper, small cardamom, ginger and turmeric ; multiplication of ginger and turmeric provided by farmers for DUS testing and onsite evaluation of candidate varieties.

DUS testing was completed for 19 turmeric varieties which include 14 farmers' varieties and 4 varieties of common knowledge (VCK) and one extant variety. DUS testing completed for 7

ginger varieties which include 4 farmers' varieties and 3 varieties of common knowledge. Ongoing programme under progress are DUS testing 2 ginger and 4 turmeric farmer varieties.

3.1.46 DUS CENTRE FOR DATEPALM: ICAR- CENTRAL INSTITUTE FOR ARID HORTICULTURE, BIKANER, (RAJASTHAN).

The ICAR-CIAH, Bikaner is maintaining 42 Datepalm reference/example varieties at DUS centres for recording morphological, flowering and fruiting characters during the year. The observations on spathe emergence/opening were recorded in 35 varieties during the year-2019-20, while other varieties are under vegetative growth phase.

3.1.47 ICAR-NATIONAL RESEARCH CENTRE FOR GRAPES, PUNE.

DUS centre for grapes maintained 57 example and reference varieties were under the maintenance and characterization at the centre. Since the Grapes being a perennial nature the on-site DUS testing provisions were made in the DUS guidelines. Accordingly centre has carried out following activities.

On-site DUS testing of Grapes

On-site DUS testing of four candidate varieties was carried out in the Kargil, region during 24-28thSeptember, 2019. These includes Margun, Bargun, Rukuchan and Churgun. Observations were recorded as per DUS guidelines of grape. Further, entries from ICAR-National Research Centre for grapes, Pune *i.e.* Manjari Kishmish and Manjari Naveen were on-site DUS tested during the year. Consolidate report of these varieties submitted to PPV&FR Authority for further processing for registration.

Also On-Site DUS testing of candidate variety 'ARRA-15' at Sahayadri Farm, Nasik (Maharashtra) is under progress. One year of testing is completed.

Table 37:The following Grapes varieties monitored on 11th February, 2020

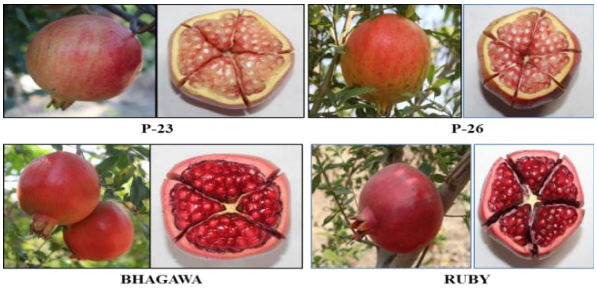
Sl.No.	Name of applicant	Candidate variety	Corresponding Address
1	ICAR-NRC for Grapes,	MANJARI NAVEEN	ICAR-National Research

	Pune		Centre for Grapes, Manjri Farm, Soalpur road, Pune
2	ICAR-NRC for Grapes, Pune	MANJARI KISHMISH	
3	Palzes Angmo	RUKUCHAN	Programme Coordinator SKUAST-K, KVK Kargil, Ladakh-194103
4	Palzes Angmo	MARGUN	
5	Tsewang Punchok	BARGUN	
6	Sonam Tsong	CHURGUN	

3.1.48 LEAD DUS CENTRE FOR POMEGRANATE : ICAR-NATIONAL RESEARCH CENTRE ON POMEGRANATE, SOLAPUR, MAHARASHTRA.

During the year total 25 varieties of pomegranate characterised under maintenance breeding as example & reference varieties and characterized for 35 DUS characters as per PPV&FRA guidelines. 'Kabul yellow' variety has Yellow fruits with light yellow arils.

First year On-site DUS testing of ICAR-NRCP, Solapur new hybrid varieties (NRCPH-4 and NRCPH-14) was carried out on 11 February, 2020 at ICAR-NRCP, Solapur. Thin rind was measured in Phule Arakta, Mridula, Ruby, Amlidana, Co-white, P-16, P-26 and Yercaud-1 varieties. Aril length (mm) was short in 'Amlidana'. Broad arils were recorded in P-13 and G-137 varieties. Soft seeds were found in Bhagawa, Ganesh, Phule Arakta, Mridula, Bassein seedless, P-13, Ruby, Kandhari, Jyoti, G-137, KRS, Muscat, Jallore Seedless, P-16, P-26, P-23, Dholka and Nimali accessions. Seed length (mm) was medium in all the accessions. Narrow seed width (mm) was noted in Ganesh, Phule Arakta, Mridula, Ruby, Kandhari, Jyoti, Jallore Seedless and P-26 varieties. 'Bhagawa' variety was found to be late maturing and 'Kabul yellow' an early maturing variety. High TSS (ºBrix) was recorded in Ganesh, Bassein seedless, P-13, Kandhari, Jyoti, G-137, KRS, Bedana Sri, Co-white, Muscat, Jallore Seedless, P-16, Dholka and Yercaud-1. Lower juice acidity (%) was found in all accessions except Amlidana and Gul-e-Shah red varieties which showed higher acidity (%). Fruit juiciness (%) was medium in all accessions.



KABUL YELLOW

3.1.49 DUS CENTRE FOR NEEM, KARANJ AND JATROPHA : FOREST COLLEGE AND RESEARCH INSTITUTE, TAMIL NADU AGRICULTURAL UNIVERSITY, METTUPALAYAM, TAMIL NADU.

FCRI, Mettupalayam has maintained 32 Neem, 33 Karanj and 18 Jatropha varieties as example/reference varieties and recorded morphological characters. Characterisation of 07 DUS descriptors out of 19 descriptors for the 32 Neem reference collection was completed and documented. One candidate variety of Gurusthan Neem filed by Shri Saibaba Sansthan was completed for DUS descriptors as per Authority guidelines and it is in the process for registration.

3.1.50 DUS CENTRE FOR JASMINE: INDIAN INSTITUTE OF HORTICULTURAL RESEARCH, BENGALURU, KARNATAKA.

During the reporting period lead centre ICAR-IIHR, Bangalore maintained and characterized the varieties in different *Jasminum spp.* such as *J.sambac* (23 nos.), *J. auriculatum* (22 nos.), *J.multiflorum* (23 nos.) and *J.grandiflorum* (31 nos.).
At collaborating DUS centre HC&RI, Tamil Nadu Agricultural University, Coimbatore. DUS centre has maintained 70 genotypes belonging to following 12 species *J. sambac, J. auriculatum, J. grandiflorum,J. multiflorum* (Syn: *J. pubescens) J. nitidum, J. calophyllum, J. rigidum* (Syn: *J. laurifolium), J. humile* (Syn: *J. bignoneaceum), J. primulinum, J. flexile, J. arborescens and J. angustifolium*

3.1.51 LEAD DUS CENTRE FOR BOUGAINVILLEA, CHRYSANTHEMUM & GLADIOLUS : ICAR-INDIAN AGRICULTURAL RESEARCH INSTITUTE, NEW DELHI.

ICAR-IARI, New Delhi acted as lead centre for Bougainvillea, Chrysanthemum & Gladiolus. The centre has maintained and characterized 100 **Bougainvillea** example /reference varieties and multiplied from the true to type mother Stock and characterization of new RV. One candidate of farmers variety of Bougainvillea under DUS testing at Centre. 37 example /reference varieties of **Chrysanthemum** and 9 including 160 number of other germplasm of **Gladiolus** has maintained and characterized.

3.1.52 DUS LEAD CENTRE FOR CANNA AND COLLABORATING DUS CENTRE FOR BOUGAINVILLEA & GLADIOLUS: CSIR-NATIONAL BOTANICAL RESEARCH INSTITUTE, LUCKNOW, UTTAR PRADESH.

CSIR-National Botanical Research Institute, Lucknow, Uttar Pradesh is the lead DUS Centre for Canna and Collaborating centre for Bougainvillea & Gladiolus. The centre has maintained and characterized 184 Bougainvillea and 81 Gladiolus, 45 germplasm & 04 species Canna as example and reference varieties by recording morphological characters.

3.1.53 LEAD DUS CENTRE FOR MARIGOLD : ICAR- INDIAN AGRICULTURAL RESEARCH INSTITUTE, NEW DELHI.

During the year under report, 52 genotypes (including 23 reference varieties/lines) of marigold were propagated in the nursery in and transplanted in the main field at DUS centre. These varieties/lines were maintained well following standard cultural operations required for marigold crop. In addition, four farmer's variety were also grown for raising crop for their characterization. Five reference varieties were subjected for DUS characterization. ICAR- IIHR, Bengaluru acted as collaborating DUS centre and DUS test conducted for 01 candidate varieties at DUS centre for Marigold and 43 varieties of Marigold under maintenance breeding characterized as example/reference varieties.

3.1.54 DUS CENTRE FOR SOYABEAN: ICAR-INDIAN INSTITUTE OF SOYBEAN RESEARCH, INDORE, MADHYA PRADESH.

ICAR –IISR, Indore is the Lead DUS testing centre for soybean. During the reporting period 1 farmers variety was tested for their DUS Characteristics. **Total 124 varieties** has maintained and characterized as example and reference varieties.

UAS, Dharwad acted as Collaborating DUS Centre for Soybean.

3.1.55 LEAD DUS CENTRE FOR ORCHID: ICAR-NATIONAL RESEARCH CENTRE FOR ORCHIDS, PAKYONG, EAST SIKKIM.

The following varieties under maintenance/characterized as a reference/example varieties.

Crops	Name or No of varieties under maintenance breeding in 2018-19
Cymbidium	30
Dendrobium	12
Vanda	10
Phalaenopsis	30
Cattleya	9
Oncidium	30
Paphiopedilum	10
Mokara	7

Reference/Example varieties of *Cymbidium, Dendrobium, vanda, Phalaenopsis, Cattleya, Oncidium* and *Mokara* database maintained at DUS centre. Dr. Y.S. Parmar University of Horticulture and Forestry, Nauni, Solan acted as collaborating DUS centre and 30 cultivars of carnation under maintenance breeding characterized as example/reference varieties.

3.1.56 LEAD DUS CENTRE FOR ROSE : ICAR- INDIAN INSTITUTE OF HORTICULTURAL RESEARCH, HESSARAGHATTA LAKE POST, BENGALURU.

ICAR-IIHR is the Lead DUS centre for Roses and conducted DUS test for 01 New and 03 VCK candidate varieties at DUS centre and **101** varieties of Rose maintained as example and reference varieties and recorded observations of morphological characters.

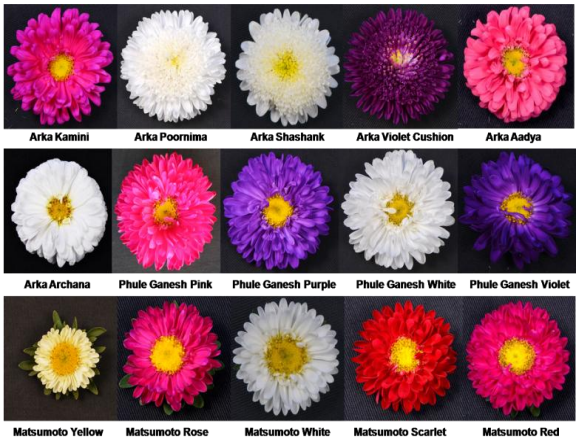
342 rose varieties are being maintained under the project of 'DUS center for Rose & National Rose Repository'. Four varieties are under DUS testing. Two varieties are being tested under protected cultivation in polyhouse while two varieties are being tested in open field cultivation. Twenty rose varieties are being exclusively maintained under protected cultivation while 322 varieties are being maintained in field repository. Digital repository is being built for 64 characters of all the 342 rose varieties.

ICAR-DFR, Pune act as Collaborating DUS Centre of Rose, germplasm of rose 150 varieties consisting of both Exotic and Indigenous varieties is being maintained at the centre. During the

year under report 51 varieties were collected from different sources. The varieties were screened for various traits.

3.1.57 LEAD DUS CENTRE FOR CHINA ASTER AND COLLABORATING DUS CENTRE FOR CHRYSANTHEMUM: ICAR- IIHR, HESSARAGHATTA.

ICAR-IIHR, Bengaluru is the lead DUS centre for China Aster and 25 varieties has maintained as example & reference varieties and evaluated for morphological and quality characters as per DUS test guidelines (10 vegetative traits and 11 flower traits).



Also, Collaborating DUS centre for Chrysanthemum and maintained **95** varieties as example and reference varieties out of which 35 genotypes were charaterised as per DUS guidelines. Total 14 applications were received for registration (03 New, 03 farmer and 08 under Extant VCK category).

3.1.57A COLLABORATING DUS CENTRE FOR CHINA ASTER: NATIONAL AGRICULTURE RESEARCH PROJECT, GANESHKHIND, PUNE, MAHARASTRA

At the collaborating DUS centre 08 China Aster varieties i.e. *a) Poornima, b) Kamini, c) Shashank, d) Violet chustion, e) PG White, f) PG Purple, g) PG Violet, h) PG Pink* were under maintenance and morphological characters recorded.

3.1.58 DUS CENTRE FOR SUNFLOWER, SAFFLOWER, CASTOR: ICAR-INDIAN INSTITUTE OF OILSEEDS RESEARCH, HYDERABAD, TELANGANA.

The ICAR - Indian Institute of Oilseeds Research, Hyderabad is the Lead centre for testing of three oilseed crops *viz.*, castor, sunflower and safflower.

Castor

During *kharif*2019-20, one new candidate variety CA 8646 (REG/2010/130) was sown for 2nd year testing in a replicated trial with two reference varieties 48-1 and SKI-215. Data was recorded for 30 DUS traits in accordance with the DUS test guidelines. Seed multiplication of one farmer's

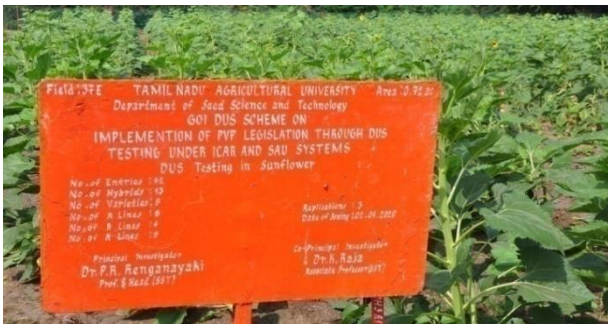
variety (REG/2017/2151) was also undertaken. During *rabi* 2019-20, 11 reference varieties of castor were maintained and multiplied.

Sunflower

During *rabi* 2019-20, 42 entries (8 varieties, 13 hybrids and 21 parental lines) of sunflower were characterized for six additional traits as per UPOV guidelines and suitable example varieties were identified. For finalization of database, verification of DUS characters was undertaken for 22 qualitative traits for 8 varieties, 8 hybrids and 18 parental lines. 14 parental lines of sunflower were maintained and multiplied.

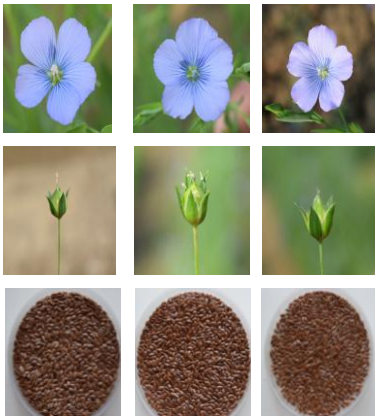
Safflower

During *rabi* 2019-20, first year of DUS testing for one new candidate 2877/4134was undertaken along with three reference varieties A-1, SSF-708 and Phule Kusuma. The DUS testing of VCK entry 2876/2327 was conducted along with three reference varieties NARI-6, JSI-7 and JSI-97. Data has been recorded for 21 DUS traits in accordance with the DUS test guidelines and post-harvest observations are in progress. An additional replication of the candidate variety (2877/4134) was raised for seed multiplication for conducting DUS trial during 2020. 09 reference varieties of safflower were maintained and multiplied.



Further Tamil Nadu Agricultural University, Coimbatore for Sunflower, AICRP on Castor, Junagadh Agricultural University,Junagadh,Gujarat for Castor and Seed Technology Research Unit, Dr. Panjab Rao Deshmukh Krishi Vidyapeeth, PO. Krishinagar, Akola for Safflower these SAUs act as collaborating DUS centre for different crops.

3.1.59 LEAD DUS CENTRE FOR LINSEED, LENTIL & FIELD PEA: JAWAHARLAL NEHRU KRISHI VISHWA VIDYALAYA, JABALPUR, MADHYA PRADESH.



The Lead DUS testing centre JNKVV, Jabalpur carried out maintenance breeding of 28 Linseed, 16 Lentil and 28 Field pea varieties and maintained as reference/example varieties. During the year total 09 Linseed, 01 Lentil and 12 Field pea were tested and data recorded and submitted to the Authority. ICAR-IIPR, Kanpur, Uttar Pradesh acted as collaborating DUS centre has maintained 78 example/reference varieties and characterized 25 linseed farmers varieties. During the period 12 candidate farmers varieties under DUS testing.

3.1.60 LEAD DUS CENTRE FOR SESAME AND NIGER: ICAR-JAWAHARLAL NEHRU KRISHI VISHWA VIDYALAYA, JABALPUR, MP.

During the reporting period centre has maintained 90 sesame and 23 Niger example and reference varieties evaluated for morphological characterization.

Under DUS testing of candidate varieties

Out of 4 Farmers' variety received during 2019-20, FV Reg/2879/2267 and Reg/2879/2309 could withstand heavy rains during flowering and capsule formation stage. FV Reg/2879/2312 was multicapsular and capsule arrangement is cluster. FV Reg/2879/2309 and FV Reg/2879/2312 are bold seeded having more than 3.5 g 1000 seed weight.

Out of 9 Farmers varieties received during 2018-19, FV REG/2017/1712 and REG/2017/2216 are bold seeded having more than 3.5 g 1000 seed weight. FV REG/2017/2095 and REG/2017/2096 did not germinate. None of the 9 varieties were multicapsular.

3.1.61 DUS CENTRE: ICAR-DIRECTORATE OF RAPESEED & MUSTARAD RESEARCH, SEWAR FARM, BHARATPUR, RAJASTHAN.

ICAR-Directorate of Rapeseed-Mustard Research is the lead DUS centre for Indian Mustard, Karan Rai, Rapeseed, Gobhi sarson. During the period 2019-20 included ten candidate varieties (2 varieties under new category and 8 varieties under farmer's category) which have been tested for 2nd year, also 9 varieties under farmer's category have been characterised for 1st year. Further 22 reference varieties have also been characterised for 24 DUS characters.

The following example/reference varieties are maintained at DUS Centre:-

Mandated Crop Species	Name or No of varieties under maintenance breeding in 2019-20
Brassica juncea	95
Brassica carinata	7
Brassica napus	5
Brassica rapa	30

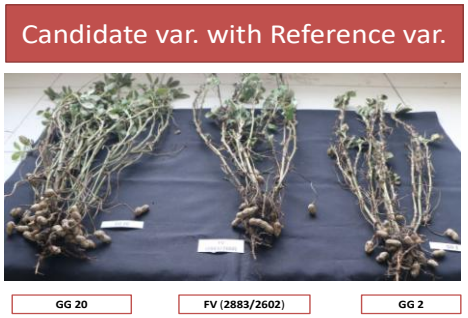
ICAR-Directorate of Rapeseed-Mustard Research also hosted the International workshop on "DUS testing of Rapeseed-Mustard" on 13th -14th February, 2020. The workshop was organized jointly by Protection of Plant Varieties and Farmers' Right Authority (PPV&FRA), New Delhi under Ministry of Agriculture and Farmer's Welfare, Government of India and The Federal Ministry of Food and Agriculture (BMEL) Germany. The workshop was graced by the presence of Honourable chairperson, PPV&FRA, Dr. K. V. Prabhu;

Director, ICAR-DRMR, Dr. P K. Rai and Registrars from PPV&FRA, delegates from Federal Ministry of Food and Agriculture (BMEL) Germany, working on DUS testing in rapeseed-mustard and hybrid breeding progamme participated though Indo-German cooperation on seed sector as well as 35 scientists working on rapeseed-mustard from all over India including research workers from private companies. The learned speakers included Mr. Thomas Gildemeister, Oilseed DUS expert from Federal Plant Variety Office (BSA), Germany, Dr. ElmarWeissmann, Senior Seed Sector Expert, Indo-German Cooperation on Seed Sector, Germany,Dr. Ravi Prakash, Registrar, PPV&FRA,Sh. Dipal Roy Choudhury, Joint Registrar, PPV&FRA, Dr. A. K. Singh, PVE, PPV&FRA and Dr. Priyamedha, PI-DUS testing in Rapeseed-Mustard, ICAR-DRMR. The workshop ended with the DUS field visit and interaction among delegates.

CSAUA&T, Kanpur, Uttar Pradesh act as Collaborating DUS Centre for Indian Mustard, Karan Rai, Rapeseed, Gobhi Sarson, Linseed, Wheat. During the period total 2 New and 12 Farmers Indian Mustard candidate varieties under DUS testing.

3.1.62 DUS CENTRE FOR GROUNDNUT: ICAR-DIRECTORATE OF GROUNDNUT RESEARCH, JUNAGADH, GUJARAT.

ICAR-DGR, Junagadh has maintained 30 groundnut reference varieties as example & reference varieties and evaluated for morphological and quality characters as per DUS test guidelines One VCK (2884/2090), and one farmer variety (2883/2602) received from Authority were sown along with 08 reference varieties during *kharif* season 2019. Observations have been recorded at appropriate growth stages in the format give by PPV&FRA under DUS Test guidelines, this includes 13 qualitative 5 quantitative descriptor traits.



3.1.63 DUS CENTRE FOR TUBEROSE & CARNATION: ICAR-INDIAN INSTITUTE HORTICULTURAL RESEARCH, HESSARAGHATTA LAKE POST, BANGALORE, KARNATAKA.

ICAR-IIHR, Bengaluru is the Lead DUS centre for Tuberose and Carnation, it has collected and maintained 26 genotypes of tuberose reference along with 8 breeding lines and reference collection of 40 accessions of carnation were multiplied and being maintained in the field gene bank under maintenance breeding. These reference collections observed and recorded some important grouping characteristics. Three accessions of tuberose were also characterized.

ICAR – DFR, Pune acted as Collaborating DUS Centre for tuberose. During the reporting period, planting of about 22 varieties/local collections (includes example varieties) consisting of 13 single and 9 double type were planted in the month of March 2020. Recording of observations related to flowering is in progress.

Dr. Y. S. Parmar University of Horticulture and Forestry, Nauni-Solan, Himachal Pradesh is the collaborating Centre for Carnation.

3.1.64 DUS TEST CENTRE FOR BREAD WHEAT, DURUM, DICOCCUM, TRITICALE: ICAR-IIWBR, KARNAL:

The seed of one wheat variety under new category was sent to ICAR-IIWBR for DUS testing with code. In all, four DUS testing trials (two each in bread wheat and durum wheat) were conducted as per details given below:

Bread Wheat:

DUS trial 1: 6 candidate varieties (W 2019-1-SRW 111, SRW 303, SRW 404 , SRW 252, SRW 231) were tested under New/VCK category in three replications against 22 reference varieties.
DUS trial 2: 60 Farmers varieties were tested against 88 reference varieties in two replications.

Durum Wheat:
DUS trial 3: One durum wheat entry (Malav 221) was tested against 8 reference varieties in three replications.
DUS trials 4: Four farmer's varieties were tested against 7 reference varieties in two replications.

Online system of submission of DUS data
ICAR-IASRI has developed DUS data input and retrieval system. This software was tested for DUS trial on Durum wheat during 2019-20. Data generated under this trials was submitted online to the authority.

Panel for example varieties for data recording:
A panel set of 250 bread wheat varieties and 149 durum wheat varieties was grown side by side of the DUS trial in order to guide the SRF to capture the right state of expression of each character.

Monitoring of DUS trial
The monitoring of DUS wheat trial at ICAR-IIWBR was supposed to be conducted during the first week of April. However, the monitoring team could not visit the institute due to lockdown imposed by the Govt. of India.

Varieties under maintenance breeding: The seed of 15 new released varieties of bread/durum wheat were obtained from breeders.

Crops	Name or No of varieties under maintenance breeding in 2019-20
Wheat	**Released varieties aestivum – 406** **Released varieties Durum & Dicoccum – 79** **Released varieties before 1965 – 71**

Applications filed with PPV&FRA: The ICAR-IIWBR, Karnal has registered two wheat varieties namely DBW 168 and DBW 173 at PPV&FRA (vide registration number 109 and 110 of 2019). The registration proposal of wheat varieties DBW 222, DBW 252 and DDW 47 were submitted to PPVFRA for registration under extant category.

3.1.65 UNIVERSITY OF AGRICULTURAL SCIENCES, DHARWAD:

The two DUS experiments were conducted at DUS test centre (Durum wheat), UAS, Dharwad. In DUS trial-4, one Candidate variety namely, 'Malav 221' and seven reference varieties were included. Similarly, DUS trial-5 comprised of four Candidate varieties and nine reference varieties.

Observations were recorded for 45 characters representing growth habit characters, ear head characters, grain characters, etc. Perusal of observations indicated quantifiable variation for various DUS characters among the candidate and reference varieties.

In DUS trial 4, the candidate variety 'Malav 221' found similar with all reference varieties *w.r.t.* grouping characters *viz.*, presence (9) of coleoptiles: anthocyanin colouration, dull white (1) ear: colour and spring (3) season type. The candidate variety 'Malav 221' along with the reference varieties UAS 446 and MACS 2846 showed presence (9) of outer glume: pubescence among the grouping characters. However, the character was absent (1) in other reference varieties. In continuation to that, 'Malav 221' found to be the most similar to reference variety UAS 446 *w.r.t.* grouping characters.

The DUS trial 5, comprised of totally four candidate varieties including two bread wheat varieties (Kathia Mukta and Amari Gehun) and two durum wheat varieties (Kayadhu N-49 and SKF WD 7003) which were tested along with the nine reference varieties *viz.*, GW-1, DWR 137, BAXI 288-18, Bijaga Yellow, N-59, JU-12, HI 8713, JNK 4W 184 and W 2019-1 against 45 characters.

3.1.66 IARI-REGIONAL STATION, INDORE:

No. of varieties for DUS testing: Wheat trials were sown as per the DUS test guidelines of PPV&FRA. In crop season 2019-20, 5 candidate varieties under new category (2nd year of testing) were tested in three replications against 21 reference varieties in DUS trial 1. In DUS trial 2 and 3, 10 farmer's varieties (2nd year of testing) and 50 farmer's varieties (1st year of testing) were tested in two replications. The trial 2 and 3 were combined with 88 reference varieties for comparison. The observations as per DUS testing guidelines were recorded.

No. of reference & example varieties maintained at the centre: 130 reference collection of wheat varieties are being maintained at ICAR-IARI, Regional Station, Indore.

Crops	**Name or No of varieties under maintenance breeding in 2019-20**
Wheat	Released varieties *aestivum* – 80 Released varieties *durum* & *dicoccum* – 50

Summary of the DUS results: The plots were laid out as per PPV&FRA guidelines. Candidate varieties were grown side by side to the reference varieties for comparison. The overall performance of the DUS trials was very good. Few of the candidate varieties has 1-2% mixture, whereas the mixture percentage in farmer's varieties was high.The claimed characteristics were found to be expressed throughout the trials. The monitoring was conducted when the crop was in

the soft dough stage. Most of the candidate varieties of DUS trials expressed the claimed characteristics at the time of monitoring.

Monitoring: The monitoring team under the Chairmanship of Dr. A.N. Mishra (Chairman), Emeritus Scientist, ICAR-IARI, Regional Station, Indore; Dr. Mrinal Kuchlan (Member), Senior Scientist, ICAR-IISR, Indore; Mr. Prakash Jain (Member), Green Gold Agritech, Indore; Arun Gupta, Nodal Officer (DUS Wheat), ICAR-IIWBR, Karnal, &Dr. S. V. Sai Prasad, Co-Nodal Officer (DUS Wheat), ICAR-IARI, Regional Station, Indore, conducted the monitoring of DUS trials at ICAR-IARI.

3.1.67 DUS TEST CENTRE FOR BARLEY: ICAR-IIWBR, KARNAL.

During the year 2019-20, six farmer's varieties were grown with 18 reference varieties in DUS trial as per DUS guidelines. Out of 6 farmer's varieties, two farmer's varieties namely Maghe and Laxhmi were grown in second year of testing for revalidation in grow-out test and four farmer's varieties i.e., B.2019-1, B.2019-2, B.2019-3 and B.2019-4 were grown for characterization and recording of grouping characters as per DUS guidelines. In addition, a set of 99 barley reference varieties were also grown for validation of 32 barley DUS characteristics**.** During the period, up to sr. no. 25 (Char. spike density) characteristics mentioned in DUS guidelines were recorded for all the candidate's and reference varieties included in the trials.

Crops	**New**	**VCK**	**FV**	
	1st year entries	2nd year entries	1st year entries	2nd year entries
Barley	-	-	B.2019-1, B.2019-2, B.2019-3, B.2019-4	Maghe, Laxhmi

Further, a proposal of release variety, DWRB160 (Karan Maltsona) was submitted to the PPV&FRA, New Delhi for registration under new extant category for seeking PBR protection.

The Protection of Plant Varieties and Farmers' Rights Authority, New Delhi in collaboration with Department of Agriculture, Cooperation & Farmers' Welfare, Ministry of Agriculture & Farmers' Welfare, GOI and Federal Ministry of Food and Agriculture, Germany organized two days International workshop on "DUS testing of Wheat and Barley" on 19th & 20th February, 2020 at ICAR-IIWBR, Karnal under Indo-German Bilateral Cooperation on Seed Sector Development. The participants from wheat, barley and private seed companies all over the country attended the workshop.

3.1.68. DUS TEST CENTRE FOR BARLEY: RAJASTHAN AGRICULTURAL RESEARCH INSTITUTE, DURGAPURA, JAIPUR

During Rabi 2019-20, ninety nine released varieties and four farmer's varieties of barley were evaluated and data recording done for all the thirty two characters/traits mandatory including both the qualitative as well as quantitative traits, for the project DUS on barley funded by the PPV&FRA, New Delhi.

For evaluation work two trials were framed i.e. DUS Trial-1 and DUS Trial-2. In DUS Trial-1, following ninety nine released varieties were planted with two replications and evaluated for different qualitative as well as quantitative traits decided. In DUS Trial-2, following twenty four including four farmers' varieties were planted. Observations were recorded on randomly selected ten plants for each variety in both the replications and their values were averaged. Data recording

for characters 1-26 was done in standing crop in the field while for grain characteristic (27-32) observations were made after harvesting.

3.1.69 DUS TESTING OF SMALL MILLETS: UNIVERSITY OF AGRICULTURAL SCIENCES, BANGALORE.

Table 38: Details of DUS testing of candidate varieties in 2019-20

Crops	New	
	1st year entries	2nd year entries
Finger millet	4	1
Foxtail millet	2	
Kodo millet	1	1

Table 39: Varieties under maintenance:

Crops	Name or No of varieties under maintenance breeding in 2019-2020
Finger millet	77
Foxtail millet	28
Kodo millet	26
Little millet	17
Proso millet	12
Barnyard millet	12

Salient Achievements

The testing entries in finger millet, foxtail millet and kodo millet were characterized in replicated trails for DUS traits along with reference varietal sets as per the DUS guidelines prescribed for each crop by PPV and FRA. During the *Kharif* 2019, second year DUS characterization has been done for finger millet and kodo millet lines. The three new entries were received in finger millet, one entry did not germinate. In foxtail millet two entries were received, one entry was not belonging to small millets it was cultivar of amaranthus crop. In kodo millet one new entry was received and trails were conducted in four replications and all entries were characterized for DUS traits along with reference varietal sets.

3.1.70 DUS TESTING OF SMALL MILLETS TNAU, COIMBATORE, ATHIYANDAL.

During the *kharif* 2019, DUS characterization has been done for Finger millet, Foxtail millet and Kodo millet lines at Centre of Excellence in Millets, TNAU, Athiyandal (Co-Nodal centre). A number of testing entries in Finger millet and foxtail millet in replicated trials and DUS lines of Kodo millet were characterized for DUS traits along with reference varietal sets as per the DUS guidelines prescribed for each crop by PPV&FRA. The description of the progress report in different millets has been mentioned below.

Finger millet: Finger millet DUS testing has been conducted during *kharif*, 2019 for a total of 3 testing entries in replicated trial and 19 farmer's varieties from Jharkhand along with 77 reference varieties as per the DUS guidelines prescribed for finger millet by PPV&FRA. The DUS testing entries 2883/2559, 2883/2074 and Sikhara were sown in 4 replications, four rows each of 3.0 m length with the spacing of 22x10 cm. DUS characterization has been carried out along with the reference set.

For finger millet, a total of 26 characters has been considered for DUS characterization. For each character, the range of values was recorded in the coded form. Further, these 26 characters have been grouped in to 18 distinctness characters and 14 grouping characters as per the DUS guidelines prescribed for finger millet crop by PPV&FRA.

Foxtail millet: Foxtail millet DUS testing was conducted during *Kharif*, 2019 for 2 testing entry 2881/4030 and 2881/4040 (given as Amaranth), along with 28 reference varieties as per the DUS guidelines prescribed by PPV & FRA. The DUS testing entries were sown in 4 replications, four rows each of 3.0 m length with the spacing of 22x10 cm.

For Foxtail millet, a total of 23 characters have been considered for DUS characterization. For each character, the ranges of values were recorded in the coded form. Further, these 23 characters have been grouped in to 15 distinctness characters and 13 grouping characters as per the DUS guidelines prescribed for foxtail millet by PPV&FRA.

Kodo millet: A total of 2 kodo millet lines along with 26 reference varieties have been tested in the field for DUS characterization during *Kharif*, 2019. The DUS lines were sown in 2 rows each of 3.0 m length with the spacing of 22x10 cm. Thus, entries are Kodo Bhura Amar Khamariya and 2881/4049, DUS characterization has been carried out as per the DUS guidelines prescribed for Kodo millet by PPV&FRA. According to DUS guidelines, a total of 30 Characters were recorded in kodo millet for both DUS observation lines and reference variety set. For each character, the ranges of values were recorded in the coded form.

3.1.71 DUS TESTING OF SORGHUM:ICAR-INDIAN INSTITUTE OF MILLET RESEARCH, HYDERABAD:

Table 40: No. of varieties for DUS testing

Crops	New		VCK	FV
	1st year entries	2nd year entries		
Kharif 2019	2	-	-	-
Rabi 2019-20	-	-	-	10

Table 41: No. of reference and example varieties maintained at the centre

No. of reference and example varieties under maintenance breeding during 2019-20	61Sorghumvarieties (including parental lines- male sterile/maintainer/restorer, hybrids and OPVs)

Summary of the DUS result

DUS testing was conducted successfully in both kharif and *rabi* seasons during the year. Two candidate varieties were tested during kharifseasonunder1styear testing, and 10 farmers' varieties were tested during *rabi* season along with the corresponding reference varieties. The crop growth and expression of DUS traits was very good during both the seasons. Data were enumerated as per revised DUS test guidelines starting from *kharif*2019 season. During *kharif* 2019, all the *kharif* adapted example varieties wereplantedin a replicated trial for characterization. Among the farmers' varieties tested during *rabi* 2019-20, all except *HasiruJola* were morphologically looking alike for plant height, panicle type, etc. Maintenance breeding/characterization was undertaken for 62 reference varieties during *rabi* 2019-20 under enforced selfing/controlled pollination.

Monitoring of *rabi* 2019-20 trials was undertaken on 29thFebruary 2020 under the chairmanship of Dr.JV Patil, Former Director, IIMR and Ex Sorghum Breeder, MPKV, Rahuri.Dr. SB Gurav, Dy. Registrar, Pune Branch Office, PPV&FRA represented the Authority.Other members of the monitoring committee were Dr. Gopal Gharde, Breeder Lead-Sorghum & Pearl Millet, Crystal Crop Protection Ltd., Aurangabad, Dr. Hariprasanna K, PI, IIMR and Dr. Vijay R Shelar, CCPI & Seed Research Officer, MPKV.

3.1.72 DUS TESTING OF SORGHUM, PEARL MILLET AND CHICKPEA:MPKV, RAHURI.

Table 42: Details of DUS testing of candidate varieties in 2019-20

Sr. No.	Crops	New		VCK		FV		Date of monitoring
		1st year entries	2nd year entries	1st year entries	2nd year entries	1st year entries	2nd year entries	
1	**Sorghum** *Kharif*	02	--	-	-	-	-	--
	Rabi	-	-	-	-	-	10	11.02.2020
2	**Pearl millet**	06	08	-	-	02	02	--
3	**Chickpea**	-	-	-	-	06	06	--

DUS characterization study of Pearl millet reference varieties: 56 reference varieties of Pearl millet

b) Key observations of the Monitoring team:

- ***Rabi* Sorghum :**

1. The layout and maintenance of the trials was good and the trial was conducted as per the PPV&FRA sorghum DUS test guidelines.
2. The recommended package of practices was followed for good conduct of the trial and fields are maintained weed free.
3. All the data regarding morphological characterization as per DUS guidelines till end of flowering stage have been recorded and up-to-date.
4. Heavy shoot fly, Sucking pest & stem borer attack was observed in Hasiru Jola (50.76%), Chamara (69.05 %), Jalira (60.90 %), Ajar (51.96 %), Magara (47.36 %), Urja (44.09%), Kapila-P (57.85 %), Jomeya (44.44 %), Kumare/Kuma (55.07 %), Khandobal Gangai (50.37 %) farmer's varieties.

5. The expression of morphological traits was not very good in majority of the farmers varieties due to adverse weather condition prevailed during the season.
6. Off types were observed in Hasiru Jola, Chamara, Jalira, Ajar, Magara, Urja, Kapila-P, Jomeya, Kumare/Kuma, Khandobal Gangai for one or two characters till now. The percentage will be finalized after completion of all the observations.

Table 43: Varieties under characterization (Farmers varieties):

Crop	No of varieties	Crop	No of varieties	Crop	No of varieties
Sorghum	10 varieties	Pearl millet	04 varieties	Chick pea	12varieties

Table 44: Details of DUS testing of candidate varieties in 2019-20

Sr. No.	Crops	New		VCK		FV		Date of monitoring
		1st year entries	2nd year entries	1st year entries	2nd year entries	1st year entries	2nd year entries	
1	**Sorghum** *Kharif*	02	--	-	-	-	-	--
	Rabi	-	-	-	-	-	10	11.02.2020
2	**Pearl millet**	06	08	-	-	02	02	--
3	**Chickpea**	-	-	-	-	06	06	--

3.1.73 DUS TESTING OF PEARL MILLET, ICAR-AICRP ON PEARL MILLET, JODHPUR.

Details of DUS testing of candidate varieties in 2019-20:

Crops	New		VCK	FV	Date of monitoring
	1st year entries	2nd year entries			
1. Pearl Millet	06	08	00	04	19.10.2019

Varieties under maintenance/characterized: **56**

Training cum Awareness programme conducted, publications and other significant achievements, if any:

A training cum Awareness programme was held at ICAR-AICRP on Pearl Millet at Jodhpur on 1st October 2019.

3.1.74 DUS TESTING OF VEGETABLE CROPS: ICAR-INDIAN INSTITUTE OF VEGETABLE RESEARCH, VARANASI

Name of the crops/species earmarked for the center: Tomato, Brinjal, Okra,Vegetablepea, French bean, Pumpkin, Bottle gourd, Bitter gourd, Cucumber and Pointed gourd.

a) Details of DUS testing of candidate varieties monitored in 2019-20

During the year, 7 cucumber, 12bitter gourd, 18bottle gourd, 3pumpkin and15 okra entries were evaluated and monitored under DUS testing.

b) Key observations/suggestions of the monitoring team

- **Bottle gourd:** Among 3 entries of farmer's varieties, 02 entries had no fruiting and 01 entry had variation in their population. In 2019 Bottle gourd monitoring was done two times i.e. 20.06.2019 and 19.08.2019 due to late received seed of 9 farmer varieties.

- **Cucumber:** Among the 7 entries, the plant populations of five VCK were not survived and one farmer variety (Sant Lal Desi Kheera) did not germinate, while, one farmer variety (Ghaghara Kheera) germinated but sufficient fruits were not found for characterization.

- **Pumpkin**: All the 3 entries of farmer's varieties had no fruiting.

- **Okra**: Two entry of FV i.e. 2883/2262&LalanBhindihaving 100% infestation of Okra Enation Leaf Curl Virus (OELCV) and do not have flowering. Entry Jai bhindi observed with variation in stem colour of plant in all three replication.

Reference varieties under maintenance and characterized:

The reference varieties of tomato (90), brinjal (86), okra (42), vegetable pea (42), French bean 26), cucumber (24), bitter gourd (25), bottle gourd (31), pumpkin (24) and pointed gourd (21) were collected from different ICAR institute and SAUs are being maintained at IIVR. Varanasi.

Okra Monitoring (14.10.2019)

3.1.75 DUS TESTING OF VEGETABLE CROPS: ICAR-INDIAN INSTITUTE OF HORTICULTURE RESEARCH, BANGALORE.

Tomato: A total of fourteen tomato entries including eight new/candidate varieties (1st season) and six candidate varieties (2nd season) and fourteen reference varieties had been raised for conduct of DUS Test for **Forty-seven** morphological characters as per DUS test guidelines for the year 2019-

20. The monitoring the committee visited the tomato and brinjal plots and thoroughly monitored the entries with respect to claimed characters and observed traits of entries under testing of Tomato. There were no off-types in any of the entries tested. The layout and conduct of experiment was very much appreciated by Chairman and Dy. Registrar and Private seed company representative.

Brinjal: One new farmer variety (1st season) along with two references were raised for conduct of DUS testing during the year 2019-20. The test entry and reference varieties were characterized for **Forty-seven** morphological traits as per DUS test guide lines. The test entry viz; Satputia was performing good with uniform plant growth habit, uniform dark green long fruits borne in clusters and compared with two references varieties namely Arka Kusumakar from ICAR-IIHR and Swetha from KAU,Vellanikkara. Twenty eight reference varieties were raised for seed multiplication.

Okra: Eleven new, one Farmer's variety and thirteen reference varieties okra were characterized for Thirty-one 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 30th October, 2019.

Cucumber: Five VCK, one Farmers Variety and four Reference varieties were characterized for thirty-five 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 23rd April, 2019.

Bitter gourd: Twelve bitter gourd new entries along with eight reference varieties were raised for conduct of DUS Testing. They have been characterized for Thirty-one morphological characters as per the crop specific DUS test guidelines. DUS Test Monitoring was conducted under the chairmanship of Dr. O.P. Dutta, Former Head, Division of Vegetable Crops, ICAR-IIHR, and Bengaluru on 5.4.2019.

Bottle gourd: Nine farmers varieties (2nd season) and **six** candidate varieties (2nd season) of bottle gourd entries along with **nine** reference varieties had been raised for conduct of DUS Test for Thirty-one morphological characters as per DUS test guidelines for the year 2019-20. All the entries are being characterized for DUS traits and crop is at flowering stage.

Table 45: Summary of entries tested under DUS project during the year 2019-20

Crops	Candidate/New Varieties		VCK	FV	Reference Varieties	Date of monitoring
	1st year entries	2nd year entries				
Tomato	8	6	-	-	14	29.02.2020
Brinjal	-	-	-	1	2	29.02.2020
Okra	10	01	-	01	13	30.10.2019
Cucumber	-	-	05	01	4	23.04.2019
Bitter Gourd	12	-	0	0	8	05.04.2019
Bottle Gourd	6	-	-	9	25	17.05.2019
Pumpkin	-	-	-	4	11	NA

3.1.76 DUS TESTING OF VEGETABLE AMARANTH, PALAK AND RIDGE GOURD, ICAR-IIHR, BANGALORE.

No. of varieties for DUS testing: Ridge gourd farmer's varieties: 18 No. of reference & example varieties maintained at the centre: Ridge Gourd: 9, Amaranth: 19, Palak: 5

Summary of the DUS result:

DUS Testing of Ridge gourd New entries and Farmers varieties:

Four new entries and four farmer's varieties of Ridge gourd received from PPV&FRA were sown for DUS testing along with 4 reference varieties. These entries have been characterized for 35 morphological characters as per the crop specific DUS test guidelines.

Uniformity testing of farmers varieties. Out of these 10 farmer's varieties, five varieties belong to ridge gourd and other five varieties belong to sponge gourd. Since sponge gourd guidelines are not available, the left over seeds of these five sponge gourd farmer varieties were returned to the Registrar (Vegetables), PPV&FRA, New Delhi. The remaining five ridge gourd varieties were characterized for five grouping characters like fruit length, fruit girth, fruit shape, fruit skin color, fruit ridge shape and number of lobes as per the DUS Descriptor for Ridge gourd. Out of five ridge gourd entries, the expression of three entries was uniform and the remaining two varieties have segregated for fruit shape, fruit length and fruit girth. Self seeds of the uniform entries were produced for further DUS testing.

4. Few selected important photographs:

Visit of DUS Test Monitoring Team under the chairmanship of Dr. O. P. Dutta, Former Head, Division of Vegetable Crops, ICAR-IIHR, Bengaluru on 5.4.2019

DUS Test Monitoring was conducted under the chairmanship of Dr. O.P. Dutta, Former Head, and Dr. A.T.Sadashiva, Principal Scientist & Head, Division of Vegetable Crops, ICAR-IIHR, Bengaluru as member on 5.4.2019. After the meeting the report has been submitted to the PPV&FRA.

3.1.77 DUS TESTING OF CHILLI, SWEET PEPPER AND PAPRIKA/ ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH, BANGALORE.

Details of DUS testing of candidate varieties in 2019-20:

Crops	New		VCK	FV ***Characterized***	RV	Dates of monitoring
	1st year entries	2nd year entries				
Chilli, paprika & bell pepper	13	1	12	9	13	27th July 2019

Varieties under maintenance/characterized:

Mandated Crop Species	Name or No of varieties under maintenance breeding in 2018-19	Data Submission (Maintenance Breeding) Yes/No
Capsicum annuum L.	39	27th July 2019

3.1.78 DUS TESTING OF WATERMELON AND MUSKMELON, ICAR-IIHR, BANGALORE.

Maintenance and regeneration of reference varieties

A total of nine reference varieties in watermelon and 13 reference varieties in muskmelon are being maintained and regenerated during Summer, 2019-20.

Submission of DUS test report for 8 watermelon and 1 muskmelon entries conducted during summer, 2019. Monitoring of this trial was conducted on 4-6-2020 under the Chairmanship of Dr O.P.Dutta. DUS testing of eight entries in watermelon along with two reference varieties and two entries of muskmelon with two reference varieties are being carried out currently. The crops were sown on 20/3/2020. Characterisation is in progress. The trial shall be completed by Jun, 2020.

3.1.79 WATERMELON AND MUSKMELON, ICAR-CENTRAL INSTITUTE FOR ARID HORTICULTURE, BIKANER.

The DUS testing was conducted for 8 varieties of watermelon and 02 varieties of muskmelon were for DUS testing.

No. of reference & example varieties maintained at the centre: Maintained the reference varieties of watermelon (Asahi Yamato, Arka Manik, Sugar Baby, Durgapura Lal, Durgapura Kesar, AHW-19, AHW-65 and Thar Manak) and muskmelon (Arka Jeet, MHY-3, MHY-5, RM-43, RM-50, Durgapura Madhu, Kashi Madhu, Pusa Madhuras, GMM-3, Punjab Sunehri and Hara Madhu) during the year.

Summary of the DUS result: Conducted DUS testing of five VCK of watermelon and one new entry of muskmelon alongwith reference varieties during rainy season of 2020. Watermelon and muskmelon entries have been characterized as per DUS test guidelines for 27 and 34 characters,

respectively. Monitoring of the DUS trials was conducted on 09-10-2019. The monitoring committee recommends that "Characters pertaining to fruit shape and rind pattern of watermelon needs to be reviewed to bring clarity".

3.1.80 INDIAN AGRICULTURAL RESEARCH INSTITUTE, DELHI

DUS Testing in Bottle gourd, Bitter gourd, Pumpkin and Cucumber, Amaranth, Palak and Ridge gourd.

Under DUS Cucurbits FY 2019-20, following four vegetable crops are tested

Ridge gourd - 22 (4 new and 18 farmer varieties)

Bottle gourd - 3 (FVs)
Pumpkin - 3 (FVs)
Cucumber - 5 (FVs)

No. of reference & example varieties maintained at the centre
Ridge gourd - 9
Bottle gourd - 18
Pumpkin - 10
Cucumber - 10
Bitter gourd: 20
Amaranth: 19
Palak: 5

Summary of the DUS result:
Ridge gourd: Among twentytwo entries received, four were candidate varieties those were tested withtwo reference varieties (Pusa Nasdar and Pusa Nutan) and eighteen were farmer varieties. All these candidate varieties were similar to one another and also similar to reference varieties but found to be distinct with respect to fruit shape at blossom end. Among eighteen farmers' varieties (FVs), eight were of sponge gourd (*Luffacylindrica*).All ridge gourd farmers' varieties were similar to one another all showed short fruit length which is distinct from reference varieties.
The reference varieties of all seven crops (amaranth, palak, ridge gourd, bottle gourd, bitter gourd, pumpkin and cucumber) are being maintained at our centre.
Bottle gourd: Among the three farmers' varieties (FVs) tested;FV-Chhaya showed only vegetative growth and did not flower in Delhi Condition. The FV-TANRI LAUKA showed variation in fruit colour. Another FV (LaukiDharidhar) was similar to NarendraDharidhar (reference variety).
Cucumber: Among five Farmers varieties received three werephoont (*Cucumismelo*var. momordica) and other two were similar to reference varieties of cucumber.
Pumpkin: Among three FVs,two showed only vegetative growth and did not flower under Delhi condition and one FV (KOHIRA-N) produced two types of fruit shape.
DUS monitoring was done on 16th May, 2019 with chairmanship of and Dr.PrithamKalia, Former Head, Division of Vegetable Science, IARI and Dr. T. K. Nagarathna, Registrar, Representative to PPV&FRA.

3.1.81 ICAR-INDIAN AGRICULTURAL RESEARCH INSTITUTE, NEW DELHI (CHILLI, BELL PEPPER AND PAPRIKA).

ICAR-IARI, New Delhi is the co-nodal center for testing the chilli, capsicum and paprika varieties for northern region of the country. The centre maintains fifty one reference varieties. The center evaluated 52 entries in summer season of 2018-19 from private companies which included 13 new entries, 18 entries under second year trial, 12 VCKs and 9 farmers varieties along with reference varieties.

Summary of DUS trials, 2018-2019:

The candidate varieties were raised in three replications with approximately thirty plants per replication as per DUS guidelines. Some of the farmer's varieties have been found to have off types and were not completely pure lines. We have found some disparities in the claimed character and observed character of some candidate entries at our centre. Some of these entries were Reg/2015/2059, Reg/2016/341, Reg/2016/291, Reg/2017/35, Reg/2017/110, Reg/2017/119, Reg/2017/120, Reg/2017/121 and Reg/2017/122.

Crops	New		VCK	FV
Chilli, Capsicum, Paprika	1st	2nd		
	13	18	12	9

Monitoring of the trial was conducted on 30.05.2019 and the committee members consisted of Dr. Pritam Kalia (Chairperson) and Dr. T. K. Nagaratna (Registrar).

DUS testing guidelines in cauliflower and cabbage

No. of reference & example varieties maintained at the centre

Crops	At IARI, New Delhi	A at IARI Regional Station, Katrain, Kullu valley, H.P.
Cauliflower	7	8
Cabbage	1	13

3.1.82 CABBAGE AND SNOWBALL CAULIFLOWER, RADISH AND CARROT, ICAR-IARI, REGIONAL STATION, KATRAIN, KULLU VALLEY

Varieties under maintenance in cabbage and cauliflower: 12 varieties (Golden Acre, Pusa Mukta, Pusa Drum Head, 83-1, 6A, C-121, Pride of India, Pride of Asia, Pusa Ageti, 208A, C-122, Kinner Red) and 3 hybrids (Pusa Cabbage-1, Pusa Hybrid-81 and KTCBH-822)of cabbage, and 7 varieties (Pusa Snowball-1, Pusa Snowball K-1, Pusa Himjyoti, Snowball-16, Pusa Snowball K-25, Kt-27, Ogu-1A) and one hybrid (Pusa Snowball Hybrid-1)of snowball cauliflower have been purified and maintained. However, no candidate varieties/ entries of cabbage and cauliflower were received for DUS testing.

Varieties under maintenance/characterized: Characterization and maintenance of 38 radish and 31 carrot varieties have been done for development of their DUS test guidelines.

3.1.83 DUS TESTING OF ONION AND GARLIC: ICAR-DOGR, RAJGURUNAGAR, PUNE.

Table 46:No. of varieties for DUS testing: Five Farmers' Varieties in case of Garlic

Crops	New		VCK	FV	Date of monitoring
	1st yr. entries	2nd yr. entries			
Onion	-	-	-	-	27th Feb, 2020 at IARI, New Delhi 17th March, 2020 at DOGR, Pune* *Pune centre monitoring was not done due to pandemic situation of COVID-19.
Garlic	-	-	-	1.PrasLahsun (Reg/2018/685) 2.BrijLahsun (Reg/2018/688) 3. 2879/3457 4. 2879/3458 5. 2879/3459	

Table 47:No. of reference and example varieties maintained at the centre (ICAR-DOGR)

Crops	**No of varieties under maintenance breeding in 2019-20**
Onion	46 *rabi* and 10 *kharif* varieties of onion.
Garlic	25varieties of garlic.

Summary of the DUS result:

ICAR-DOGR is working as Nodal Centre for conduct of DUS test of onion and garlic and maintaining 56 onion and 25 garlic varieties under this project. These varieties of onion and garlic are treated as reference varieties. In onion, 46*rabi* season varieties and 10*kharif* season varieties and in garlic 25 varieties are being maintained at ICAR-DOGR, Rajgurunagar, Pune. Long day onion and garlic varieties are being maintained at ICAR-CITH, Srinagar and multiplier onion varieties at TNAU, Coimbatore. All the data have been recorded as per DUS test guideline in all the maintained varieties of onion and garlic under DUS project. A total of five garlic farmers' varieties were received from PPV&FRA for DUS testing during 2019-20 which have been tested as per DUS Test Guidelines during *rabi* 2019-20.

Task Force Committee for monitoring of "DUS Testing trials of garlic" at ICAR-DOGR, Pune and ICAR-IARI, New Delhi constituted by PPV&FRA vide F.No. PPV&FRA/Reg-II/23/2018/592 dated 17th Feb, 2020. The Chairman of the Monitoring Committee Dr. K.E. Lawande, Ex-VC, Dr.BSKKV, Dapoli and Ex-Director, ICAR-DOGR, Pune and Members Dr. Major Singh, Director, ICAR-DOGR; Dr. T.K. Nagarathna, Registrar, PPV&FRA; Dr. Amar Jeet Gupta, PI of DUS Project and Dr. Anil Khar, Co-PI of DUS Project. Monitoring at New Delhi centre was conducted on 27th Feb, 2020 whereas, monitoring at Pune centre scheduled on 17th March, 2020 was not done due to pandemic situation of COVID-19.

A total of five garlic farmers' varieties *viz*.; PrasLahsun (Reg/2018/685), BrijLahsun (Reg/2018/688), 2879/3457, 2879/3458 and 2879/3459received from PPV&FRA for DUS testing during 2019-20 which have been tested as per DUS Test Guidelines during *rabi* 2019-20. Monitoringat New Delhi centre was conducted on 27th Feb, 2020 whereas, monitoring at Pune centre scheduled on 17th March, 2020 was not done due to pandemic situation of COVID-19.

3.1.84 IARI, NEW DELHI

Table 48: No. of varieties for DUS testing: Three Farmers' Varieties in case of Garlic

Crops	New		VCK	FV	Date of monitoring
	1st yr. entries	2nd yr. entries			
Onion	-	-	-	-	27th Feb, 2020 at IARI, New Delhi 17th March, 2020 at DOGR, Pune* *Pune centre monitoring was not done due to pandemic situation of COVID-19.
Garlic	-	-	-	1. 2879/3457 2. 2879/3458 3. 2879/3459	

Table 49: No. of reference and example varieties maintained at the centre (ICAR-DOGR)

Crops	No of varieties under maintenance breeding in 2019-20
Onion	44 varieties of onion
Garlic	14varieties of garlic.

1. **Summary of the DUS result**

ICAR-IARIis working as co-Nodal Centre for conduct of DUS test of onion and garlic. We are maintaining 44 onion and 14 garlic varieties under this project. These varieties of onion and garlic are treated as reference varieties. All the data is being recorded as per DUS test guidelines in all the maintained varieties of onion and garlic under DUS project. A total ofthree garlic farmers' varieties were received from PPV&FRA for DUS testing during 2019-20 which have been tested as per DUS Test Guidelines during *rabi* 2019-20. Beside this, five garlic lines viz., Sikkim Local, PG-18, Rani Bennur Local, Shilkuei Local and Ooty Local were obtained from ICAR-DOGR for maintenance at our centre.

3.1.85 DUS TESTING OF POTATO DUS, ICAR-CENTRAL POTATO RESEARCH INSTITUTE, SHIMLA.

DUS characterization of three candidate varieties viz., Lady Terra, MI2009-924-016 and MI2007-019-039 (Technico Agri Science Limited, Chandigarh) was done along with the respective reference variety Kufri Frysona, and Santana for vegetative and tuber traits at CPRI Regional Station, Modipuram and CPRS, Jalandhar (Fig-1) while one variety Santana (Technico Agri Science Limited, Chandigarh) along with reference variety Kufri Frysona was characterized for floral traits as per standard Potato DUS test guidelines at CPRS, Kufri.

Table 50: Details of potato varieties in DUS trial at CPRI, Shimla

Location	CPRS Kufri	CPRS Jalandhar	CPRS RS Modipuram
Group of protection	Extant (VCK)	Extant (VCK)	Extant (VCK)
Name of firm	Technico Agri Science Limited		
Name of candidate var.	Santana	Lady Terra, MI2009-924-016 & MI2007-019-039	Lady Terra, MI2009-924-016 & MI2007-019-039
Name of reference var.	K. Frysona	K. Frysona & Santana	K. Frysona & Santana

Maintenance of DUS reference varieties: Two hundred and thirteen reference varieties were maintained in *in vitro* conditions at CPRI, Shimla while 151 and 142 were maintained under field condition at CPRS, Kufri and CPRI Regional Station, Modipuram, respectively.

3.1.86 DUS TESTING OF PIGEONPEA: ICAR-INDIAN INSTITUTE OF PIGEONPEA, KANPUR.

The pigeonpea DUS experiment at ICAR-IIPR, Kanpur was sown on 29th June 2019. The experimental materials comprises 23 farmers varieties (18 in 2nd years and five in 1st year DUS testing) (Table 1) and 86 reference varieties. In general the crop stand and expression of the traits were good except in a farmer variety entry no-2883/2705.

Annual monitoring of DUS test on pigeonpea project was held by the monitoring team constituted by the Registrar, PPV&FR, Ministry of Agriculture and Farmer's Welfare, Govt. of India on dated 11/12/2019. The committee was chaired by Dr. MN Singh, Retd. Professor, currently working as Emeritus Scientist (Plant Breeding), Institute of Agricultural Sciences, BHU Varanasi, Dr. NP Singh, Director, ICAR-IIPR, Kanpur, Dr. TK Nagarthana, Registrar, Protection of Plant Varieties and Farmer's Rights Authority, Ministry of Agriculture and Farmer's Welfare, Govt. of India, Dr. Ashish Srivastava, Corteva Agriscience Pvt. Ltd. Representing seed company, Dr. Amrapali Atul Akhare, Co-PI of DUS test on pigeonpea at Seed Technology Research Unit, Dr. Panjabrao Deshmukh Agricultural University Akola were members and Dr. IP Singh, PI of the DUS project on pigeonpea was the Member secretary for the meeting and Dr. Satheesh Naik SJ, Co-PI of the DUS Test on Pigeonpea at ICAR-IIPR, Kanpur convene the meeting.

The monitoring team examined the experimental material keenly and recorded that all of the five farmers varieties under first year DUS Testing were mixture for pod related traits.

Farmers' varieties under second year DUS Test:

There are total eighteen varieties are in second year DUS Test. Of these, seven entries were mixture for different qualitative traits. Brief information is given below Two farmer's varieties are severely affected by the wilt disease namely Murmu Aghani (Reg/2016/2197) and Murmu Chaitali (Reg/2016/2200).

3.1.87 DR PDKV, AKOLA CENTRE

Table 51:Details of DUS testing of candidate varieties in 2019-20:

Crops	New Var.		VCK	FV	Date of monitoring
	1st year entries	2nd year entries			
Pigeonpea	--	--	-	05 for testing 14 for GOT*	17/01/2020

* Out of 30 farmers varieties tested in year 2018-19, only 14 varieties had sufficient seeds to carry out GOT in year 2019-20.

Monitoring: **Yes,** DUS monitoring with (5 team members) under the chairmanship of Dr. Dr. T.K. Nagarathna, Registrar, PPV&FRA, New Delhi on dated (17/01/2020).Key observations of the Monitoring team: In case of farmer's varieties, the purity is low and admixture percentage observed was up to 17 %. Due to high percentage of Admixture the exact categorization became the difficulty.
Varieties under maintenance/characterized: **57**

3.1.88 DUS TESTING OF CHICKPEA, ICAR-INDIAN INSTITUTE OF PULSES RESEARCH, KANPUR.

Six farmers chickpea varieties *viz.*, (UJALA CH-3, RUNA CH-2, LAUNA CH-1, ANANDI-01, Suni-ek and RUNNA CHANNA) were tested for DUS trait during 2019-20 (Second Year) along with the six reference varieties at ICAR-IIPR, Kanpur. Observations were recorded on 20 DUS traits as per National Guide Lines of DUS testing for chickpea. These includes 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.
Six farmers chickpea varieties (CBCM-206, CCRA-207, CJRA-208, CLCM-279, CCRA-300 and CJRB-303) were tested for first year during 2019-20. Observations were recorded on 4 DUS grouping traits as per National Guide Lines of DUS testing for chickpea. These include Days to 50% flowering, Flower colour, Seed colour, Seed size. Besides, 140 reference varieties were maintained.

3.1.89 DUS TESTING OF MUNGBEAN, URDBEAN, PEA, LENTIL AND RAJMASH, ICAR-IIPR, KANPUR.

During *Kharif* season (2019) total 67 and 41 reference varieties of Mungbean and varieties Urdbean were maintained. Likewise, in *Rabi* season (2019-20) 61 varieties of pea, 39 varieties of Lentil and 14 varieties of Rajmash were maintained. For maintenance of reference varieties 10 single plants were selected from each variety and harvested separately.
In *Kharif* season (2019) total 24 farmers' varieties were received including 13 and 11 varieties of mungbean and urdbean, respectively. In addition, one new variety of mungbean also received. All aforementioned varieties tested in second year along with reference varieties & data recorded as

per DUS guideline. Similarly, four and nine farmers' varieties of Mungbean and Urdbean, respectively and 1 new variety of urdbean tested for first year along with reference varieties & data recorded according to DUS guideline. In *Rabi* season (2019-20) two farmers varieties of pea & seven new varieties of lentil tested in second year along with reference varieties & data recorded as per DUS guideline. Likewise, 12 farmers' varieties of pea, 1 farmer's varieties of Lentil and 2 farmer's varieties of Rajmash and 1 new variety of rajmash tested in first year along with reference varieties & data recorded as per DUS guideline.

During reporting period mungbean farmers variety haladi hesaru showed high infestation of red mites and other mungbean varieties i.e. bandri hesru, SRS-1 and urdbean laxman urd, amba urd, arak kali urd were found highly susceptible for MYMV at pre flowering stage.

In urdbean one farmers varieties (GKSS MASH SURI LOCAL) and one new variety (2883/2129) demonstrated susceptible reaction to MYMV. Hence, data could not be recorded. In rabi season (2019-20) received one faba bean (PAEK290) and two lathyrus varieties (PAKK 227, PMKK 232) in the name of pea, therefore, data could not recorded. Further, one farmer variety of pea namely PBCM 250 was genetically impure and had different plant type. In *Kharif* season (2019) one variety of mungbean (kalyanpur moong) in second year testing could not germinated and two variety of urdbean (GKSS MASH SURI LOCAL, 2883/2129) had poor germination which was less than 20 percent.

In rabi season the rajmash one farmers variety (2883/2259) were not germinated. Hence data could not take due to proper information at all stage like, flowering to maturity etc. The candidate variety of mungbean (2883/2482) tested in first year, was found resemblance with urdbean for type plant. Another new farmer's variety orad (kartik) was a climbing type plant.

The candidate variety of mungbean (RAMAIPUR) tested in second year was portrayed resemblance to urdbean for plant type.

3.1.90 DUS TESTING OF SAFFLOWER, DR PDKV, AKOLA.

Table 52: Details of DUS testing of candidate varieties in 2019-20:

Crops	New Var.		VCK	FV	Date of monitoring
	1st year entries	2nd year entries			
Safflower	01	--	01	6 Reference variety	17/01/2020

* 8 varieties (1 New, 1 VCK and 6 reference varieties) was received and tested in year 2019-20, sowing was done 16/10/2019only 01variety had insufficient seeds to carry out DUS testing in year 2019-20.

DUS monitoring with (5 team members) under the chairmanship of **Dr. Dr. T.K. Nagarathna, Registrar, PPV&FRA, New Delhi**on dated (17/01/2020).

Key observations of the Monitoring team: In case of farmer's varieties, the purity is low and admixture percentage observed was up to 17 %. Due to high percentage of Admixture the exact categorization became the difficulty.

Varieties under characterized: **08**

3.1.91 DUS TESTING OF GRAIN AMARANTH, BUCKWHEAT AND FABABEAN, NBPGR, NEW DELHI

Mandated Crop species: Grain Amaranth, Buckwheat, Faba bean

Table 53: Details of DUS testing of candidate varieties in 2019-20:

Crops	New		VCK	FV	Date of monitoring
	1st year entries	2nd year entries			
1	1			REG/2017/2223	18th March, 2019

Table 54: Varieties under maintenance/characterised:

Mandated Crop Species	Name or No of varieties under maintenance breeding in 2017-18	Data Submission (Maintenance Breeding) Yes/No
Grain Amaranth	(20) VL 101, VL 102, GA-1, GA-2, GA-3, BGA-2, VL-44, PRA-1, PRA-2, PRA-3, Durga, Annapurna, Suvarna, AMPH-1, EC150200, IC7918, IC7920, IC9554, IC38129, IC42371	Yes
Buckwheat	(20) Shimla B-1, Shimla B-2, Shimla B-3, Sangla B-1, Sangla B-5, VL-7, Himpriya, PRB-1, Sangla B214, Sangla B118, Sangla B 129, IC109729, IC 14889, IC 412722, IC 17371, IC 202226, IC 274426, EC323730, IC 26594, IC 258233	Yes

The experiment was conducted for characterization and maintenance of reference varieties of grain amaranth at NBPGR, New Delhi. A total of 20 reference varieties/ accessions were laid down in RBD design with 3 replications along with two Farmer's variety – (REG/2017/1715 and REG/2017/2223). All the reference varieties were maintained as per guidelines.
It was observed that the morphological traits of the Farmer's variety (REG/2017/2223) was not of **grain amaranth type** but it´s agro-morphological traits showed vegetable type amaranth as shown in fig. 1 so characterization data is not recorded for REG/2017/2223.

3.1.92 DUS TESTING OF POTATO, ICRA-CENTRAL POTATO RESEARCH INSTITUTE, SHIMLA

Details of DUS testing of candidate potato varieties in 2019-20: DUS characterization of three candidate varieties viz., Lady Terra, MI2009-924-016 and MI2007-019-039 (Technico Agri Science Limited, Chandigarh) was done along with the respective reference variety Kufri Frysona, and Santana for vegetative and tuber traits at CPRI Regional Station, Modipuram and CPRS, Jalandhar (Fig-1) while one variety Santana (Technico Agri Science Limited, Chandigarh) along with reference variety Kufri Frysona was characterized for floral traits as per standard Potato DUS test guidelines at CPRS, Kufri.

Fig 1: Sprouts of different potato varieties

Fig 2: Flower of potato variety-Santana

Table 55: Details of potato varieties in DUS trial at CPRI, Shimla

Location	CPRS Kufri	CPRS Jalandhar	CPRS RS Modipuram
Group of protection	Extant (VCK)	Extant (VCK)	Extant (VCK)
Name of firm	Technico Agri Science Limited		
Name of candidate var.	Santana	Lady Terra, MI2009-924-016 & MI2007-019-039	Lady Terra, MI2009-924-016 & MI2007-019-039
Name of reference var.	K. Frysona	K. Frysona & Santana	K. Frysona & Santana

Maintenance of DUS reference varieties: Two hundred and thirteen reference varieties were maintained in *in vitro* conditions at CPRI, Shimla while 151 and 142 were maintained under field condition at CPRS, Kufri and CPRI Regional Station, Modipuram, respectively

9.1.93 DUS CENTER FOR DRUMSTICK (MORINGA OLEIFERA LAM), UNIVERSITY OF HORTICULTURAL SCIENCES, BAGALKOTE

The eco-geographic studies are carrying out with focus on surveys based on the ecological and climatic parameters of major distribution areas of moringa species in different regions of India. These studies provide better understanding of the distribution patterns and agroecosystems of moringa species. By mapping the collected accessions, it became possible to map the areas with high diversity of moringa, predict their possible distribution in other similar agroclimatic areas and identify gaps in existing collections. The morphological observations of the same genotype from different area have been collected in order to identify the environment based variation and stability of the genotype.

Exploration and Germplasm Collection: Germplasm collection have been done in the areas identified for further exploration through eco-geographic studies based on the collecting strategies with sound scientific basis from the different regions of India were rich diversity

Genetic diversity: Although genetic diversity of drumstick has got immense potentiality to raise the quality fruit production and productivity, the conservation and use of these genotypes have not yet been carried out in depth. In absence of identification, conservation and utilization of drumstick genotypes, the losses of such valuable genotypes will occur and continues to occur. Therefore, identification of elite valuable genotypes, their proper use and conservation of these valuable unique resources are essential to increase quality production for internal consumption as well as for export markets. In view of this, University of Horticultural sciences trying to establish a field gene bank of moringa.

Conservation of Drumstick Tree Genetic Resources and establishment of field gene banks: As there is enormous need for human nutrition, fodder and energy, it is imperative to identify a crop that exactly fits for the needs of the man. Moringa is one such crop, which fits better in this context. Hence, there is urgent need to preserve and conserve the moringa species through field gene banks which provide a potential gene pool for future exploitation. Considering this in mind, University of Horticultural Sciences developed a field gene bank for moringa germplasm. Now the well established field has 21 genotypes from different part of India. It has been properly maintained with proper cultural practices and intercultural operations. For proper establishment of the tree, the tree will be ratooned by a length of 2inches in every year during the month of may-june. It helps to maintain proper vigor of the tree. Trying to include more collections to the filed from different part of India and world by efficient exploration and collection. Collections are conducted based on the leaf nutrition, fruit traits, phenology traits and bioactive compounds. The collected samples multiplied and recording the morphological observations based on the DUS guidelines for moringa in every season. Field gene bank are established for the available germplasm of moringa for both immediate use and for posterity. All the clones of field gene bank will be subjected to characterization using molecular tools and efficient molecular markers.

Evaluation and Utilization of Diversity Germplasm Characterization: For germplasm characterization, ecotypes have been collected from different parts of India including Karnataka, Tamil Nadu, Rajastan, Orissa, Maharashtra etc which cover the total ecology of India and a field has been established with 21 ecotypes. For the evaluation of the phenotype, morphological observations are carried out using the DUS guidelines of moringa published by PPVFRA including 26 characters including qualitative and quantitative traits. The observation have been taken season wise and the analysis has been carried out in order to identify the promising ecotypes and to determine the stability of the ecotypes.

3.2 GENE BANKS OF PPV&FRA

The Natinal Gene Bank of PPV& FRA has been established for medium term storage of orthodox or true seeds (e.g.rice, wheat, maize, sorghum, tomato, rapeseed-mustard, jute etc) of candidate varieties for plant variety registration purpose at PPV&FRA.

However, for fruit trees (like coconut, mango and citrus), plantation species (like *eucalyptus and poplar*), spices (black peppers,ginger and turmeric), commercial species, like rubber , that either produces recalcitrant (seeds normally do not withstand desiccation or low temperature storage and are not easy to store under conventional storage conditions) seeds having long regeneration cycles or sexually sterile, no seeds at all or species that are normally clonally propagated (sugarcane and potato), planting matrial of

these species are conserved at Field Gene Bank under *ex situ* conditions. Since the diversity of the genetic resources is abundant near the places of primary of secondary centres of origin or domestication, the species concerned are also adapted to the local agro-climatic conditions (like soil, water,temperature etc), field gene bank are also strategically established in these areas.

The field gene banks facility will also be used as a repository of the varieties released (referral collection) from different geographical contexts having sub species/intra varietal variability and conserved at one place. Field gene banks will also maintain specimen plants of the varieties registered under the PPV&FR Act, 2001. Documentation regarding source, parentage, morphological/sexual/value for cultivation characterstics, digitalization and database management will help in resolving techno-legal issues and dispute settlement.

3.2.1 NATIONAL GENE BANK, NBPGR OLD CAMPUS, NEW DELHI

3.2.1.1 Medium Term Storage of Seeds of Registered Varieties & DUS Repository

These seed samples will be kept during the period of protection and viability will be checked at prescribed intervals. If necessary rejuvenation of seed samples will be undertaken or breeder may be asked to submit fresh seed samples at their own cost in case of loss of viability of the submitted seed samples takes place. The seeds are hermetically sealed in a triple layer aluminum foil pouches of suitable size with proper labeling indicating the denomination of candidate variety, application number as allotted by the varieties registry, category (new/extant/variety of common knowledge/farmers' etc), year of harvest and seed qulity parameter (moisture content, viability and genetic purity).

Seed samples of 3870 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 conditions of 4^0C temperature and 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 7691 seed samples of various categories of varieties were arranged in DUS test repository.

3.2.1.2 Short Term storage of seeds of varieties under DUS testing

A separate facility of the National Gene Bank is also used for short term storage of seeds of the candidate varieties undergoing DUS test. Section 19 of PPV& FR Act, 2001, stipulates that seeds of candidate varieties are required to be submitted for conduting appropriate tests to ascertain the distinctiveness, uniformity and stability (DUS). Rule 29(1) (C) also specifies that DUS test should be field and multi-location based for at least two crop seasons. Further, for new varieties, varieties of common knowledge under extant category and farmers' varieties and the applicant/breeder has to submit the specified quantities of seeds and for new varieties and varieties of common knowledge, breeders have to submit prescribed quantities of seeds, DUS test and registration fee. The seed samples also adhere to the prescribed quality standards and the applicant is required to submit the seed testing certificate. The seeds should also be hermetically sealed in a triple layer aluminum foil pouches of suitable size with proper labeling indicating the denomination of candidate variety, application number as allotted by the plant varieties registry, category (new/extant/variety of common knowledge/farmers' etc), year of harvest and quality parameter

(moisture content, vability and genetic purity). The entire seed lot should be equally divided in ten (for new varieties) or five (for variety of common knowledge or Farmers' varieties) seed packets/pouches. Representative seed samples sent to DUS test centres and rest of the samples are kept for any contingency. The seed packets are stored at 20±2^{0}C till the period of DUS test is over.

3.2.1.3 Registered varieties monitored for germination and moisture test

Seeds samples of 754 registered varieties stored in the Gene-bank (MTS) of PPV&FRA were tested after 5 years of their storage for cereals and legumes and 3 years of the storage for oil seeds.

Crops	No. of varieties monitored during the FY 2019-2020	Moisture range (%)	Germination Range (%)
Black Gram	04	10.87-15.18	82-100
Wheat	23	8.16-16.08	36-100
Brinjal	05	8.37-11.20	62-100
Cabbage	01	9.10	46
Chickpea	05	10.61-16.34	0-100
Cotton	45	6.13-19.60	2-100
Pea	04	12.64-17.28	0-98
Green Gram	05	10.44-12.85	82-100
Jute	03	9.75-17.08	84-94
Kidney Bean	03	11.66-16.91	58-98
Lentil	01	15.59	100
Maize	10	7.32-12.60	4-100
Pearl Millet	20	9.63-14.32	16-100
Pigeon Pea	03	9.32-11.62	64-74
Rice	559	6.38-16.22	0-100
Sorghum	45	8.56-15.85	0-100
Tomato	02	10.13-11.48	20-58
Rapeseed	04	7.44-9.06	36-100
Soybean	07	7.99-9.52	84-100
Sunflower	05	5.87-8.43	54-92

3.2.1.3.1 Medium term storage condition & DUS Repository (as on 31st March, 2020)

S. N.	Crops	DUS Test Repository (STS) (Candidate varieties for DUS test kept at 220C) SEED RECEIVED A					Medium Term Storage (4˚C) CERTIFICATE ISSUED B					GRAND TOTAL
		New	VCK +EDV	Farmer	Extant Notified	Total (A)	New	VCK +EDV	Farmer	Extant Notified	Total (B)	(A+B)
1	Barley	10	5	30	4	49		1		16	17	66
2	Barnyard Millet			37	1	38					0	38
3	Bitter Gourd	19	22	11		52				1	1	53
4	Black Gram	3	2	109	6	120			2	19	21	141

5	Black Millet			1		1					0	1
6	Black Pepper							3	3		6	6
7	Bottle Gourd	8	11	42		61				4	4	65
8	Brinjal	112	88	80	4	284	15	77	3	12	107	391
9	Cabbage	17	1			18	3	1		1	5	23
10	Castor	4	2	7		13	3	2		5	10	23
11	Cauliflower	37	12	13	1	63	8	7		3	18	81
12	Chickpea		1	73	3	76	2		6	48	56	132
13	Chilli	101	113	17	8	239				8	8	247
14	Coriander	1		30		31				1	1	32
15	Cotton	412	199 +154	5	51	821	97	190+14	1	81	383	1204
16	Cucumber	7	20	21		48				2	2	50
17	Faba Bean			1	1	2					0	2
18	Fenugreek			9		9					0	9
19	Finger Millet	1		41	5	47				9	9	56
20	Foxtail Millet			27	1	28				1	1	29
21	French Bean			4		4					0	4
22	Garlic	1	1			2				7	7	9
23	Grain Amaranth			4	1	5				1	1	6
24	Green Gram	4	3	50	7	64		1	2	31	34	98
25	Groundnut	3	1	19	1	23				35	35	58
26	Ginger										0	0
27	Jute	8	2	4		14	7	1		11	19	33
28	Kidney Bean	1	2	20		22		2		8	10	32
29	Kodo Millet			97		97					0	97
30	Lentil			58		58			4	12	16	74
31	Linseed			53	2	55				6	6	61
32	Little Millet			76	1	77				2	2	79
33	Maize	301	48	282	19	650	140	56	6	76	278	928
34	Muskmelon	5		1		6				2	2	8

35	Mustard	15	9	59	4	87	3	12	6	52	73	160
36	Okra	76	44	18	3	141	9	18	1	15	43	184
37	Onion	3	12	5	2	22				10	10	32
38	Pea	3	2	82	2	89			3	28	31	120
39	Pearl Millet	143	279	18	17	457	53	32		50	135	592
40	Pigeon Pea	13	2	164	5	184	13	2	9	23	47	231
41	Pumpkin			28		28				3	3	31
42	Rapeseed			21	1	22				13	13	35
43	Rice	301	43	2395	67	2806	98	50	1590	212	1950	4756
44	Ridge Gourd	8	1	18		26				1	1	27
45	Safflower	2		1	3	6				7	7	13
46	Sesame			62	1	63			1	10	11	74
47	Sorghum	59	8	58	11	136	61	38	7	41	147	283
48	Soybean	3		22	2	27	2	1		32	35	62
49	Sunflower	63	7		1	70	28	18		10	56	126
50	Tomato	120	91+3	17	8	239	24	36		15	75	314
51	Turmeric			2	1	3					0	3
52	Watermelon	4	14			18					0	18
53	Wheat	22	7	99	44	172	29	5	23	129	181	353
	TOTAL	1889	1206	4309	287	7691	595	555	1667	1053	3870	11561

3.2.3 Seed Standards

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.)	1/11/2006	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)		2000	1000	80	10	98	*Kharif*-March Rabi-Aug	230x300
5	Pearl Millet (*Pennisetum glaucum* (L.) R.Br.)		600	300	80(inbred/ SCH) 90(var/DCH)	10	98	*Kharif*-March	165x220
6	Chickpea (*Cicer arietinum* L.)		2000(desi) 3000(kabuli)	N.A.	95	8-9	98	*Rabi*-Aug	230x300
7	Green Gram (*Vigna radiata*(L.) Wilczek)		1000	N.A.	95	8-9	98	*Kharif* - March	230x300
8	Black Gram (*Vigna mungo*(L.) Hepper)		1000	N.A.	95	8-9	98	*Kharif*-March	165x220
9	Field Pea (*Pisum sativum* L.)		2000	N.A.	85	8-9	98	*Rabi*-Aug	230x300
10	Kidney Bean (*Phaseolus vulgaris* L.)		3000	N.A.	85	8-9	98	June-July	230x300
11	Lentil (*Lens culinaris* Medik)		1000	N.A.	85	8-9	98	*Rabi*-Aug	230x300
12	Pigonpea (*Cajanus cajan*(L.) Millsp.)		2000	1500	95	8-9	98	*Kharif*-Mar	230x300
13	Cotton (*Gossypium hirsutum* L.)	31/12/2007	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.)	27/7/2009	400 single bud sett						
20	Ginger (*Zingiber officinale* Rosc.)		5000 g (clean and whole sum 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)						

22	Indian Mustard (*Brassica juncea* L. Czern & Coss)		500	250				Jun-Jul	165x100
23	Karan rai (Brassica carinata A Braun)		500	250				Jun-Jul	165x100
24	Rapeseed-Mustard (*Brassica rapa* L.)		500	250	85	8	98	June-Jul	165x100
25	Gobhi sarson (*Brassica napus* L.)		500	250				Jun-Jul	165x100
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)	30/4/2010	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	May-June	165x100
33	Black pepper (*Piper nigrum* L.)		40 no of rooted cuttings						
34	Small cardamom (*Elettaria cardamomom* Maton)		50 Suckers						
35	Tomato (*Lycopersion lycopersicum* (L .) Karsten ex. Farw.)	2/12/2010	15(open field) 8 (Greenhouse)	same	85	8	98	April- May	165x100
36	Brinjal (*Solanum*		15(open)	15(open)	85	8	98	April- May	165x100

	melongena L.)								
37	Okra (*Abelmoschus esculentus* (L.) Moench.)		200	-				May-June	230x300
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 9 plants in 12 inch or 30 cm pots size						
44	Chrysanthemum (*Chrysanthemum spp.)*		100 two node terminal rooted cutting taken from mother plant						
45	Mango (*Mangifera indica* L.)		7 grafted for each location						
46	Duram wheat (*Triticum durum*Desf.)	18/8/2011	3000	1500	95	8-9	98	Same as wheat	230x300
47	Dicoccum wheat (*Triticum dicoccum* L.)		3000	1500	95	8-9	98	Same as wheat	230x300
48	Other *Triticum* s p		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 suckers (10-15 cm long)						
51	Damask Rose (*Rosa damascena* Mill)		100 Cutting						
52	Periwinkle (*Catharanthus*		10 gm	-	85	8	98		

	roseus L.)								
53	Brahmi (*Bacopa monnieri* L.Pennell)		500 Cutting (clean and wholesome vegetative parts 10-15 cm long)						
54	Coconut (*Cocos nucifera* L.)		30 number of one year old seedlings raised in polybag containing standard potting mixture						
55	Orchids (*Cymbidium Sw.*)	27/3/2012	20 plants (10 for each centre) with at least two pseudo-bulbs 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)	15/4/2014	10 propagules, One year old raised through air layering or rooted stem cutting (multiplied from the same tree) or tissue culture raised plants for each location.						
59	Orchid (*Cattleya Lindl.*)		20 plants two or three year old with at least two shoot						
60	Orchid (*Phalaenopsis Blume*)		20 flowering size plants						
61	Casurina (*Casurina equisetifolia* L.)		50 rooted cutting (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	Jul-Aug	165x100
69	Fenugreek (*Trigonella foenum*		250	-	80	8-9	98	Jul-Aug	165x100

	*graecum*L.)								
70	Almond (*Prunus dulcis* (Mill.) D.A. Webb)		10 grafted or budded plants						
71	Apple (*Malus domestica* Bork h)		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*Lam k.)		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 L.)*	16/10/ 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 should be above six months						
84	Mandarin (*Citrus reticulata* Blanco)		10 plants for each DUS centre. Age should be above six months						
85	Sweet Orange (*Citrus sinensis* (L.) Osbeck)		10 plants for each DUS centre. Age should be above six months						
86	Bougainvillea (*Bougainvillea Comm.* Ex Juss.)		10 well rooted and established plant						

87	Banana (*Musa spp*.)		40 uniform tissue cultured plant in one submission per location						
88	Orchid (Oncidium sw.)		20 plants 2-3 year old with at least two pseudo-bulbs/shoots						
89	Canna (*Canna* L.)	21/1/2015	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	Sep-Oct	230x300
92	Watermelon (*Citrullus Lanatus*(Thunb.) Mansf.)		150 gm seed for open field cultivation	-	80	8	98	Sep-Oct	230x300
93	Jasmine (*Jasminum auriculatum* L.)	2/7/2015	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.)		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.)		10 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	-	80	10-12	97	Apr-May	230x300
102	Foxtail Millet (*Setaria italica*(L.) Beauv)		250 gm & 10 Panicles	-	80	11-12	97	Apr-May	230x300
103	Vegetable Amaranth (*Amaranthus tricolor* L.)	19/4/2016	150 g (in one submission only)		80	<8	98	July-Sep	165x100
104	Ridge gourd (*Luffa acutangula* (L.) Roxb.)		250g or 1500 seeds (in one submission only)		80	<8	98		
105	Spinach beet (*Beta vulgaris* var. bengalensis Roxb.)		250 g (in one submission only)		80	<8	98	Aug-Sep	165x100
106	Carnation (*Dianthus caryophyllus* L.)		150 rooted cuttings						
107	Orchid (*Paphiopedilum* Pfitz.)		10 plants for each centres						
108	Noni (*Morinda citrifolia* L.)	13/7/2016	10 grafted or budded plants for each location						
109	Bael (*Aegle marmelos* (L.) Correa)		5 Plants for each centres						
110	Jamun/Black plum (*Syzygium cuminii* (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.)		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	Apr-May	165x100
120	Guava (*Psidium guajava* L.)		10 grafts/ air layers for each locations						
121	Litchi (*Litchi chinensis* Sonn.)	12/5/2017	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 of 12-15 cm length & 1.0-1.5 cm diameter						
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 cm height, in June-July						
137	Barnyard millet (*Echinocloa frumentaceae* (Roxb.) Link)		250 grams seed with 10 panicles		80	12	97	Apr-May	230x300
138	Kodo millet (*Paspalum scorbiculatum* L.)		500 grams seed with 10 panicles		80	12	97	Apr-May	230x300
139	Little millet (*Panicum sumatrense* Roth. Ex Roemer And Schultes)		150 grams seed with 10 panicles		80	12	97	Apr-May	230x300
140	Proso millet (*Panicum miliaceum* L.)		200 grams seed with 10 panicles		80	12	97	Apr-May	230x300
141	Cashew (*Anacardium occidentale* L .)	23/10/2017	8 grafted plants						
142	Arecanut (*Areca catechu* L.)		10 numbers of one year-old seedlings						
143	Chironji (*Buchanania*	9/1/2018	09 grafts for each location						

	lanzan Sperng.)							
144	Tamarind (*Tamarindus indica* L.)							
145	Sweet potato (*Ipomoea batatas* (L.) Lam.)		09 grafts for each location 150 vine cuttings (each one with a length of 30cm with 5 to 8 buds) for both centres					
146	Cassava (*Manihot esculenta* Crantz.)		100 cuttings for each centre, length 20 cm with minimum 5 to 8 viable buds					
147	Poplar (*Populus deltoides* L.)		120 cuttings from 1 year old plants					
148 - 154	Willow (*Salix* species) *Salix tetrasperma, Salix nigra, Salix jessoensis, Salix x rubens, Salix matsudana, Salix alba, Salix acmophylla* .	11/7/ 2018	120 hardwood cuttings, diameter 1 cm and length 20 cm					
155	Oat (*Avena sativa* L.)		1,000 gm		85	10	98	Jul-Aug	230x300
156	Date Palm (*Phoenix dactylifera* L.)		06 Rooted suckers (offshoots), weight 8-10 kg					
157	Moringa (*Moringa oleifera* L.)	18/7/ 2019	30 plants or 100 pure seeds for each centre					
158	Melia (*Melia dubia* Cav.)	25/2/ 2019	100 rooted plants.					
159	Pointed Gourd (*Trichosanthes dioica* Roxb.)	not yet notified	50 (fifty) tuberous root/ rooted vine cuttings (having minimum 3 nodes)					
160	Crossandra (*Crossandra infundibuliformis* (L.) Nees.)	not yet notified	100 terminal rooted cuttings in plugs or pro-trays (50 for each center) of 6 cm to 8 cm					
161	Cowpea (*Vigna unguiculata* (L.) Walp. *ssp. unguiculata* and *Vigna unguiculata* (L.) Walp. *ssp. sesquipedalis* (L .) Verdc.)	not yet notified	1,000 gm	95	9	98		

3.3 Regional Horticultural Research and Training Station, Mashobra; Dr Y S Parmar Univ. of Hort. and Forestry, Mashobra, Shimla

Details of varieties collected in 2019-20

- In apple variety collection block two new varieties viz; Dark Baron Gala and King Roat were added during the year 2019.

Crop	Number of variety in maintenance breeding blocks	Number of variety in reference /variety collection blocks
Apple	268	118
Pear	78	32
Cherry	46	21

- Total number of plants maintained in maintenance breeding and reference block of mandate crops at RHR&TS, Mashobra during the year 2019-20

Crop	Maintenance Breeding Block	Reference Block	Total no. of plants
Apple	805	563	1368
Pear	264	272	536
Sweet Cherry	207	132	339
Total	**1276**	**967**	**2243**

DUS testing of candidate varieties in 2019-20

- Conducted On-Site DUS testing of farmer's variety of apple "HRMN-99" at Paniyala, Ghumarwin, Bilaspur, HP along with Scientist from CITH on 21st June, 2019.
- Conducted ON-Site DUS testing of farmer's variety of apple "APPS" at Jaltar, Kotkhai, shimla submitted to PPV&FRA, New Delhi along with Scientist from CITH on 31/07/2019.

Varieties of apple, pear and cherry characterized under maintenance breeding at RHR&TS, Mashobra

Crop	Number of variety in maintenance breeding blocks	Data Submission (Maintenance Breeding)
Apple	268	For Vegetative, flowering and fruit characteristics
Pear	78	Only for vegetative characteristics
Cherry	46	Only for vegetative characteristics

- In maintenance breeding block of apple, characterization for flower characters (flower colour at balloon stage and arrangement of petals) and fruit characters (fruit weight, fruit size (length and diameter), length/ diameter ratio, size of eye, length of sepals, number of lenticels, length of stalk, thickness of stalk, depth of stalk, width of stalk cavity, depth of eye cavity, firmness of flesh and colour of flesh were done only for those varieties which came into fruiting during the year 2019.

Leaf blade: attitude in relation to shoot

upwards

Oregon Spur

outwards

Worcestor Pearmain

downwards

Kesari

Leaf blade: intensity of green colour

light

Cox's Orange Pippin

medium

Beauty of Bath

dark

Royal Delicious

Flower: predominant color at balloon stage

white

Director Van Di Plassche

yellowish pink

Worcestor Pearmain

light pink

Red Baron

dark pink

James Grieve

- In pear and cherry, 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.

Leaf Blade: shape of base

Acute (Concorde)

Obtuse (Kashmiri Nakh)

Right angled (Badshah)

Distance of stipule from basal attachment of petiole

Long

Medium

Short

Colour of Nectaries(Cherry)

Black Heart

Dark Red

Van

Greenish Yellow

Sam

Light Red

One year old shoot: Number of lenticels

Few

Medium

Many

Total number of plants maintained in maintenance breeding and reference block of mandate crops are viz; apple **1368**, pear **536** and cherry **339 Total (2243)** at RHR&TS, Mashobra. Most of the plants under gene bank are now seven to eight year old and for the maintenance of these plants more man power is required and for protecting these plants from the hail storm anti hail net structure needs to be established. It has already been established in variety collection block of apple and a small portion of maintenance breeding block has also been covered. Cheery and pear blocks also need to be covered which will be done step by step in the coming years.

Progress of Work in 2019-20(reference block)

- In Reference block of apple, strains of important Delicious, Gala, Fuji and other varieties like Akane, Belle de Boskoop, Beauty of Bath, Starkrimson Gold etc were collected from CITH, Srinagar, NBPGR, Phagli, RHRS, Seobagh, THRS, Kotkhai, PCDO, Bajaura, Vita Fruit, Italy etc places were collected and maintained.
- **Apple Variety Type: Delicious and it's strains**

Varieties	YSPUH&F, Nauni	RHRS, Mashobra	CITH, Srinagar	NBPGR, Phagli	PCDO, Bajaura	PCD, Annu	SKUAST, Srinagar	RHRS, Seobagh	THRS, Kotkhai	Private Orchards	Vita Fruit, Italy	Total
Red Delicious		√	√	√								3
Starking Delicious		√	√	√				√	√			5
Richared		√	√									2
Starkrimson Delicious		√	√	√	√		√	√	√			7
Hardeman		√	√									2
Skyline Supreme Delicious		√	√	√								3
Vance Delicious		√	√	√				√				4
Bright n Early		√				√		√				3
Early Red One		√		√	√				√	√		5
Red Chief	√	√	√	√	√	√			√			7
Top Red		√	√		√				√			4
Super Chief	√	√			√					√√√		7
Silver Spur		√	√	√	√			√				5
Oregon Spur		√	√		√							3
Oregon Spur II		√		√	√	√		√		√		6
Red Spur		√		√					√			3
Well Spur		√	√	√	√			√	√			6
Scarlet Spur II		√						√		√		3
Miller's Sturdee Spur		√						√				2
Scarlet Spur		√			√					√		3
Ace Spur	√									√		2
Tydeman Early		√	√	√								3
Real Mecoy		√		√		√						3
Hardy Brite				√								1

Spur												
Camspur					√							1
Red Velox	√										√	2
Jeromine	√											1
Golden Delicious		√	√									2
Modi											√	1
Redcap Valtod											√	1
Cahllanger	√											1
Valley Spur	√											1
Dorset Golden	√											1
King Roat											√	1

- Apple Variety type: **Gala and it's strains**

Varieties	**YSPUH&F, Nauni**	**RHRS, Mashobra**	**CITH, Srinagar**	**NBPGR, Phagli**	**GBPUA & T, Hill Campus, Ranichauri**	**PCDO, Bajaura**	**RHRS, Seobagh**	**Private Orchards**	**Vita Fruit, Italy**	**Total**
Gala				√						1
Gale Gala		√						√		2
Scarlet Gala		√		√			√			3
Galaxy						√				1
Brookfield Gala					√					1
Gala Mast			√							1
Crimson Gala								√		1
Gala Mitchella						√				1
Royal Gala					√	√	√			3
Redlum Gala	√									1
Fulford Gala	√									1
Galaval Gala									√	1
Gala Venus									√	1
Buckeye Gala									√	1
Dark Baron Gala									√	1

- **Apple Variety Types: Fuji and it's strains**

Varieties	**RHRS, Mashobra**	**CITH, Srinagar**	**NBPGR, Phagli**	**GBPUA & T, Hill Campus ,Ranichauri**	**PCDO, Bajaura**	**Total**
Fuji	√	√				2
Red Fuji	√	√	√		√	4
Coe Red Fuji	√	√				2
Fuji Kiku					√	1
Fuji Raku Raku					√	1
Auvil Early Fuji					√	1
Sun Fuji					√	1
Aztec Fuji				√		1

- **Other varieties**

Varieties	RHRS, Mashobra	CITH, Srinagar	NBPGR, Phagli	GBPUA & T, Hill Campus, Ranichauri	PCDO, Bajaura	RHRS, Seobagh	Total
Akane			√				1
Gloster	√					√	2
Cortland			√				1
Jonagold			√				1
Ingrid Marie	√		√				2
Mutsu	√		√	√			3
Belle de Boskoop			√				1
Cox's Orange Pippin	√		√		√		3
James Grieve	√		√				
Red Astrachan	√						1
Worcestor Pearmain	√						1
Ida Red			√	√			2
Melrose	√		√				2
McIntosh	√						1
Lodi Early Golden	√		√				2
Beauty of Bath	√						1
Granny Smith	√	√	√				3
Spartan	√	√	√		√	√	5
Vista Bella		√					1
Cooper IV		√					1
American Aprirouge		√					1
Firdous		√	√				2
Shireen		√					1
Red Gold	√	√	√				3
Benoni		√					1
Pink Lady		√			√		2
Laxton's Fortune		√	√				2
Prima		√		√			2
Summer Red		√		√			2
Michael		√	√				2
June Eating		√					1
Red Baron	√	√	√				3
Lal Ambri		√					1
Ambri	√	√					2
Winter Commercial		√					1
Green Sleeves		√					
Rome Beauty	√	√	√				3
Parlin's Beauty		√	√				2
Early McIntosh		√	√				2
Maayan		√	√				2
Black Ben Davis	√	√	√				3
Gold Spur	√	√	√		√	√	6
Anna		√	√				2
King Hascious		√		√			2
Chanpora Selection			√				1
Starkrimson Gold			√				1
Jonica			√				1
Tallisare			√				1
Lenninguard			√				1
Stark Summer Gold			√				1

Wealthy		√					1
Indo			√				1
Kesari	√		√				2
Mai Gold		√	√				2
Wilson Red June		√					1
Jonathan			√				1
Mollies Delicious	√	√	√				3
Gibson Golden	√						1
Golden Smoothee					√		1
Wealthy Double Red	√						1
Kings of Pippine's							1

- 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.

Source and Number of Cherry Varieties in Reference Block:

Sr. No.	Varieties	RHRS, Mashobra	CITH, Srinagar	SKAUST, Srinagar	THRS, Kotkhai	RHRS, Seobagh	Private Orchardist Narkanda	Total
1.	Bigarreau Noir Grossa		√	√				2
2.	Bigarreau Napolean		√	√				2
3.	Sweet Heart		√					1
4.	Stella	√	√				√	3
5.	Lapins	√	√				√	3
6.	Guigne Noir Hative	√	√					2
7.	Guigne Pourpea Prececce		√	√				2
8.	Germersdorfer				√			1
9.	Merton Glory	√						1
10.	Early Rivers	√						1
11.	Bing	√	√					2
12.	Sam	√						1
13.	Van	√	√		√		√	4
14.	Vega	√						1
15.	Sunburst	√					√	2
16.	Lambert	√	√			√		3
17.	CITH-Cherry-4		√					1
18.	CITH-Cherry-5		√					1
19.	CITH-Cherry-8		√					1
20.	CITH-Cherry-16		√					1
21.	Durone Nero –II	√			√			2

- 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.

Source and Number of Pear Varieties in Reference Block:

Sr. No.	Varieties	RHR &TS, Mashobra	CITH, Srinagar	NBPGR, Phagli	GBPUA & T, Hill Campus, Ranichauri	SKAUST, Srinagar	PCDO, Bajaura	RHRS, Sharbo	IARI, Amartara	THRS, Kotkhai	Private orchard	Vita fruit, Italy	Total
1	Battira Giffard		√										1
2	Doyenne du Comice		√		√					√			3
3	Pyasua Behapa		√										1
4	Santya Braskaya		√	√									2
5	Hayward		√										1
6	William Pear		√					√	√			√	4
7	Grand Drouard		√										1
8	Starkrimson						√	√		√			3
9	Zypcee Hpoeau Copecea	√											1
10	Max Red Bartlett						√	√		√			3
11	Severenta		√										1
12	Coscia		√										1
13	Red Bartlett			√			√	√		√			4
14	Beurre Bosc				√						√		2
15	Beurre Hardy	√		√									2
16	Conference				√						√√		3
17	Packham's Triumph									√	√√		3
18	Jargonelle			√						√			2
19	Concorde				√					√	√√	√	5
20	Clapp's Favourite			√									1
21	Bur Giffard			√									1
22	Dr. Jules Guyot							√					1
23	Vicar of Winkfield		√										1
24	Abate fetel					√					√		2
25	Anjou									√			1
26	Canal Red					√							1
27	Carmen					√							1

28	Laxton's Superb									√			1
29	Noveau Poitaeu									√			1
30	Red Sensation						√						1
31	Stark Winter Bartlett									√			
32	Severyanka			√									1

Reference Block of Apple

Pear and Cherry blocks are planted at Kraignano (near main station) whereas apple blocks are at Sadhora near Gene Bank Building.

In Pear and Cherry half of the field is under maintenance breeding block and half under reference block as shown in the above pictures. Whereas in apple reference block is below the road and maintenance breeding block is above the road.

3.4 Dr BS Konkan Krishi Vidyapeeth, Dapoli, Maharashtra

The project entitled '*Collection, maintenanace, evaluation and development of descriptors of fruit and plantation crops and three spices through live repository*' is being implemented at Dr. B.S. Konkan Krishi Vidhyapeeth Dapoli. The site plan for reference varieties/ DUS test block/gene bank block has been laid out and land preparation for ginger, small cardamom, black papper, turmeric etc have been completed.

Crop	No. of varieties/Ecotypes under maintenance
Mango	36
Turmeric	13 Ecotypes
	31 Varieties
Citrus	4 Species
Kachai Lemon	1
Black pepper	6
Banana	46
Nutmeg	4 Varieties
Jackfruit	2 Variety (14 Plants)

The reference variety block for mango, citrus, turmeric, ginger and black pepper was established. In mango, several varieties were earlier collected from different locations which are as follows, e.g., Alphonso (Vengurle, Dapoli, Deogad), Sindhu, Ratna (Rukhi), Neelam (Wakawali), Pairi, Niranjan (Aurangabad), Totapuri, Fernandina (Dicholi, Mhapsa, Sattari, Kodar), Mankurad, Goamankur, Rajapuri, Keshar (Junagad), Baramashi, Peddarasam (Adilabad), Chinnarasam (Medak), Banganpalli, Himayatpasand (Sangareddy). Another 20 varieties were collected from RFRS Mango Research Station Vengurla, Department of Horticulture, Dapoli. CES Wakwali, Shri. Bhushan Padmakar Nabar, Math, Vengurle.

The characterization of mother plant was made for some DUS descriptors. The scion sticks were procured from CES, Wakawli and conserved in reference variety block on common poly-

embryonic rootstock, viz. 'Vellaikolamban' which is locally adapted. The nursery was established for grafting mango varieties on common polymbryonic rootstock. Appox 280 seedlings of 'Vellaikolamban' were raised in the nursery and were established in gene bank at 3mx3m spacing.

In turmeric, 13 ecotypes and 31 varieties were collected, viz. 'Krishna' (Sangli), 'Phule swarupa','Rajapuri','Tekurpetha','Selam' (Wai, Satara), 'Waigaon selection' (Akola) and "Kaddappa' (Vasmat) were collected from different locations. Four ginger varieties were collected from Dr Ashok Chiwate, Koregaon, Maharashtra, Agri. Research Station Digras Sangli, Sh Shripad Digamane, Sangli, & Sh Santosh Darekar, Borgaon, Satara.These turmeric and ginger varieties were planted in reference variety block under coconut plantation. Thirty eight turmeric varieties were collected from Dr. Ashok Chiwate, Agri. Research Station Digras Sangli, Indian institute of Spices Research Farm, Peruvannamuzhi, Shri Sanjay Jadhav, Badlapur, Maharashtra
Several black pepper varieties namely 'Panniyur 1-7',' Sreekara','Panchami',' Subhakara','pournami',' Girimunda',' Malabar local','Sakthi',' Thevam' were earlier collected from Pepper research Station, Panniyur and the Indian Institute of Spices Research Farm at Peruvannamuzhi in Kerala and planted in reference variety block. Similarly, several cardamom varieties, namely 'MHC 1',' RRI','NKE 12','CCS 1','ICRI 1',' ICRI 2',' ICRI 3',' ICRI 5',' ICRI 7' were also collected from Cardamom Research Station at Appangala and the Indian Cardamom Research Institute at Myladumpara were collected for planting in reference variety block. Nearly 30 varieties were collected from ICAR-NRC, Trichi, as well.

The citrus varieties, viz.'nagpur mandarin','Mosambi',' Kagzi lime' and 'Seedless lemon' were earlier collected from Nagpur and Dapoli and planted in reference variety block. To establish reference variety and field gene bank, land was cleaned, the counter terracing was done, layout was made and plants were planted in respective block. The irrigarion system has been established thorugh pitcher and drip irrigation. Necessary fencing has also been done and the construction work for field laboratory building was completed.

Sr. No.	Name of Species	No. of germplasms received	Source
1.	Banana	8 Varieties	Sri Vijayan, President, Chengalikodan Banana Growers Association Erumaprtty, Thrissur, Kerala
2.	Kachai Lemon	10 Plants	Manipur Centre, Imphal
3.	Jackfruit	2 Varieties	PPV & FR Authority, New Delhi.
4.	Chilli	15 gm	Central Costal Agri. Research Institute, Goa
5.	Turmeric	2 Varieties	Punjab Agri. University Ludhiana
6.	Nutmeg	3 Varieties	Mr. Jose Mathew, Mr. Varkey Thomman and Mr.Tom C. Antony
7.	Planting Material	160 Plants	IPR Cell, Kerala Agricultural University, Kerala
8.	Yam	5 Varieties	Shaji . N. M. Arattuthara wayanad, Kerala
9.	Planting Material	42 Plants	Mr. P. V. Jose, Pullan House, Chalakkudy Perambra, Pootta, Thrissur Kerala 680722.

10.	Planting Material	21 species	Mr. K. R. Jayan, Kaipully Madam, Avittathur, Kallettumkara, Thrissur Kerala 680683.
11.	Planting Material	44 species	Mr. Raveendran. R., Reji Bhavan, KRA 172, Panachavila Lane, Ulloor, Medical College P.O., Thiruvananthapuram, Kerala
12.	Planting Material	21 species	Mr. K. R. Jayan, Kaipully Madam, Avittathur, Kallettumkara, Thrissur Kerala 680683.
13.	Medicinal (Seed material)	1 species	Mr. Prasad Rama Hedge Kankodlu Village Hemmadi Post, Yellapur Taluk- 581402 Uttara Kannada District, Karnataka State India.
14.	Lime (Plant)	6 plants	
15.	Lime (Scion Material)	4 Species	
16.	Lime (Seed material)	6 species	
17.	Banana	5 Varieties	
18.	Dalchini	2 Varieties	
19.	Mango	39 Varieties	
20.	Black Pepper	5 Varieties	

Plan for 2020-2021:

i. Characterization of collected reference variety of mango.
ii. Collection and characterization of newly proposed mango varieties.
iii. Plantation of farmers' varieties received from IPR cell Kerala.
iv. Sowing of rhizomes of different yams varieties.
v. Sowing of different varieties of Turmeric and their maintenance.
vi. Awareness programme of PPV & FR Authority.
vii. Conservation of candidate varieties of jackfruit, nutmeg and farmers' varieties nominated by PPV & FR Authority.
viii. Survey and collection of farmers' varieties and their registration under PPV & FR Authority, New Delhi.

3.5 NATIONAL REVIEW MEETING OF DUS CENTERS AND PROJECTS

3.5.1 34th EVRC Meeting held on 2nd August, 2019

The 34th EVRC Meeting was held under the Chairmanship of Dr. H.S. Gupta, Former Director, IARI. 19 applications filed by ICAR Institutes, SAUs and private companies were placed before the committee out of which 1 was rejected as time-barred and for hybrids as per Public Notice 1 of 2019 it was decided that for hybrid seeds it was mandatory to submit seeds of parental lines and denomination as mentioned in the Gazette must be assigned in respect of extant notified varieties and if there is difference then the applicant must amend the same in the Gazette.

3.5.2 35th EVRC Meeting held on 24th February, 2020

The 35th EVRC Meeting was held under the Chairmanship of Dr. H.S. Gupta, Former Director, IARI.31 applications with complete documents filed by ICAR Institutes, SAUs and private companies were placed before the committee. It was decided to inform all ICAR Institutes and SAUs and breeders regarding the expiry of time limit for registration of crop species under extant variety category by 2020. It was also decided that the Authority has to inform all institutions including private sectors on recording observations for candidate varieties as per DUS descriptors including reference varieties/checks as claimed by the applicant during trial for evaluation itself which has to be part of application of TQ. DUS descriptor data to be made available as replicated data for atleast two years from two locations where the evaluation trials are organised. Certified copies of such information comprising data sheet as recorded duly signed by the Trial-incharge. This decision was taken to be effective from Khariff 2020.

3.5.3 Second Task Force Committee Meeting on "Complimenting DUS characterisation through DNA finger printing" was held on 24.01.2020 under the chairmanship of Dr. B.S. Dhillon, Hon'ble Vice-Chancellor, Punjab Agricultural University, Ludhiana.

The Committee arrived at consensus that DNAFP using a well distributed, a well validated set of molecular markers my be used for complementing DUS testing for registration of varieties. The following decisions were taken by the committee namely:-

1. Use of molecular markers linked to DUS or agronomic traits for complimenting DUS testing for registration of varieties.
2. Availability of trait related gene/ QTPL specific molecular markers for DUS character for registration of notified crop species.
3. Development of uniform set of standard operating protocol (SOP) for notified crops.
4. Identification of accredited referral lab for different crop species and funding those laboratories (project mode/ revolving fund/per sample basis).
5. Development of database and integration with DUS characterisation by phenotypic data
6. Constitution of broad based working groups for developing SOPs involving public and private sectors.

3.5.4 Expert Committee meeting on Inviting Expression of Interest (EoI) bids for conducting DUS testing on outsourced basis held on 26th February, 2019 under the chairmanship of Dr. J.P.Tandon, Ex-ADG (FFC) at NASC Complex, New Delhi.

The committee took the following decisions

1) Involving both public and private Institutes/ Organisations for outsourcing of DUS testing centres and invite expression of interest from eligible establishments.
2) Selection of minimum two locations zone-wise and region-wise as per each crop species requirement for DUS testing .
3) Identification of DUS test centres based on location, approachability, availability of good quality soils, irrigation, adequate isolation distances in cross-pollinated crops.
4) Availability of appropriate farm management machinery.

5) Farm land has to be owned or long leased by the organisation/ institute.
6) DUS centre must have adequate laboratory space.
7) Adequate availability of scientific staff
8) All DUS materials be coded.
9) Authority will have unrestricted approach to DUS trial site.
10) Budget required for DUS testing shall be based on the estimate submitted by the organisation.

3.5.5 Expert Committee meeting on Inviting Expression of Interest (EoI) bids for conducting DUS testing on outsourced basis held on 19th August, 2019 under the chairmanship of Dr. J.P.Tandon, Ex-ADG (FFC) at NASC Complex, New Delhi.

In the said meeting the format for inviting expression of interest, eligibility of the organisation / institutes and terms and conditions were finalised.

3.5.6 15th Review meeting of DUS centres for kharif crops-2019 was held on 25th & 26th April, 2019

It was emphasized that proper communication from the DUS centre and PPVand FR Authority be maintained on a legally vettable base. All the test centres have to compulsorily submit DUS test photographs with good resolution and clarity sufficient to be produced in legal proceedings. Time of conduct of DUS test by IIVR and IIHR centres were clarified. Photo should be thoroughly checked by PI of the centres before submission. Timely submission of financial and Technical report should be ensured. Additional fund requirement in case of fencing should be submitted immediately. Sufficient quantity of seeds should be submitted by applicants failing which applications will not be considered. DUS format was discussed in detail. Due to technical problems in handling PFMS it was decided that funds will be released through lead centres only to the cooperating centres. Data submitted by centres is a legal document and hence to be corrected and documented by professionally qualified personnel only. Details of project staff in format provided by Authority should be submitted by the centre. Action shall be initiated within provisions of Act on centres in case of occurrence of any unfortunate event non-performance on negligence duty on part of the centre. Seeds of candidate varieties other than what is required have to be destroyed

3.5.7Project appraisal meeting held on 2nd March, 2020 in committee room, PPV&FR Authority

The committee decided to take following details from the applicant such as Origin of the Crop, whether crop is annual perennial, Ecological adaptation of the crop, Area under cultivation and Number of varieties in trade and Availability of local material as varieties under local cultivation.

Based on requirement of the Authority, crop species were decided by PPV&FR Authority for inviting project proposal during 1st week of April every year. All the project proposals were presented discussed and critically examined by members of the committee

3.5.8 16th Review meeting of DUS centres for rabi crops 2019 held on 26th September, 2019.

The salient points of Technical session 1 it was decided as follows:-

1) Procedure for registration of plant varieties has been revised with effect from 1st September 2018
2) Timeline for kharif, Rabi and summer / spring season has to be followed by applicants.
3) The centres have to communicate to PPVFRA for timely monitoring of trial
4) Consolidated error free certified data of trial must reach PPVFRA within 4 months from date of harvest of trial
5) Immediate reporting of poor/ non germination of types of non-uniformity beyond prescribed levels to concerned registrar
6) Hybrid will be registered along with parental lines and DUS testing shall be done for parents
7) 2nd year revaluation of the style is expanded for evaluation of both hybrids and varieties by inclusion of new way reference varieties

For submitting farmers variety for registration it has to be characterized for one year by crop breeder at ICAR/SAU and be certified by breeder for its purity and uniformity. PPV&FR Authority will intimate concerned PI of centre about receipt of planting material of New entries of vegetatively propagated crops 10 days in advance. Presence of mother plants is required for on testing of farmers varieties of perennial crops

Timely submission of UC and SOE. Web based data test data base be made available for Online submission of real-time data by DUS centres Multiple database be made available to select reference varieties. Entry code to be included in addition to trial code. Provision to include in the database to shift candidate varieties into reference varieties collection once the candidate that it is registered.

Chapter 4: Development of DUS Test Guidelines and Establishment of Germplasm Banks

4.1. Projects on Development of DUS Test Guidelines

The Authority has identified various institutes and awarded a two/three years projects for development of DUS test guidelines to enlarge the registration basket of the Authority. During the projects on crops such as Greater Yam & Yam Bean, Teak, Seabuckthorn, Crossandra, Jackfruit, Ajwain, Dill, Nigella, Celery, Anise, Lemon, Pummelo, Coffee, Ailanthus, Cocoa, Lilium, Gerbera, Kokum, FCV and Bidi Tobacco were at various stages.

4.1.1 A project for development of DUS test guidelines for **Crossandra (*Crossandra infundibuliformis)*** flowers was awarded to ICAR-IIHR, Bangalore, Dr. C. R. Aswath act as PI of the project. The final DUS guidelines has finalized and upload on our Authority website to open for registration of varieties.

4.1.2 The project for development of DUS test guidelines for two crop species **Yam bean (*Pachyrhizus erosus*) and Greater Yam (*Disoscorea alata*)** was awarded to ICAR-CTCRI, Trivandrum is lead centre, Dr. M. N. Sheela act as PI of the project and ICAR- CTCRI, Bhubneswar act as Collaborating centre, Dr. Kalidas Pati as PI of the centre. The final DUS guidelines have finalized and upload on our Authority website to open for registration of varieties.

4.1.3 The project for development of DUS test guidelines for **Jackfruit (*Artocarpus heterophyllus Lamk*.)** crop species was awarded to University Agriculture Sciences, GKVK, Bangalore, Dr. Shyamlamma as PI of the Project as lead centre and ICAR- Research Complex for NEH Region, Umiam, Meghalaya as collaborating centre, Dr. Ruth Assumi act as PI of the centre**.** The final DUS guidelines have finalized and upload on our Authority website to open for registration of varieties.

4.1.4 The project for development of DUS test guidelines for **Seabuckthorn (*Hippophae rhamnoides Linn.)*** was awarded to Dr. Y.S. Parmar University of Horticulture & Forestry, Nauni, Solan, Dr. H. P. Sankhyan as PI of the Project as lead centre and DIHAR, Leh, Ladakh as collaborating centre, Dr. T. Stobdan act as PI of the centre. The final DUS guidelines have finalized and upload on our Authority website to open for registration of varieties

4.1.5 A project for development of DUS test guidelines for various major Spices viz. fennel and cumin and minor Seed Spices Ajwain, Dilli, Celery, Nigella and Anise was awarded to National Research Centre on Seed Spices, Tabiji, Ajmer, Dr. R. S. Meena as PI of the Project. The draft DUS guidelines on above said crops has developed by the centre and placed before the Task force Committee for finalisation.

4.1.6 The project for development of DUS test guidelines for two crop species **Teak (*Tectona grandis*)" and Melia (*Melia dubia*)** was awarded to IFGTB, Coimbatore, Dr. Siva Kumar as PI of the Project**.** The DUS test guidelines for **Melia (*Melia dubia*)** has finalized and convert into DUS centre, Dr. Rekha Warrier act as PI of DUS centre. The draft DUS test guidelines on **Teak** are under process to finalise the guideline.

4.1.7 A two years project was awarded to Central Coffee Research Institute, Coffee Research Station, Chikmagalur, Karnataka, Dr. N. Surya Prakash Rao as PI of the project for development of DUS test guidelines on **Coffee (*Coffea arabica* and *Coffea canephora*).** The centre has developed draft DUS guidelines and under process for finalization.

4.1.8 A two years project was awarded to Dr. YS Parmar University of Horticulture and Forestry Nauni Solan, Himachal Pradesh, Dr. S. R. Dhiman as PI of the project for Validation of DUS Testing guidelines for **Lilium** (*Lilium sp., Oriental, Asiatic, LA Hybrids and OT Hybrids*). The draft DUS guidelines was developed and submitted by the centre to the Authority for finalisation. A Task force was constituted to finalize the guidelines.

4.1.9 A two years project was awarded to Division of Floriculture and Medicinal Crops, ICAR-IIHR, Bangalore, Dr. Chenna Reddy Aswath as PI of the project for Validation of DUS Testing guidelines for **Gerbera** (*Gerbera jamesonii Bolus ex. Hooker F.*). The draft DUS guidelines was developed and submitted by the centre to the Authority for finalization. A Task force was constituted to finalize the guidelines.

4.1.10 A three years project was awarded to ICAR-CPCRI, Regional Station, Vittal, Bantwal TK., Karnataka, Dr. Nagaraja N. R. act as PI of the project for development of DUS test guidelines for **Cocoa**. The draft DUS guidelines was developed and submitted by the centre to the Authority for finalization. A Task force was constituted to finalize the guidelines.

4.1.11 A three years project was awarded to Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli, Ratanagiri, Dr. V.V. Dalvi act as PI of the project at lead centre and ICAR-CCARI, Old Goa, Dr (Mrs.) S. Priya Devi act as PI of Collaborating centre, for development of DUS test guidelines for **Kokum.** The draft DUS guidelines was developed and submitted by the centre to the Authority for finalization. A Task force was constituted to finalize the guidelines.

4.1.12 A three years project was awarded to Indian Agricultural Research Institute, New Delhi, Dr. A K Dubey act as PI of the project at lead centre and ICAR Research Complex for NEH Region, Umiam, Meghalaya, Dr. N. A. Deshmukh act as PI of Collaborating centre, for development of DUS test guidelines for **Lemon** and **Pummelo**. The draft DUS guidelines was developed and submitted by the centre to the Authority for finalization. A Task force was constituted to finalize the guidelines.

4.1.13 A Two years project was awarded to, ICAR-Central Tobacco Research Institute, Rajahmundry, Dr. K. Sarala as PI of the project for development of distinctiveness, uniformity and stability (DUS) guidelines for **FCV (Flue Cured Virginia)** and **Bidi Tobacco.** The draft DUS guidelines was developed and submitted by the centre to the Authority for finalization. A Task force was constituted to finalize the guidelines.

4.1.14 A Two years project was awarded to, Institute of Forest Genetics & Tree Breeding (ICFRE), Coimbatore, **D. Rajasugunasekar** as PI of the project for development of descriptors and DUS testing guidelines for **Ailanthus *excels Roxb.* And Establishment of Gene Bank.** The draft DUS guidelines was developed and submitted by the centre to the Authority for finalization. A Task force was constituted to finalize the guidelines.

4.2. ON-GOING PROJECTS

4.2.1 Project on "Validation of DUS descriptors for Dahlia (Dahlia Sp.)"

RHRTS, Sirmour Himachal Pradesh act as **lead centre** comes under YS Parmar University of Horticulture and Forestry Nauni Solan, Himachal Pradesh is working on "Validation of DUS descriptors for **Dahlia (*Dahlia Sp.*)**". The project was started during 2018-19, a total 50 reference/example varieties were maintained to evaluation for characters growth and flowering to observe for the development of DUS guidelines on Dahlia. 50 Out of which 45 numbers as decorative group, 03 numbers as cactus type and 02 single type. All India Research Project on Floriculture, Bidhan Chandra Krishi Viswavidyalaya (BCKV), Krishi viswavidyalaya, Mohanpur, Nadia, West Bengal act as **collaborating centre** for development of DUS guidelines on **Dahlia** and this centre also work on **Hibiscus** for development of DUS guidelines.

4.2.2 Project on "Development of DUS guidelines on Lemon Grass (*Cymbopogon flexuosus L.*)"

CSIR- NEIST, Jorhat, Assam is working on "Development of DUS guidelines on Lemon Grass (*Cymbopogon flexuosus L.*)". The project work was started during 2018-19 to developed the DUS guidelines on Lemon grass. A total 370 germplasms of Lemongrass were collected and maintained at the field trial centre. During the year 2019-20 a total of 09 representative characters were evaluated and rest of the characters will be recorded in upcoming year (2020-21). The 09 representative characters evaluated were stem colour, number of nodes on main stem, colour of node, colour of midrib, time of emergence of spike, inflorescence colour & type, essential oil yield (FWB) and essential oil quality.

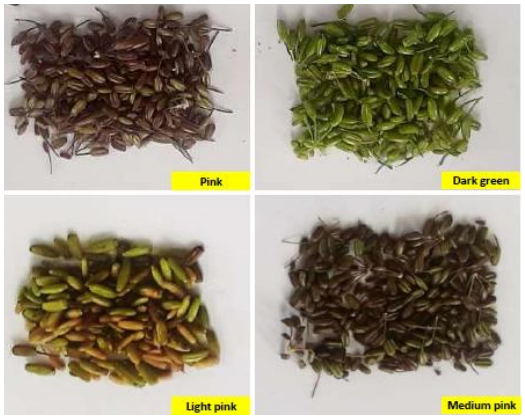
4.2.3 Project on "Validation and development of DUS testing guidelines for Olive"

ICAR- CITH, Srinagar is working on "Validation and development of DUS testing guidelines for Olive". During 2019-20, a total of 18 Olive varieties maintained at centre as example varieties were evaluated for different fruit traits at Ramban and some varieties at Rajasthan Olive Cultivation limited to observe on most of the characters for development of DUS guidelines of Olive crop under Indian conditions.

4.2.4 Project on "Development of descriptor for promoting DUS guidelines for Saffron (*Crocus sativus L.*) indigenous to temperate regions of Jammu & Kashmir"

Saffron Research Station, SKUAS&T, Pampore, Srinagar is working on "Development of descriptor for promoting DUS guidelines for Saffron (*Crocus sativus L.*) indigenous to temperate regions of Jammu & Kashmir. The project started during 2018-19, during the period 2019-20, a total of 411 germplasm lines were collected from these hot spots with a sample size of 50 corns of uniform weight. During 2018-19, project trial was laid out with 650 clones, however, clones with repetitive data expression were culled out and in 2019-20 only 268 clones were considered for generating data at Saffron Research Station, SKUAS&T, Srinagar for development of DUS guidelines.

4.2.5 Project on "Development of DUS testing guidelines of Kalazeera (*Bunium persicum Boiss. Fedts*)"



Saffron Research Station, SKUAS&T, Pampore, Srinagar is working on "Development of DUS testing guidelines of **Kalazeera (*Bunium persicum Boiss. Fedts*)**. The project started during 2018-19, during the period PI and Co-PI surveyed for identification of hot spots of **Kalazeera**. During the survey, 2 hot spots were identified in district Pulwama, 3 in Budgam, 2 in Srinagar, 1 in Bandipora, 3 in Doda and 3 in Ladakh. A total of 51 germplasm lines were collected from these hot spots with a sample size of 20 tubers of uniform weight. The collected tuber samples were analyzed for various parameters recorded as per the technical programme for development of DUS guidelines.

4.2.6 Project on "DUS characterization of Anthurium (*Anthurium andraenum*)"

Department of floriculture and Landscape Architecture, College of Horticulture, Mudigrere , Chikamgalur, Karnataka is working on development of DUS guidelines of **Anthurium (*Anthurium andraenum*).** The project started during 2019-20 for three years, 15 characters of 10 varieties of Anthurium have been studied under polyhouse conditions. The genetic resources collected will be utilised by different

institutes at both National and State levels for utilisation in the crop improvement programme. The Morphological study on genotypes of anthurium becomes a necessity because morphological characters are the strongest tools used in taxonomic classification of plants. The charaterisation of anthurium cultivars were morphologically characterised using the descriptors during development of DUS guidelines on Anthurium.

4.2. 7 Development of DUS testing guidelines in radish and carrot, IARI, New Delhi

No. of varieties & hybrids for DUS testing: Radish = 38; Carrot = 33
No. of reference & example varieties maintained at the centre
Radish = 15; Carrot = 14

Summary of the DUS result: A total of 38 varieties/ F_1 hybrids (19 from private companies and 19 from public sector institutions) of radish were characterized for 29 DUS characteristics. In carrot, 33 varieties/ F_1 hybrids (18 from private companies and 15 from public sector institutions) were characterized for 25 DUS characteristics. Maintenance breeding of public sector varieties of radish and carrot was done. Monitoring was done on 6-12-2019.

4.2.8 Development of DUS testing guidelines of cluster bean, horse bean and moth bean, UAS, Dharwad

The development of DUS guidelines for all the three crops has been completed. The task force committee has been constituted and the guidelines will be finalized after incorporating suggestions made by the committee at the earliest.

4.2.9 . Development of DUS testing guidelines, characterization and documentation of farmer's varieties in dolichos bean (Lablab purpureus L..

The Project was started on 28-08-2019 during Rabi season by recruiting 1 JRF and 2 field assistants. A total of 36 released varieties of dolichos (*Lablab purpureus* L.) and 185 germplasm of dolichos (*Lablab purpureus* L.) were collected from different institutes (viz., TNAU Coimbatore, MPKV Rahuri, Dr. BSKKV, IARI, IIVR, JNKVV, KAU, ICAR-RCER, Dr.YSR Horticulture University, JAU, UAS-GKVK and NBPGR). The collections were evaluated under augmented design during Rabi 2019-20 for different traits such as vegetative, flower, pod and seed characters. During the period under report, some of the germplasm were short listed as example varieties from

the 185 germplasm for the characters in which variability was observed in varieties of Dolichos bean. The shortlisted example varieties and traits will be further confirmed in replicated trial during Rabi 2020-21.

4.2. 10 Development of DUS guidelines for CUCURBITS (chow-chow, ash gourd, snake gourd and ivy gourd), Department of Horticulture, SASRD, Medziphema Campus, Nagaland University, Nagaland

a) Ash gourd

1. Collection of reference varieties/landraces of ash gourd has been done from the different SAUs and ICAR Institutes and farmers fields.
2. List of morphological parameters of ash gourd have been finalized for taking observations for DUS testing based on different descriptor i.e. UPOV, NBPGR, Biodiversity international and other cucurbitaceous DUS guidelines.
3. Total of forty-three (43) morphological parameters data has been recorded in the first year crop.
4. Second year crop for confirmation of first year results is in the field and data recording is in progress.
5. Details of collected varieties/germplasms of ash gourd (34 nos.)
6. Number of morphological parameters recorded in Ash gourd: 43

b) Snake gourd

1. Collection of reference varieties/landraces of snake gourd has been done from the different SAUs and ICAR Institutes.
2. List of morphological parameters of snake gourd (38) have been finalized for taking observations for DUS testing based on different descriptor i.e. UPOV, NBPGR, Biodiversity International and other cucurbitaceous DUS guidelines.
3. Total of thirty-eight (38) morphological parameters data has been recorded in the first year crop.
4. Second year crop for confirmation of first year results is in the field and data recording is in progress.

c) Ivy gourd

1. Collection of reference varieties of ivy gourd (6) has been done from IGKVRaipur, ICAR, CHES-Bhubaneswar, KAU-Kerala in the month of February, 2018 (Table-5). Five (5) diverse landraces have been collected from Assam, Eastern U.P. and Bihar in the month of Oct-Nov, 2018.
2. Mother block of total eleven varieties/germplasms is being maintained in the field. 3. List of morphological parameters of ivy gourd (37) have been finalized for taking observations for DUS testing based on different descriptor i.e. UPOV, NBPGR, Biodiversity International and Other Cucurbitaceous DUS Guidelines.
4. Data recording of thirty-seven morphological parameters are in progress.

d) Chow chow
1. Collection of twenty-one germplasm/landraces of chow-chow has been done from different states of NER in 2018
2. Mother block is being maintained in the field.
3. List of morphological parameters of chow-chow (36) have been finalized for taking observations for DUS testing based on different descriptor i.e. UPOV, NBPGR, Biodiversity international and other cucurbitaceous DUS guidelines.
4. Data recording of thirty-six (36) morphological parameters are in progress.

Chapter 5: Activities Related to Farmers

5.1 TRAINING-CUM-AWARENESS PROGRAMMES

Training cum awareness programmes & others activities organized during 2019-20			
S.NO	**ACTIVITIES**	**2019-20**	**Total**
1	Awareness Programme	3	3
2	Workshop	5	5
3	International Workshop	3	3
4	Exhibition	4	4
5	Interface meeting	1	1
6	Seminar	1	1
		G. Total	**17**

Program related to provisions of the PPV&FR Act, 2001 involving different stakeholders viz. ICAR Institutes, SAUs, KVKs, NGOs, Govt. departments, farmers, researchers, plant breeders, intellectuals, scientists and students etc. organised as per details mentioned hereunder:

SL	Date	Programme	Institutions	Type of Meeting
1.	1st August, 2019	Dr. Ravi Prakash, Registrar attended Seminar on "Genetically improved planting stock as an important and valuable resource for increasing productivity of plantation forests" and also delivered a lecture about the provisions of the Protection of Plant Varieties and Farmers Right Act 2001 at FRI, Dehradun.	University	Seminar
2.	1st – 3rd August, 2019	Sh. R.S. Sengar, Dy. Registrar along with other staff of PPV&FRA participated in International Agricultural & Horti Expo-2019 from 1-3rd August, 2019 at Pragati Maidan, New Delhi. Shri Kailash Choudhary, Hon'ble Union Minister of State for Agriculture and Farmers Welfare, Govt. of India has visited PPV&FR Authority stall and interacted with Authority officials about the registration process.	PPV&FRA	Exhibition
3.	26th August, 2019	Chairperson, Registrar General, Registrars and Legal Advisor of PPV&FRA attended "Interface meeting with the Seed Sector" at Professor Jayashankar, Telangana State Agricultural University, Rajendranagar, Hyderabad-500030, Telangana. Dr. Ravi Prakash, Registrar delivered a lecture on DUS testing as per new procedure and Dr. T.K. Nagarathna, Registrar delivered a lecture on "New Protocol Followed for	SAU	Interface Meeting

		Registration of Crop Varieties at PPV&FRA".		
4.	2nd September, 2019	Sh. R. S. Sengar, Deputy Registrar, PPV&FR Authority has participated in World Coconut Day held on 02nd September, 2019 at Bhubaneswar, Odisha organized by Coconut Development Board.	Ministry of Agriculture	Exhibition
5.	10th-11th October, 2019	Dr. R.C. Agrawal, Registrar General and Dr. Ravi Prakash, Registrar attended Regional Workshop on "Enriching Custodian Farmers with PPV&FRA Act to Safeguard Valued Plant Genetic Resources Towards Green Prosperity" at ICAR-CTCRI, Thiruvananthapuram and also delivered a lecture on PPV&FR Act, 2001.	ICAR-CTCRI, Thiruvananthapuram	Regional Workshop
6.	22nd October, 2019	Plant Genome Saviour Awards Ceremony at Dr B P Pal Auditorium, ICAR Indian Agricultural Research Institute, New Delhi	PPV&FR Authority	Exhibition
7.	30th - 31stOctober, 2019	Dr. Ravi Prakash, Registrar attended Workshop on "Strawberry production in plain area" at ICAR- CISH and CSIR-CIMAP, Lucknow.	ICAR- CISH and CSIR-CIMAP	Workshop
8.	30th November, 2019	Dr. Ravi Prakash, Registrar attended Regional Workshop on "PPV&FRA Act, 2001"and delivered a lecture on PPV&FR Act, 2001 and also visit DUS centre of Groundnut variety at ICAR-DGR, Junagadh and reviewed the activities of the DUS centre.	ICAR-DGR, Junagadh	Regional Workshop
9.	17th December, 2019	Chairperson along with other staff of PPV&FRA attended the Indo-German workshop on "Post Plant Variety Control of Registered Varieties and Implementation of Plant Breeders' Rights" under Indo-German Bilateral Cooperation on Seed Sector Development at NASC Complex, New Delhi.	Indo-German	International Workshop
10.	10th January, 2020	Regional Workshop in association with National Citrus Meet-2020 on 10.01.2020 at BNCA, Biswanath Chariali, Assam	BNCA, Assam	Regional Workshop
11.	3rd February, 2020	Chairperson attended the training programme on "Seed Production and Quality Assurance" and also Delivered a lecture on "Plant Variety Protection: Indian Prospective" at Division of Seed Science and Technology, IARI, New Delhi	ICAR-IARI	Training Programme
12.	13-14thFebruary,	Chairperson along with other staff of PPV&FRA attended the International	PPV&FRA	International

	2020	workshop on DUS testing of Rapeseed and Mustard under the Indo-German collaboration in seed sector at Directorate of Rapeseed-Mustard Research, Bharatpur, Rajasthan		Workshop
13.	17th February, 2020	Chairperson along with other staff of PPV&FRA attended Indian Seed Congress-2020 at JW Marriott, Aerocity, New Delhi. Chairperson chaired the technical session-4"Seed quality regulation and IPR regime in India" and also delivered a lecture on "Benefit share mechanisms aligning with breeder and farmer rights under PPV&FR Act-Challenges & prospects".	NSAI	Indian Seed Congress
14.	23rd - 25thFebruary,2020	Dr. Ravi Prakash, Registrar attended "Awareness on Protection of Plant Varieties and Farmers' Rights, and chaired the session and also delivered the lecture on "PPV&FR Act,2001" at ICAR-NRC on Banana, Tiruchirapalli, Tamil Nadu	ICAR-NRC on Banana	Awareness/ Workshop
15.	19-20th February, 2020	Chairperson along with other staff of PPV&FRA attended the International workshop on DUS testing of Wheat and Barley under the Indo-German collaboration in seed sector at Indian Institute of Wheat and Barley Research Institute, Karnal, Haryana	PPV&FRA	International Workshop
16.	26thFebruary,2020	Dr. Ravi Prakash, Registrar attended Model Training Course on "Advances in Floriculture and Landscaping" at ICAR-IARI, New Delhi and delivered a lecture on "PPV&FR Act,2001 and protection of varieties of flower species" during Technical session.	ICAR-IARI	Training Programme

5.2. REGIONAL WORKSHOP:

During the period under report three Regional workshop were conducted as detailed given below:

5.2.1 Regional Workshop on "Enriching Custodian Farmers with PPV&FR Act to Safeguard Valued Plant Genetic Resources Towards Green Prosperity" at ICAR-CTCRI, Thiruvananthapurasm on 10 -11 October, 2019

A two day regional workshop for farmers of Kerala and Karnataka on "Enriching custodian farmers to safeguard valued genetic resources towards green prosperity" began at the ICAR-Central Tuber Crops Research Institute (ICAR-CTCRI), Sreekaryam, on 10-11 October, 2019.

Dr. R.C. Agrawal, Registrar General, Protection of Plant Varieties and Farmers Rights Authority (PPV&FRA), inaugurated the Workshop. He underlined the need for a balance between breeders' rights and farmers' rights. Dr. Ravi Prakash, Registrar, PPV&FRA, stressed the need to educate farmers on their rights and the importance of registration of crop varieties. ICAR-CTCRI director Archana Mukherjee presided.

5.2.2 Regional Workshop on ""PPV&FRA Act, 2001"" at ICAR-DGR, Junagadh on 30 November, 2019. Dr. Ravi Prakash, Registrar attended Regional Workshop on "PPV&FRA Act, 2001"and delivered a lecture on PPV&FR Act, 2001 and also visit DUS centre of Groundnut variety at ICAR-DGR, Junagadh and reviewed the activities of the DUS centre.

5.2.3 Regional Workshop in association with National Citrus Meet-2020 on 10.01.2020 at BNCA, Biswanath Chariali, Assam

The PPV&FR Authority has organized a Regional Workshop in Association with National Citrus Meet-2020 at BNCA, Biswanath Chariali, Assam. Dr. K. V. Prabhu, Chairperson of PPV&FR Authority has inaugurated the Regional Workshop and the following officials participated in the Regional Workshop.

1. Dr. A. K. Singh, DDG (Horticulture), ICAR, New Delhi
2. Dr. Ashok Bhattacharya, Vice-Chancellor, AAU, Jorhat, Assam
3. Dr. M. S. Ladaniya, Director, ICAR-Central Citrus Research Institute, Nagpur
4. Dr. Bidyut C. Deka, Director, ICAR- ATARI, Shilong

5. Dr. S.K. Malik, Pr.Scientist, ICAR, New Delhi
6. Dr. I.P. Singh, Pr. Scientist, ICAR-CCRI, Nagpur
7. Sh. R.S. Sengar, Deputy Registrar, PPV&FRA, New Delhi
8. Sh. Phool Singh Malviya, Deputy Registrar, PPV&FRA, B.O. Guwahati.

Dr. K. V. Prabhu, Chairperson, PPV&FRA inaugurating the Regional Workshop and National Citrus Meet-2020 in the presence of Dr. A. K. Singh, DDG (Horticulture), ICAR, New Delhi, Dr Ashok Bhattacharya, Vice-Chancellor, Assam Agricultural University, Dr Ladhania, Director, CCRI, Nagpur and other officials of ICAR

Around 200 participants (officials and Progressive farmers from Seven North Eastern Hills Region States) from all North Eastern State participated in the event, where an exhibition was also organized for farmers to display the crop varieties conserved and preserved by them. The PPV&FR Authority also participated in the exhibition and put on display 25 varieties of rice and 50 species of Bis Medicinal and Aromatic plants. The collection and conservation made by the PPV&FRA Awardee farmers was also displayed.

5.3 FARMER TRAINING-CUM-AWARENESS PROGRAMME:

The Authority has conducted 3 training-cum-awareness programme for farmers under PPV&FR Act, 2001 in different location(s) of the country. In some of the programme, officers from Authority participated and delivered talk on Farmers' Rights and PPV&FR Act, 2001.

5.4 PROJECT RELATED TO FARMERS' VARIETIES: CHARACTERIZATION AND DOCUMENTATION:

During the reporting period, different projects for farmer varieties for characterization, documentation and conservation of crops species were being managed at different institutions. There are two projects for establishment of seed bank for conserving farmers varieties located in Karnataka. The progress report during the period under report found satisfactory in most of the projects and progress report of the project were received. The following projects were under progress during the reporting period.

List of projects at Farmers' Cell

Sl. No.	Project Title	Duration	Budget provision for this project (in lakh)	Year sanctioned	Budget sanction	Report
1.	Establishment of Community seed bank and conservation of farmer varieties of rabi sorghum, wheat and redgram in Northern region of Karnataka,	2 years	10	2017-18	Total amount sanction Rs. 5 Lakh. breakup 1. Manpower-1.50 lakh, 2. Field Exp-1 lakh, 3. Contengy-2 lakh and 4. travel-05 thousand for the period of 2017-18.	Progress report of the project received.
2.	Mainstreaming farmer varieties through participatory seed production & establishment of community seed bank.	2 years	10	2017-18	Total amount sanction Rs. 5 lakh. breakup 1. Manpower-2.50 lakh, 2. Field Exp-1 lakh, 3. Contengy-1 lakh and 4. Travel-05 thousand for the period of 2017-18.	Progress report of the project received.
3.	Identification, collection, documentation and Registration of Maize, Millets, Pulses and Vegetables of Farmer varieties of Vindhya region of Eastern Uttar Pradesh.	2 years	18	2017-18	Total amount sanction Rs. 9 lakh. Breakup 1. Manpower-4 lakh, 2. Field Expenses-2 lakh, 3. Contingency-2.50 lakh, 4. Travelling-05 thousand for the period of 2017-18.	Progress report of the project received and project completed.
4.	Collection, documentation and registration of farmer varieties cereals, Pulses and Vegetables and their protection under PPV&FR Act, 2001.	3 years	9	2016-17	Total amount sanction Rs. 3.30 lakh. breakup 1. Manpower-2.05 lakh, 2. Contingency-0.95 lakh, 3. Travelling-0.30 thousand for the period of 2016-17.	Progress report of the project received.
5.	Survey, Collection, documentation and Registration of farmer varieties in different crops in Karnataka.	3 years	27	2017-18	Total amount sanction Rs. 9 lakh. Breakup 1. Manpower-4 lakh, 2. Field Expenses-2 lakh, 3. Contingency-2.50 lakh, 4. Travelling-05 thousand for the period of 2017-18.	Progress report of the project received.

5.5 PLANT GENOME SAVIOUR AWARDS/REWARDS/RECOGNITION.

Plant Genome Saviour Awards Ceremony 22nd October, 2019 at Dr B P Pal Auditorium, ICAR Indian Agricultural Research Institute, New Delhi.

Sh Narendra Singh Tomar, Hon'ble Minister for Agriculture & Farmers Welfare, Government of India conferred Plant Genome Saviour Community Awards to five communities; Plant Genome Saviour Farmer Rewards to three farmers and Plant Genome Saviour Farmer Recognition to six farmers from different states of India. Shri Parshoam Rupala and Shri Kailash Choudhary, Minister(s) of State for Agriculture & Farmers Welfare, Government of India; Shri Sanjay Agarwal, Secretary, DAC&FW, Ministry of Agriculture & Farmers Welfare, Government of India; Dr. Trilochan Mohapatra, Secretary, DARE, Ministry of Agriculture & Farmers Welfare, Government of India & Director General, ICAR; Dr. K. V. Prabhu, Chairperson, PPV&FR Authority, Government of India and Dr. R. C. Agrawal, Registrar General, PPV&FR Authority, Government of India, also graced the occasion. An exhibition showcased the agro biodiversity being conserved by the Awardees. In his address to the audience of Farmers, Scientist, Policy makers, Govt. officials, Press and Media, Hon'ble Agriculture Minister congratulated the awardees and urged that the traditional communities/farmers who are conserving biodiversity, medicinal plants, should be encouraged and suitably awarded. The function was held on Oct 22, 2019 at Dr B P Pal Auditorium, ICAR Indian Agricultural Research Institute, New Delhi.

5.5.1 <u>Community Award</u>: this award contents Rs. 10.00 lakh per community the details of the community awardees are as under:

1. Gram Panchayat, Salooni, Bhandal, Chamba-176320 (HP)
2. Adarsh Mahila Atma Samooh, Patan, Achanakpur, Tarra, Durg,Chhattisgarh-491111
3. Amarkanan Rural Socio-Environmental Welfare Society (ARSW Society), Gangajalghati, Ranbahal, Amarkanan, Bankura, West Bengal-722133
4. ThayannanKudy Tribal Settlement, Chinnar, Marayoor, Idukki-685620, Kerala
5. Farming Community of Village Gomal, Tehsil Karnah, Tangdhar, Gomal, Kupwara-193225 J&K

The Hon'ble Minister for Agriculture and Farmers Welfare is distributing the prize to group of Community

5.5.2 <u>Farmers Reward:</u> This award contents Rs. 1.50 lakh per individual farmers the details of the farmers awardees are as under:

1. **Shri Mahan Chandra Borah**, Central Block, Meleng Kath Gaon, Borkhelia, Jorhat, Assam -785101
2. **Shri Leela Ram Sahu**, Kurud,Ghuma, Darra, Dhamtari, Chhattisgarh-493885
3. **Shri P. V. Jose**, Pullan House, Chalakkudy, Perambra, Potta, Thrissur, Kerala – 680722

The Hon'ble Minister for Agriculture and Farmers Welfare is distributing the prize to individual farmers

5.5.3 <u>Farmers Recognition</u>: This award contents Rs. 1.00 lakh per individual farmers the details of the farmers awardees are as under:

1. **Shri Srinivasamurthy S. R**., Siddanahundi, Vysarajapura post, Sosale Hobli, T. Narasipura, Mysuru Distt., Karnataka-571120.
2. **Shri Prabin Saikia**, Narayanpur, Madhopur, Lakhimpur, Assam- 784104.
3. **Shri K. R. Jayan**, Kaippully Madam, Avittathurm Kallettumkara, Thrissur, Kerala-680683.
4. **Shri Sailen Chandi**, Santipur, Sri Ram Ganguly Lane, Nadia, West Bengal -741204.
5. **Shri Raveendran R.**, RejiBhawan, KRA-172, Panachavila Lane, Ulloor, Thiruvananthapuram, Kerala -695011
6. **Shri Prasad Rama Hegde**, Kankodlu village, Hemmadi, yellapur Taluk, Uttar Kannada, Karnataka-581402

Chapter 6: Plant Variety Journal of India, National Register of Plant Varieties and Publications of the Authority

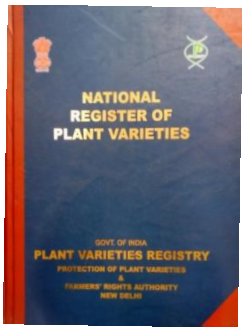
6.1 PLANT VARIETY JOURNAL OF INDIA

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 publication and made available to public each month on its official website. This journal has the equivalent status of a Gazette under the PPVFR Regulations, 2006. The contents of Journal includes official and public notices, Gazette notifications, passport data of plant varieties along with photographs, published DUS test guidelines of different crop species, details of certificate of registration and other related official matters and notices.

Number of Varieties advertised in Plant Variety Journal inviting opposition during the year 2019-20

S. No.	Category of variety	No. of variety	crop	Application received From-To
1.	Farmer	98	Grape, Rice, Brinjal, Lentil, Field pea, Pearl Millet, Sorghum, Cauliflower, Tomato, Groundnut, Indian Mustard, Maize	18.07.2011 – 11.04.2017
2.	New	140	Maize, Grapes, Cauliflower, Bread Wheat, Brinjal, Okra, Sorghum, Pigeon pea, Tomato and Tetraploid Cotton, Walnut, Turmeric, Jute, Pearl millet, Cotton, Sugarcane, Groundnut, Sunflower, Lentil, Potato	05.12.2009 –15.04.2016
3.	Extant	187	Rice, Soybean, Safflower, Sugarcane, Cashew, Brinjal, Cauliflower, Tomato, Okra, Cotton, Bread Wheat, Green Gram, Chick pea, Potato, Watermelon, Finger Millet, Grain Amaranthus, Pigeon pea, Faba Bean, Indian Mustard, Groundnut, Cotton, Rice, Linseed, Pearl Millet, Black Gram, Sorghum	12.05.2011 – 15.02.2017

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.

Number of Varieties entered in the National Register of Plant Varieties during the year 2019-20

S. No.	Category of variety	No. of variety	crop	From-To
1.	Farmer	121	Rice, Pigeon pea, Sorghum, Field pea, apricot, Brinjal, Custard Apple, Black Gram, Chickpea, Diploid Cotton, Grape, Lentil, Okra	28.09.2011-31.10.2016
2.	New	83	Rice, Maize, Wheat, Pigeon pea, Sorghum, Tetraploid Cotton, Jute, Cabbage, Brinjal, Cauliflower, Grape, Okra, Pearl Millet, Tomato, Turmeric, Walnut	22.05.2017-22.11.2018
3.	Extant	215	Rice, Maize, Sunflower, Sugarcane, Finger Millet, Wheat, Pigeon pea, Sorghum, Barley, Bread Wheat, Durum Wheat, Onion, Field pea, Chilli, Bottle Gourd, Tetraploid Cotton, Jute, Soybean, Cashew, Cabbage, Brinjal, Cauliflower, Linseed, Chickpea, Green Gram, Groundnut, Indian Mustard, Little Millet, Paprika, Potato, Safflower, Tomato, Rose	21.05.2007-26.07.2019
4.	EDV	13	Tetraploid Cotton	02.04.2008-12.08.2013

6.3 PUBLICATIONS OF THE AUTHORITY

Authority is regularly published in bilingual mode (Hindi as well as in English), the brochures on PPV&FR Act, 2001 and Farmers' Rights, Frequently Asked Questions (FAQ) and distributed in several Farmers fair organized by the different institute of ICAR, State Agricultural Universities and by the Ministry of Agriculture and Farmers Welfare, meetings, training-cum-awareness programmes, workshops etc. Compendium of registered varieties, posters, annual report, annual accounts 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 reporting year, DUS test guidelines of different crops species have been published and sent to Department of Agriculture, Co-operation and Farmers Welfare for notification. 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.

The details of publications as follows: -

1. Frequently Asked Questions (FAQ)- PPVFR Act 2001 (http://www.plantauthority.gov.in/pdf/FinalNewFAQ15.09.2020.pdf).

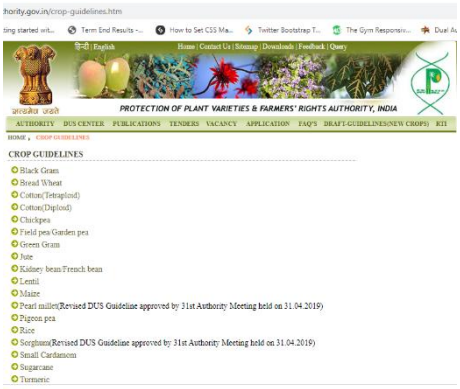
2. DUS Test Guidelines of CROSSANDRA (http://www.plantauthority.gov.in/pdf/DUS%20Guidelines%20Crossandra.pdf).

3. DUS Test Guidelines of Pointed Gourd (http://www.plantauthority.gov.in/pdf/Draft-DUS%20guidelines-Pointed-Gourd.pdf)

4. DUS Test Guidelines of Cowpea (http://www.plantauthority.gov.in/pdf/DraftCowpeaDUSguideline11019.pdf)

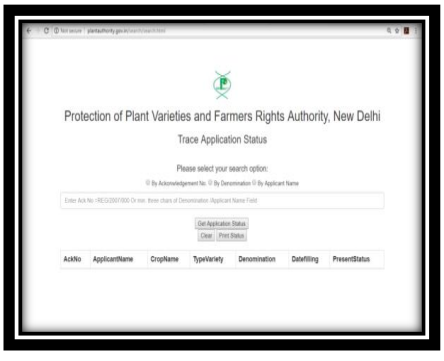
chapter 7: Development of Database, IINDUS, NORV, Website and Information and Communication Technology (ICT)

7.1 WEBSITE:



The official website (www.plantauthority.gov.in) of the Protection of Plant Varieties and Farmers' Rights Authority (PPV&FRA) has been running on secure NIC cloud server. The feature of cloud server is scalability/ elasticity, more performance, improved disaster recovery system. The website is maintained in bilingual (Hindi and English). The web pages are improved as per requirement in Hindi as well as English version of Authority website. The new crop group and their crop names are introduced followed by botanical name along with crop DUS guideline in downloadable format in pdf. Total 161 crop species have been listed. A new FAQ web page is introduced with collapse and expands all features using java script. Other web pages designed and maintained are Plant Genome Saviour Community Award, Reward & Recognition. RTI Page, Plant Variety Registry Related Information Webpage, Annual Report and Annual Account web page, about the employees of the Authority, list of registration opens for 158 crop species under the category of New Variety and 161 crop species under the category Extant/Farmer Variety and important Gazette notifications webpage etc.

7.2 ONLINE TRACKING OF APPLICATION STATUS:



The Authority has developed the online tracking system of applications on the website. It is a dynamic mode search page in which applicant can search its application status either their Acknowledgement number or by denomination or Name of applicant. This page information made more user friendly by adding new field corresponding address and present status, so that Applicant would easily find current status of application on short span of time. It is very feasible to view and print the status report. This web page is compatible with all web browsers.

7.3 INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

The Authority also gives a copy of tenders on Central Public procurement portal (https://eprocure.gov.in/eprocure/app), purchase for Authority is taken from GeM (Government E-Marketplace), update General Pool Residential Accommodation (http://gpra.nic.in/gpra), quarterly reports of RTIs (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/). The Authority is also trying to fulfill the concept of national e-governance and has taken initiatives in this regard.

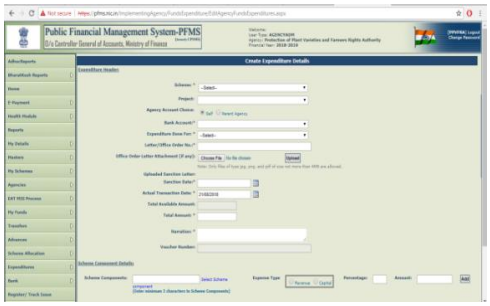
7.4 ONLINE FILING OF APPLICATION FOR REGISTRATION:

The Authority initiated registration of 12 crop species in 2007 which has been extended to 161 crop species at present. Authority is accepting the applications filled by the applicants along with prescribed fee (fee deposited in the form of demand drafts) either by hand or by postal service. Development of online process for submission of applications and payment for registration process of plant varieties will facilitate the applicants to file their applications in online mode to the Authority and also to pay the prescribed fee through 'Payment Gateway' which may be either through Debit card/Credit card/Net Banking. The system is now being implanted by NIC/NICSI and development of software is in progress. The scope of the project includes system Study, Design, Development, Installation and Configuration, Commissioning and Publishing of Web Portal. Post development tasks including Performance tuning, Security Penetration Testing & Auditing by CERT-IN empanelled Auditors, GIGW Compliance Certification, Post go-Live tasks like Backup Activities, Training, comprehensive maintenance support including backend support from application, system & database admin to perform activities like performance tuning, security patch updates, backup, archival/retrieval etc. The detailed scope is as below:

- Study the existing flow and processes of Plant Varieties and Farmers Right Authority (PPV&FR).
- Requirements, understanding and analysis with respect to developing new Web Application for registration of plant varieties.
- Design, Develop, Implement, Install, test, publish and rollout of the developed Web Portal.
- Design Online filing and process workflow of applications to reduce processing time enhance transparency into the process.
- On line management and processing of the applications for the Grant of rights to breeder & farmers.
- Real-time notification and communication between stakeholders like Applicants and Plant Varieties Registry to enhance user experience.
- The scrutiny of applications for grant of PVP to be done more effectively using the on-line tools thereby reducing time.
- The monitoring of the DUS Test Results shall be more effective, accurate and reduce processing time.

- Architect the solution to addresses the future scalability requirements, in terms of application, infrastructure and backend process.
- Integration of payment gateway for application and DUS Test fee collection and other type of fees.
- Dashboard of the entire application to monitor the process, check status and progress in real-time.
- MIS Module for Generating various reports related to the applications.
- Off-site warranty, Maintenance & Technical support from date of issue of compilation certificate and annual maintenance of website/application with onsite technical support as required.
- Ensure that website compliance with the GIGW in full along with mobile compatibility.
- Ensure that the website is security audited by Cert-in empanelled agency.
- Identity and execute training requirements for successful execution of project.
- Creation of detailed user manual for all the stakeholders of the application.
- Creation of manuals and documents for the project executed.
- Report generation in PDF/MS office formats or any other format as desired and/or required by PPV&FR.
- Send email and SMS to respective registered user to enter/update the relevant information.
- Develop training material for Department staff and officials to get acquainted with the service platform.

7.5 PUBLIC FINANCIAL MANAGEMENT SYSTEM (PFMS)



The Authority has implemented PFMS, Digital Payment Systems and e-payment like RTGS/NEFT. The Authority discourages off-line payment system like deposition of cash in the different accounts of Authority. The Authority has been shifted on e-payment systems like PFMS and other digital payments. The list of institutes mapped in PFMS is here under

MAPPED IN PFMS SCHEME 3025

S. No.	Agency Name	Agency Type	Agency Unique Code
1	Acharya N.G. Ranga Agricultural University	Statutory Bodies	ANGRAUCCS
2	Agriculture University, Jodhpur	Statutory Bodies	RJJO00006176
3	Assam Agricultural University	State Government Institutions	AAU
4	ATARI Guwahati	Central Government	ASKR00008584
5	ATARI Patna	Central Government	BRPA00005506
6	Bidhan Chandra Krishi Viswavidyalaya	Statutory Bodies	BCKV

7	Bihar Agricultural University, Sabour Bhagalpur	Statutory Bodies	BAUSAB
8	Birsa Agricultural University, Kanke, Ranchi, Jharkhand	State Government PSUs	BAUNI
9	C.S. Azad University of Agriculture & Technology, Kanpur	Statutory Bodies	CSAUK
10	CCS Haryana Agricultural University, Hisar	Statutory Bodies	CCSHAUHRY
11	Central Agricultural Research Institute, Port Blair	Central Government	CARIPORT
12	Central Institute of Temperate Horticulture Srinagar (ICAR)	Central Government	cith
13	Central Coffee Research Institute - Balehonnur	Registered Societies (Govt., Autonomous Bodies)	KACK00003714
14	Central Institute for Arid Horticulture, Bikaner	Central Government	CIAH
15	Central Institute for Cotton Research Nagpur (Unit of ICAR)	Central Government	ICAR0430
16	Central Institute for Subtropical Horticulture	Central Government	CISH123
17	Central Plantation Crops Research Institute	Central Government	CPCRI
18	Central Potato Research Institute	Central Government	CPRI
19	Central Research Institute for Jute and Allied Fibres	Central Government	CRIJAF
20	Central Rice Research Institute	Central Government	CRRICUTTACK
21	Central Tobacco Research Institute	Central Government	CTRI
22	Central Tuber Crops Research Institute	Central Government	CTCRI
23	CIMAP	Registered Societies (Govt., Autonomous Bodies)	CIMAP
24	Comptroller, Maharana Pratap University of Agriculture and Technology, Udaipur	Registered Societies (Govt., Autonomous Bodies)	MPUAT
25	CSR&TI Mysore	Registered Societies (Govt., Autonomous Bodies)	KAMY00004325
26	Directorate of Cashew Research (Formerly National Research Centre For Cashew)	Central Government	CAJURES
27	Directorate of Groundnut Research (ICAR Unit)	Central Government	DGR-DBT1
28	Directorate of Maize Research	Central Government	MAIZE
29	Directorate of Medicinal and Aromatic Plants	Central Government	NRCMAP

30	Directorate of Oilseeds Research, Rajendranagar, Hyderabad	Central Government	DORH
31	Directorate of Rice Reserach	Central Government	DRR
32	Directorate of Seed Research, Uttar Pradesh	Central Government	AOSDSR
33	Directorate of Soybean Research (Indian Council of Agricultural Research)	Central Government	DSR
34	Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth	Registered Societies (Govt., Autonomous Bodies)	BSKKV
35	Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola	State Government PSUs	DRPDKV
36	Dr.Y.S. Parmar University of Horticulture and Forestry	State Government Institutions	DYSPUHF
37	G.B. Pant University of Agriculture and Technology, Pant Nagar	Statutory Bodies	GBPUATP
38	Icar- Agricultural Technology Application Research Institute	Central Government	RJJO00006157
39	ICAR- Agricultural Technology Application Research Institute, Kanpur	Central Government	UPKS00005951
40	ICAR Directorate of Onion and Garlic Research	Central Government	MHPU00014556
41	ICAR- IIWBR (Indian Council of Agricultural Research- Indian Institute of Wheat and Barley Research)	Central Government	DWRKAR
42	ICAR Research Complex for NEH Region	Central Government	ICARNEH
43	ICAR Research Complex, Goa, (Indian Council of Agricultural Research)	Central Government	ICARRCG
44	ICAR Unit Drmr (Directorate of Rapeseed-Mustard Research)	Central Government	ICARNRCRM
45	ICAR, ATARI-III	Central Government	MLRB00001040
46	ICAR, NRC For Orchids	Central Government	721000
47	ICAR-Agricultural Technology Application Research Institute, Hyderabad	Central Government	TLHY00000637
48	ICAR-Agricultural Technology Application Research Institute, Jabalpur	Central Government	MPJA00004614
49	ICAR-Agricultural Technology Application Research Institute, Pune	Central Government	MHPU00014544
50	ICAR-Agricultural Technology Application Research Institute, Zone-I	Central Government	PBLU00001252
51	ICAR-ATARI Kolkata	Central Government	WBPN00007525
52	ICAR-ATARI, Bangalore	Central Government	KABN00002107
53	ICAR-National Research Centre on Pomegranate (NRCP), Solapur	Central Government	MHSO00011522

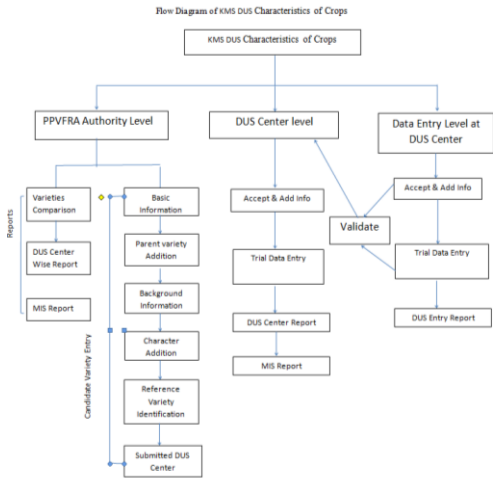
54	Indian Agricultural Statistics Research Institute	Central Government	IASRI
55	Indian Grassland and Fodder Research Institute	Central Government	IGFRI
56	Indian Institute of Horticultural Research	Central Government	IIHR
57	Indian Institute of Millets Research	Central Government	DSRHYD
58	Indian Institute of Pulses Research	Central Government	iiprkanpur
59	Indian Institute of Spices Research (ICAR)	Central Government	IISR
60	Indian Institute of Sugarcane Research, Lucknow	Central Government	IISRLKO
61	Indian Instute of Vegetable Research (ICAR)	Central Government	IIVR
62	Indian Society of Seed Technology	Registered Societies (Govt., Autonomous Bodies)	ISSOT
63	Indira Gandhi Krishi Vishwavidyalaya, Raipur.	Registered Societies (Govt., Autonomous Bodies)	IGKVSAU
64	Institute of Forest Genetics and Tree Breeding (Indian Council of Forestry Research and Education)	Registered Societies (Govt., Autonomous Bodies)	IFGTB
65	Jawaharlal Nehru Krishi Vishwavidyalaya	Statutory Bodies	BTCJNKVV
66	Junagadh Agricultural University	State Government Institutions	JAUNI
67	Kerala Agricultural University	State Government PSUs	KAUNI
68	M S Swaminathan Research Foundation	Trusts	MSSRF
69	Mahatma Phule Agricultural University, Rahuri	State Government Institutions	MHAH00010021
70	Nagaland University	Statutory Bodies	NU
71	Narendra Deva University of Agriculture & Technology, Kumarganj, Faizabad	State Government Institutions	NDUAT
72	National Botanical Research Institute, Lucknow	Registered Societies (Govt., Autonomous Bodies)	NBRI
73	National Bureau of Plant Genetic Resource - NBPGR (ICAR)	Central Government	NBPGR
74	National Research Center for Litchi	Central Government	LITCHI
75	National Research Centre for Banana (ICAR)	Central Government	720200
76	National Research Centre for Citrus, Nagpur (Unit of ICAR)	Central Government	NRCC0400
77	National Research Centre for Grapes (ICAR)	Central Government	NRCG
78	National Research Centre on Seed Spices	Central Government	NRCSS
79	Navsari Agricultural University	State Government PSUs	NAUNI
80	North-East Institute of Science & Technology (CSIR)	Registered Societies (Govt., Autonomous Bodies)	NEIST

81	Prof. Jayashankar Telangana State Agricultural University, Rajendranagar, Hyderabad	State Government Institutions	PJTSAU
82	Punjab Agricultural University	Registered Societies (Govt., Autonomous Bodies)	PAUNI
83	Sam Higginbottom Institute of Agriculture Technology And Sciences	State Government PSUs	SHIATS
84	Sardar Krushinagar Dantiwada Agricultural University	State Government PSUs	SKDAUNI
85	Sher-E-Kashmir University of Agricultural Sciences and Technology of Kashmir	Registered Societies (Govt., Autonomous Bodies)	SKUAST-KASHMIR
86	Sri Karan Narendra Agriculture University, Jobner	State Government Institutions	SKNAU
87	Sugarcane Breeding Institute, Coimbatore, (ICAR)	Central Government	SBIICAR
88	Tamil Nadu Agricultural University	Registered Societies (Govt., Autonomous Bodies)	SSACDST
89	Tea Board DTR&DC,Kurseong	Registered Societies (Govt., Autonomous Bodies)	WBDA00000969
90	Tea Research Association	Registered Societies (Govt., Autonomous Bodies)	TRA
91	University of Agricultural and Horticultural Sciences, Shivamogga	Statutory Bodies	KASH00003536
92	University of Agricultural Sciences, Bangalore	Statutory Bodies	BANGAUNI
93	University of Agricultural Sciences, Dharwad	Registered Societies (Govt., Autonomous Bodies)	UASR
94	University of Horticultural Sciences, Bagalkot	Statutory Bodies	UHSB
95	VPKAS(ICAR), Almora	Central Government	VLAB

7.6 DESIGN AND DEVELOPMENT OF WEB BASED KNOWLEDGE MANAGEMENT SYSTEM FOR DUS CHARACTERISTICS OF CROPS-ICAR, IASRI

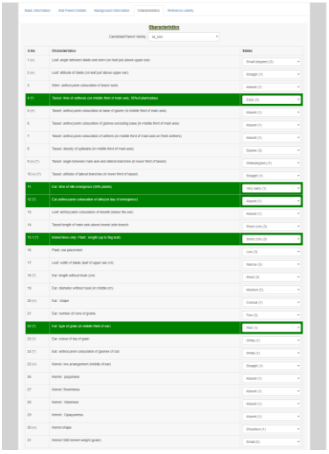
One database related project was assigned to ICAR-Indian Agricultural Statistical Research Institute, New Delhi with the following objective(s)

i. Design and Development of Web Based Knowledge Management System for DUS Characteristics of Crops.
ii. Implementation of System in PPVFRA and DUS Centers.
iii. Maintenance and support of DUS Portal.



This project is an important initiative for digitally storing the variety information on DUS parameters. This will help in knowledge management of variety on DUS features and at the same time facilitate in testing the new variety against the existing database before it is declared new. This system will bring effectiveness and transparency in managing new varieties. Database on DUS features will future facilitate in application of AI/Deep Learning techniques for knowledge discovery. Salient progress is mentioned here;

- System Requirement specification has been submitted by IASRI.
  - Base level Information:
  - IINDUS documentation has been retrieved and migrated to new system having Oracle infrastructure; database into excel format
  - 4 level of users indentified: PPV&FRA, DUS centers RA/SRF/Technical staff at DUS centers & Administration
  - System is being developed using ASP.Net & SQL server as database.
  - System has been tested at ICAR Data center and mode available on https://ppvfradus.icar.gov.in



- Database feature- a) General Master Data, b) Varieties Master Data
- Flow diagram
- Template for data tabulation-maize and Bread wheat template is being used as a test case
- Report of candidate var, experimental data, TQ comparison, CV/Ref var., statistical report
- DUS level Dashboard, crop time line page DUS data entry
- Entry relationship- IINDUS level/PPVFRA/DUS center
- Output report & Query

Chapter 8: Administration, Governance and Other Miscellaneous Actitvities

8.1 ADMINISTRATION:

During the period under report the following changes has taken place in PPV&FR Authority.

1. Sh. J. P. Singh, Financial Advisor superannuated on 30th June, 2019.

2. Dr. R. C. Agrawal, Registrar-General has completed his tenure and relieved from the Authority on 23rd November, 2019 so as to enable him to join his parent department i.e. ICAR.

8.1.1 MANPOWER RECRUITMENT PROCESS:

The Authority has issued advertisement for the post of Registrar, Joint Registrar, Financial Advisor and Legal Advisor. In addition to this the Authority has submitted a detailed proposal to DAC&FW for creation of 136 new posts during the period under report.

At the time of submission of this report, the positions of two Registrars of the three approved posts and that of Registrar General are vacant. Manpower in the form of Registrar and Registrar General is most crucial and have to be in position mandatorily for the implementation of the provisions of the Act including registration of the varieties, judicial proceedings on any appeals or objections or petitions. These statutory roles cannot be executed by any other officer or temporary officers given the charge. The posts of Registrar (two out of three vacant currently) and Joint Registrar are not being filled despite three advertisements during the year under report and one more since then so far as there are no applicants. The only reasons these posts are not being filled or are attractive enough among professional scientists in the country as at the time of printing this Report are, a). The status of these positions are lower than contemporary posts in the Universities and ICAR/CSIR or other such organizations b). The condition of being only on deputation for 3-5 years. Both these are concerns need to be addressed on priority in time to come.

8.2 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. The Legal Cell of the Authority is LIMBS (Legal Information Management & Briefing System) compliant and the progress of the cases are updated regularly and monitored in LIMBS.

During the reporting period, 29 cases were pending against the Authority and six cases (W.P. (C) No. 10203 of 2015, W.P. (C) No. 6470 of 2013, W.P. (C) No. 6208 of 2014, LPA 63 & 64 of 2020 and O. A. No. 190 of 2015,) were disposed of.

The details of forum and number of cases pending for adjudication are given below:

Central Administrative Tribunal	High Courts	Supreme Court
2	22	5

The following Gazette Notifications were published in the year 2019-20:

- Gazette Notification S.O. 2576(E) dated **July 18, 2019** regarding notification on the 1 crop species Melia for the purpose of registration of varieties.
- Gazette Notification S.O. 863(E) dated **November 20, 2019** regarding amendment relating to Renewal fee.

Details of Judgments passed by Hon'ble High Court of Delhi/ Hon'ble CAT

S. No.	Court	Case No.	Parties	Date of Judgment
1.	Hon'ble Delhi High Court	W.P. (C) No. 10203/ 2015	Maharastra Hybird Seeds Co. -Vs- Union of India & Anr	29.08.2019
2.	Hon'ble Central Administrative Tribunal	O.A. No. 190/2015	R. R. Pradhan -Vs- Vigilance Officer & Ors	14.11.2019
3.	Hon'ble Delhi High Court	LPA No. 63 of 2020	Union of India -Vs- Uma Kant Dubey & Ors	03.02.2020
4.	Hon'ble Delhi High Court	LPA No. 64 of 2020	Union of India -Vs- Ajay Kumar Singh & Ors	03.02.2020

Details of Daily Orders /Judgments passed by Learned Chairperson and learned Registrar-General.

S. No.	Parties	Denomination	Subject Matter	Order dated	Passed by
1	Bioseeds Research India Limited -Vs- Nuziveedu Seeds Limited	MALLIKA-NCS 207	Revocation	04.04.2019	Chairperson
2.	Bioseeds Research India Limited	BUNNY-NCS-145	Revocation	04.04.2019	Chairperson

	-Vs- Nuziveedu Seeds Limited				
3.	Daftari Agro Biotech Pvt. Ltd. -Vs- Ankur Seeds Pvt. Ltd.	Jai Bt	Benefit Sharing	01.05.2019	Chairperson
4.	Daftari Agro Biotech Pvt. Ltd. -Vs- Ankur Seeds Pvt. Ltd.	C-96	Revocation	01.05.2019	Chairperson
5.	Bio Seed Research India Pvt. Ltd. -Vs- Nuziveedu Seeds Pvt. Ltd	A. No. 1 of 2012	Provisional Protection	02.05.2019	Registrar-General
6.	Nuziveedu Seeds Pvt. Ltd -Vs- Shriram BioSeeds	A. No. 2 of 2013	Provisional Protection	02.05.2019	Registrar-General
7.	Nuziveedu Seeds Pvt. Ltd -Vs- BioSeeds	A. No. 3 of 2013	Provisional Protection	02.05.2019	Registrar-General
8.	Nuziveedu Seeds Pvt. Ltd -Vs- Maharashtra Hybrid Seeds Co., Ltd	MRC 7385	Opposition	02.05.2019	Registrar-General
9.	MAHYCO -Vs- PRABHAT	A N. 2 of 2008	Provisional Protection	07.05.2019	Registrar-General
10.	Nuziveedu Seeds Pvt. Ltd. -Vs- MAHYCO	A N. 1 of 2009	Provisional Protection	07.05.2019	Registrar-General
11.	Nuziveedu Seeds Pvt. Ltd. -Vs- MAHYCO	A N. 2 of 2009	Provisional Protection	07.05.2019	Registrar-General
12.	Nuziveedu Seeds Pvt. Ltd. -Vs- Shriram BioSeeds	A. No. 1 of 2013	Provisional Protection	13.05.2019	Registrar-General

13.	Nuziveedu Seeds Pvt. Ltd. -Vs- DCM Shriram Ltd.	A. No. 1 of 2015	Provisional Protection	13.05.2019	Registrar-General
14.	M/s Nuziveedu Seeds -Vs- MAHYCO.	MRC 7301 BG-II, MRC 7351 BG-II, MRC 7383 BG-II and MRC 6918 Bt	Opposition	13.05.2019	Registrar-General
15.	Bioseeds Research India Limited -Vs- Nuziveedu Seeds Limited	MALLIKA-NCS 207	Revocation	16.05.2019	Chairperson
16.	Bioseeds Research India Limited -Vs- Nuziveedu Seeds Limited	BUNNY-NCS-145	Revocation	16.05.2019	Chairperson
17.	M/s. International Flower Auction Bangalore Ltd., -Vs- M/s. Moerheim Roses & Trading India Pvt. Ltd.	MEIFLEMINGUE	Revocation	30.05.2019	Chairperson
18.	Nuziveedu Seeds Pvt. Ltd. -Vs- Shriram BioSeeds	A. No. 1 of 2013	Provisional Protection	22.07.2019	Registrar-General
19.	Nuziveedu Seeds Pvt. Ltd -Vs- Shriram BioSeeds	A. No. 2 of 2013	Provisional Protection	22.07.2019	Registrar-General
20.	Nuziveedu Seeds Pvt. Ltd -Vs- BioSeeds	A. No. 3 of 2013	Provisional Protection	22.07.2019	Registrar-General
21.	Bio Seed Research India Pvt. Ltd. -Vs- Nuziveedu Seeds Pvt. Ltd	A. No. 1 of 2012	Provisional Protection	22.07.2019	Registrar-General
22.	Nuziveedu Seeds Pvt. Ltd. -Vs- DCM Shriram Ltd.	A. No. 1 of 2015	Provisional Protection	22.07.2019	Registrar-General
23.	Nuziveedu Seeds Pvt. Ltd -Vs-	MRC 7385	Opposition	22.07.2019	Registrar-General

	Maharashtra Hybrid Seeds Co., Ltd				
24.	Maharashtra Hybrid Seeds co. Ltd. -Vs- Nuziveedu Seeds (P) Ltd & Ors	A. No. 1 of 2008	Provisional Protection	24.07.2019	Registrar-General
25.	Nuziveedu Seeds Pvt. Ltd. -Vs- MAHYCO	A No. 1 of 2009	Provisional Protection	24.07.2019	Registrar-General
26.	M/s Nuziveedu Seeds -Vs- MAHYCO/BHARTI SEEDS	C5096, C5195, MRC 6029 Bt, – MRC 7045 BG II, MRC 7347 BG II, MRC 7929 BG II, 4206336B, MRC 7017 and -MRC 6322 Bt	Opposition	31.07.2019	Registrar-General
27.	M/s Nuziveedu Seeds -Vs- MAHYCO	C5096, C5195, MRC 6029 Bt, – MRC 7045 BG II, MRC 7347 BG II, MRC 7929 BG II, MRC 7017 and -MRC 6322 Bt	Opposition	06.09.2019	Registrar-General
28.	M/s Nuziveedu Seeds -Vs- MAHYCO	MRC 7031	Opposition	13.09.2019	Registrar-General
29.	M/s Nuziveedu Seeds -Vs- MAHYCO	MRC 7301 BG-II, MRC 7351 BG-II, MRC 7383 BG-II and MRC 6918 Bt	Opposition	19.09.2019	Registrar-General
30.	M/s Nuziveedu Seeds -Vs- BHARTI SEEDS	4206336B	Opposition	19.09.2019	Registrar-General
31.	M/s. International Flower Auction Bangalore Ltd., -Vs- M/s. Moerheim Roses & Trading India Pvt. Ltd.	MEIFLEMINGUE	Revocation	25.09.2019	Chairperson
32.	Bioseeds Research India Limited -Vs- Nuziveedu Seeds Limited	MALLIKA-NCS 207	Revocation	08.01.2020	Chairperson
33.	Bioseeds Research	BUNNY-NCS-	Revocation	08.01.2020	Chairperson

	India Limited -Vs- Nuziveedu Seeds Limited	145			
34.	Kavitha Kuruganti -Vs- Pepsico India Holdings Private Limited	FL-2027	Revocation	22.01.2020	Chairperson

8.3 RIGHT TO INFORMATION (RTI)

Under the RTI Act, 2005, the Protection of Plant Varieties & Farmers' Rights Authority (PPV&FRA) has nominated officers as Central Public Information Officer (CPIO) and first Appellate authority for furnishing information to the concerned applicants. The details of the designated officers are available on website of the Authority under the menu heading RTI. Compliance of provisions contained under section 25(2) of RTI Act, 2005 for submission of information to Chief Information Commissioner (CIC) are being done on a regular basis. During the reporting period, the Authority received 15 applications either directly from the applicant or transferred from other departments seeking information under RTI Act, 2005. The information sought was made available within the stipulated period. There are no appeals pending before the first Appellate Authority or Chief Information Commissioner (CIC).

The status of the applications received by the Authority is uploaded on its website on regular basis. The quarterly status of the applications is available on the website of the Authority and Central Information Commissioner (CIC) with full details including receipt of fees too.

8.4 GOVERNMENT e-MARKETPLACE (GEM)

During the reporting year 2019-20, the Authority purchased different items, worth ` 12,28,559/- (Rupees twelve lakh twenty-eight thousand five hundred fifty-nine only) through GEM after completing necessary formalities. The month-wise purchases with value and items are as under:-

Report of Procurement (GeM) during 2019-20 (1st April 2019-31st March, 2020)			
S. No.	**Particular**	**Month**	**Amount (Rs.)**
1.	Computers, Water Dispenser, Pen-drive, Air conditioners, Hard disk, UPS, Imaging Drum, Toner, Cycle, Sanitary Items, Hospitality and Stationary Items.	Apr., 2019	1,23,741
2.		May, 2019	7,600
3.		Jun., 2019	-
4.		July, 2019	3,91,756
5.		Aug., 2019	75,082
6.		Sep., 2019	57,960
7.		Oct., 2019	67,550
8.		Nov., 2019	46,150

9.		Dec., 2019	57,720
10.		Jan., 2020	2,25,000
11.		Feb., 2020	-
12.		Mar., 2020	1,76,000
TOTAL AMOUNT			**12,28,559/-**

8.5 INSPECTION OF RECORDS AND SUPPLY OF CERTIFIED COPY

During the reporting period, the request for inspection of records and supply of certified copies of the following 35 varieties were received. The amount Rs. 2,66,000/- (Rupees Two Lakh Sixty Six Thousand Only) as fees for the above purpose were deposited by the concerned applicant. After receipt of fees, the certified copies were supplied to the concerned applicants.

8.6 BRANCH OFFICES:

There are five branch offices located in different parts of the country headed by Deputy Registrar as detailed below:

1. **Sh. Phool Singh Malviya, Deputy Registrar**
   Protection of Plant Varieties and Farmers' Rights Authority
   Department of Agriculture, Co-operation & Farmers Welfare,
   Computer Centre Building, Near Damodar International Guest House,
   Birsa Agriculture University Campus, Kanke, Ranchi (JH)-834006

2. **Sh. Phool Singh Malviya (Additional charge)**
   Protection of Plant Varieties and Farmers' Rights Authority
   Govt. of India, Ministry of Agriculture & Farmers Welfare,
   Department of Agriculture, Co-operation & Farmers Welfare,
   Assam Agricultural University, Near Administrative Building, Khanapara, Guwahati-781022

3. **Dr. Shiv Kumar Sharma, Deputy Registrar (on contract basis)**
   Protection of Plant Varieties and Farmers' Rights Authority
   Department of Agriculture, Co-operation & Farmers Welfare,
   CSK HP Krishi Viswavidyalaya, Palampur, Dist. Kangra, Himachal Pradesh-176061

4. **Dr. S. B. Gurav, Deputy Registrar (on contract basis)**
   Protection of Plant Varieties and Farmers' Rights Authority
   Department of Agriculture, Co-operation & Farmers Welfare,
   Centenary Building, College of Agriculture Campus,
   Mahatma Phule Krishi Vidyapeeth, Pune, Maharashtra-411005

5. **Dr. T.H. Gowda, Deputy Registrar (on contract basis)**
   Protection of Plant Varieties and Farmers' Rights Authority

Department of Agriculture, Co-operation & Farmers Welfare,
UAHS Shivamogga, Abbalagere post, Shivamogga, Karnataka-577204

8.7. FRA&PPVENTRUSTED THE CHAIRMANSHIP OF TOLIC (TOWN OFFICIAL LANGUAGE IMPLEMENTATION COMMITTEE)

Department of Official Language, Ministry of Home Affairs, Govt. of India, entrusted the responsibility of Chairmanship of Town Official Language Implementation Committee (TOLIC) North Delhi to Protection of Plant Varieties & Farmers' Rights Authority on September, 2018. There are 64 offices as members in the said committee. After assuming Chairmanship by the Authority, the first meeting of committee was organized on 26 June, 2019. The head of office of all the member offices attended the meeting and half yearly progress was reviewed by presentations of each of the offices. During the meeting, issues regarding problem in implementation of official language and how to improve, were discussed. A 12 member committee was formed to operate different provisions of official languages

8.7.1 Officials Language Implementation Committee of PPV&FRA

Authority has already an existing official language implementation committee for implementation of official language in the Authority. In the reporting year all four meeting were conducted and discussed on various issues of official language.

8.7.2 Rajbhasha Fortnight

Rajbhasa Fortnight was organized in the Authority from 14 September, 2019 to 28 September, 2019. During the reporting period many competitions were organized for celebrating Hindi Fortnight in which many officials participated including contractual employee and paid cash prize to the winners.

8.7.3 Use of official Language Hindi

Official Language Hindi is used in Authority by officials. Officials of Authority have done noting and drafting in Hindi. Section 3(3) of the Official Language Act, 1963, all the official documents are issued in bilingual and the letters to different regions A, B and C are sending as per norms of Government.

8.7.4 Hindi Pakhwada

The PPV&FR Authority celebrated Hindi Pakhwada from 11 to 24th September, 2019, during the Pakhwada authority has arranged competition among the PPV&FR Authority employees. A prize distribution function was also arranged on

03rd October, 2019 at Auditorium of Directorate of Extension, DAC&FW Pusa Campus, New Delhi.

8.8. OBSERVANCE OF VIGILANCE AWARENESS WEEK

Though the Authority does not come under the jurisdiction of the Central Vigilance Act or Central Vigilance Commission Act (2003), in view of the establishment of the spirit of maintaining the Authority free of any corruption and misuse of official position, the Authority in solidarity with the same observed Vigilance Awareness Week administering the oath by its staff, employees and officers.

The Authority observed the Vigilance Awareness Week where the staff of the Authority collectively participated in the prevention of corruption and the fight against corruption being vigilant as part of the Vigilance Awareness Week (28th October – 2nd November, 2019) with the theme "Integrity- A way of life (ईमानदारी - एक जीवन शैली)".

The observance of the Vigilance Awareness Week commenced with the taking of the Integrity Pledge. An essay writing competition (Bilingual) was also organized as part of the activity during the vigilance week.

The Chairperson of the Authority delivered a keynote address signifying personal and organisational integrity by drawing some examples. He encouraged and motivated especially the younger generation as flag bearers in realizing this vision. He said that insensitivity to corruption are being faced serious problems and at the same time congratulate officers and staffs of the Authority to take initiatives to disseminated to transparency and honesty by their progress of work.

Banner displayed during the week

Integrity Pledge

Essay Competition

Closing ceremony

8.9 PPV&FR AUTHORITY MEETINGS

During FY 2019-20, two meetings of the PPV&FR Authority were held and detailed minutes of meetings are available in the PPV&FRA website. Salient points are given:

8.9.1 Thirty-First meeting on 30th April, 2019

- Status of PGSC Awards
- Proposal for the salary on outsource staff
- Important issues approved by the Authority pending execution/Implementation with Nodal Ministry
- Web-based system for online application through NIC(NICSI)
- Revision of DUS test guidelines under Rule 29(8) and (9) of PPV&FR Rules, 2003 for Sorghum and Pearl Millet
- Creation of new posts at PPVFR Authority
- Amendment in Certificate of Registration
- Proposal for conducting awareness programme/workshops
- Restoration of provision for special policy for career advancement or promotion of Registrar and other staff and providing upward mobility/ promotional opportunities for technical cadre of PPV&FR Authority.

8.9.2 Thirty-Second meeting on 25th September, 2019.

- Approval of DUS test guidelines for Crop Species Pointed Gourd, Crossandra and Cowpea under Rule 29(9) of PPV&FR Rules, 2003.
- Approval of fixation of time limit for registration of extant varieties for Pointed Gourd, Crossandra and Cowpea.
- Approval of fixation of DUS Fee and onsite DUS test fee for Pointed Gourd, Crossandra and Cowpea.
- Revision of Annual Fee Return Form.
- Approval of Recruitment Rules for the post of Financial Advisor.
- Approval of draft Annual Report 2018-19 of PPV&FR Authority.
- Approval of Annual Accounts 2018-19 of PPV&FR Authority.
- Approval of Inspection of a candidate variety in the DUS test centre and fee.
- Submission of minutes of 34th Meeting of the Extant Variety Recommendation Committee (Notified).
- Criteria for Distinctiveness, Uniformity and Stability for registration of Extant Varieties Notified.
- Decision on Appeal to restore increments as per Disciplinary Proceedings initiated in respect of Shri. J.P. Singh, Ex. Financial Advisor.

8.10 PARTICIPATION OF CHAIRPERSON IN VARIOUS MEETINGS AND DISCUSSIONS DURING 2019-20

Date	Description
5th April, 2019	Chairperson attended meeting under the chairmanship of Secretary (AC&FW) to discuss the important issues related to Seed Division at Krishi Bhawan, New Delhi.
9th April, 2019	Chairperson attended special meeting of NARAKAS at NASC Complex, New Delhi.
23rd April, 2019	Chairperson attended meeting for plant varieties provisions in the IP chapter of RCEP negotiation with Shri Rajiv Agrawal, Joint Secretary, Department for Promotion of Industry and Internal Trade (DPIIT), Udyog Bhawan, New Delhi.
25th-26th April, 2019	Chairperson attended 15th Review meeting of DUS centres for kharif crops 2019 at NASC Complex, New Delhi.
30th April, 2019	Chairperson attended 31st Authority meeting at NAAS Committee Room No-II, NASC Complex, New Delhi. The agenda related to technical, legal and progress of registry was discussed during the meeting.
4th May, 2019	Chairperson attended Launching of National Genomics and Genotyping Facility at the National Institute of Plant Genome Research, (NIPGR) New Delhi.
7th May, 2019	Chairperson attended review meeting for DUS guidelines of Bamboo Species at PPV&FRA, New Delhi.
8th May, 2019	Chairperson attended a panel discussion on DD Kisan Channel, at Khel Gaon, New Delhi
28th May, 2019	Chairperson delivered a keynote lecture on the occasion of International Conference on Innovative Horticulture and Value Chain Management at GBPUA&T, Pantnagar, Uttarakhand.
30th May, 2019	Chairperson attended meeting with Secretary, DAC&FW regarding pending issues related to PPV&FRA and DAC&FW at Krishi Bhawan, New Delhi.
5th June, 2019	Chairperson attended 26th Annual General Body meeting of National Academy of Agricultural Sciences (NAAS) at A.P. Shinde Symposium Hall, NASC complex New Delhi.
14th June,2019	Chairperson attended one day National Seminar on "Priorities and Strategies to Boost Farmer's Income" on the occasion of 30th Foundation Day of Uttar Pradesh Council of Agricultural Research (UPCAR) at Lucknow and also delivered a lecture on "Plant Varieties Protection, Farmers' Rights and Benefit Sharing".
18th June, 2019	Chairperson attended meeting related to Plant Variety Provisions in RCEP negotiations with Mr. Rajiv Aggarwal, Joint Secretary, Department of Industrial Policy and Promotion (DIPP), Udyog Bhawan, New Delhi.
21st June, 2019	Chairperson along with others staff of PPV&FRA reviewed the DUS guideline of Eucalypts species at PPV&FRA, New Delhi.

24th June, 2019	Chairperson participated in the Brainstorming Session on Seed Sector under the chairmanship of Secretary (AC&FW) at Room No. 138 (Mahalanobis Committee Room), Krishi Bhawan, New Delhi.
26th June, 2019	➢ Chairperson attended 2nd Regional consultation with SBBs for discussing the draft (revised) guidelines on ABS Regulation, 2019 at MOEFCC, New Delhi. ➢ Chairperson attended a programme of WIPO India Summer School and delivered a lecture on "Patents and plant Varieties - Recent Developments" at M/o Commerce and Industry, DIPP, Office of CGPDTM, Hislop College Road, Civil Lines, Near Nagpur University, Behind Air India Building, Nagpur, Maharashtra. ➢ नराकास जून 26 वीं छमाही बैठक का आयोजन8 की (री दिल्लीउत्त), 2019 अपराह्न जियम हालशिंडे सिम्पो .पी.बजे ए 2:30, एनपरिसर .सी.एस.ए., टोडापुर, नई दिल्ली में किया गया। जिसमे अध्यक्ष ने भाग लिया।
22nd July, 2019	Chairperson addressed a 30-Member Official International Delegation at IARI, New Delhi.
7th - 8th August, 2019	Chairperson attended 56th Meeting of Expert Committee on Access and Benefit Sharing at NBA, Chennai
26th August, 2019	Chairperson attended "Interface meeting with the Seed Sector" at Professor Jayashankar, Telangana State Agricultural University, Rajendranagar, Hyderabad-500030, Telangana
28th August, 2019	Chairperson presented brief about PPV&FR Authority before Hon'ble AM at Krishi Bhawan
5th September, 2019	Chairperson attended Teachers' Day lecture on the birthday of former Hon'ble President of India Dr. S. Radhakrishnan, who was a renowned teacher, par excellence at Dr. B.P. Pal Auditorium, IARI
6th September, 2019	Chairperson chaired a session on Increasing Productivity, Sustainability and Profitability in Rice Cultivation in the seminar on sustainable rice production. Hon'ble Minister for State Shri Kailash Choudhary was also being part of the inaugural session.
11th-13th September, 2019	Chairperson attended NAAS Sectional Committee meetings 2019 at NAAS, NASC Complex, New Delhi.
16th September, 2019	Chairperson attended हिंदी माह as a Chief Guest at Ministry of Defence DRDO, Institute of Nuclear Medicine & Allied Sciences, S.K. Mazumdar Marg, Delhi.
24thSeptember, 2019	Chairperson attended "हिंदी पखवाड़ा" as a Chief Guest at ASRB, Krishi Annusandhan Bhavan I, PUSA, New Delhi
25th September, 2019	32nd Authority meeting was conducted at NAAS Committee room No. II, NASC Complex New Delhi. The meeting was conveyed to discuss various agenda items related to registry and administrative issues.
26th-27th	Chairperson, attended the 16th Review Meeting of DUS test centres for Rabi

September, 2019	crops-2019 at NAAS Committee Room-I, NASC Complex, New Delhi.
30th September, 2019	Chairperson attended plenary session on NextGen Genomics, Biology, Bioinformatics and Technologies (NGBT) Conference at Mumbai, Maharashtra.
11th October, 2019	Chairperson attended meeting related to Plant Genetic Resources Policy and Trade at ICAR-NBPGR, New Delhi.
14th October, 2019	Chairperson attended meeting for variety identification, maintenance and protection in NSC-2019 at ICAR-IARI, New Delhi.
23rd – 24th October, 2019	Chairperson attended the Rajbhasha Mahotsav 2019 at Auditorium, NPL, Pusa, New Delhi.
25th October, 2019	Chairperson attended ISGPB committee for selecting the Fellows for the year-2019 at NASC Complex, New Delhi.
26th October, 2019	Chairperson attended fifth edition of the Niti Aayog's Lecture Series delivered by Mr. David R. Malpass, President of the World Bank Group at Vigyan Bhawan. The lecture will be held followed by a Panel Discussion with leading representatives from the world of Finance and Banking.
04th November, 2019	Chairperson attended the meeting of Foundation stone laying ceremony at new office building, ASRB, New Delhi
11th November, 2019	नगर राजभाषा कार्यान्वयन समिति (उत्तरी दिल्ली) वर्ष 2019–20 की दूसरी बैठक ए. पी. शिंडे सभागार, एनएएससी परिसर, टोडापुर, नई दिल्ली में किया गया। जिसमे अध्यक्ष ने भाग लिया।
14th November, 2019	Chairperson attended the meeting of 1st National Agrochemicals Congress on the theme: Country's status on various fronts on Agrochemicals at Dr BP Pal auditorium, IARI, New Delhi
14th November, 2019	Chairperson attended the second meeting of the Executive Committee of 'National Genomics and Genotyping Facility' at Aruna Asaf Ali Marg, New Delhi
26th November, 2019	Chairperson attended a meeting for gracing the inaugural session of Village Adoption Programme (VAP-14) at NIFTEM at Kundli, Sonipat, Haryana
30th November, 2019	Chairperson delivered a Lecture in Regional Workshop and Agro-Biodiversity Exhibition at JAU, Junagadh.
04th December, 2019	Chairperson attended the meeting with Secretary and Addl. Secretary, DAC&FW regarding pending issues of PPV&FRA and DAC&FW at Krishi Bhawan, New Delhi.
07th December, 2019	Chairperson delivered a lecture on 'Protection for Plant Varieties and Traditional Agricultural Knowledge- Experiences from India' at MoEFCC, New Delhi.
9th December, 2019	Chairperson attended a meeting on PVP system in India (including DUS testing) at committee room, PPVFRA, NASC Complex.
11th December, 2019	Chairperson attended the National Project Steering Committee Meeting for UN Environment Implemented GEF project at NAAS, Committee Room-I, NASC Complex, New Delhi.

17th December, 2019	Chairperson along with other staff of PPV&FRA attended the Indo-German workshop on "Post Plant Variety Control of Registered Varieties and Implementation of Plant Breeders' Rights" under Indo-German Bilateral Cooperation on Seed Sector Development at NASC Complex, New Delhi.
20th December, 2019	Chairperson attended wrap-up meeting of EU team for equivalence at, Krishi Bhawan, New Delhi.
08th January, 2020	Chairperson attended the meeting of National Horticulture Board (NHB) with the members of Confederation of Indian Horticulture and Horticulture Growers Association at Krishi Bhawan, New Delhi.
10th January, 2020	Chairperson attended the Regional Workshop in association with National Citrus Meet-2020 at Biswanath College of Agriculture, Biswanath Chariali, Assam.
14th January, 2020	Chairperson presented a presentation before the Hon'ble Minister of Agriculture & Farmers Welfare on the comments of stakeholders and public on the Seed Bill at Krishi Bhawan, New Delhi.
17th January, 2020	➢ Chairperson attended the 7th International Conference on "Phytopathology in Achieving UN Sustainable Development Goals" at IARI, New Delhi ➢ Chairperson attended meeting of "Plant Variety Protection, Seed Testing and Certification" for the officials of Kenya Plant Health Inspectorate Service (KEPHIS), Government of Kenya at Division of Seed Science and Technology, ICAR-IARI, New Delhi. ➢ Chairperson attended the Meeting of Seed Bill with Joint Secretary (Seeds), Additional Secretary and ADG (Seeds) at Krishi Bhawan, New Delhi.
20th January, 2020	Chairperson attended the Meeting of Supreme Court case JMO at DAC&FW
30th January, 2020	Chairperson Chaired the Session Potato Policy Issues in the Global Potato Conclave-2020 at Gandhinagar, Gujarat
3rd February, 2020	➢ Chairperson attended the Experts Meet on Seed Policy at NAAS Committee Room I, NASC, New Delhi. ➢ Chairperson attended the training programme on "Seed Production and Quality Assurance" and also Delivered a lecture on "Plant Variety Projection: Indian Prospective" at Division of Seed Science and Technology, IARI, New Delhi.
4th February, 2020	Chairperson attended the Project Management Committee (PMC) meeting for the network project on Minor pulses at NBPGR, New Delhi.
6th February, 2020	➢ Chairperson attended meeting of the Draft Document on Genome Edited Organism: Regulatory Framework and Guidelines for Risk Assessment at Committee room-I, NASC Complex, New Delhi. ➢ Chairperson attended the meeting to finalize the counter affidavit in FSII matter at PPV&FRA, New Delhi.

11th February, 2020	Chairperson Taken a viva of Ph.D. Students at Chaudhary Charan Singh Haryana Agricultural University (CCS HAU) Hisar.
12th February, 2020	Chairperson attended the 58th Convocation Week Programme on Vth Dr. A.B. Joshi Memorial Award Lecture at Dr. B.P. Pal Auditorium, IARI, New Delhi
13-14th February, 2020	Chairperson along with other staff of PPV&FRA attended the International workshop on DUS testing of Rapeseed and Mustard under the Indo-German collaboration in seed sector at Directorate of Rapeseed-Mustard Research, Bharatpur, Rajasthan. Dr. Ravi Prakash, Registrar delivered a lecture on "PVP system in India" during the workshop.
14th February, 2020	Chairperson attended the 58th Convocation at New Auditorium, NASC Complex, New Delhi.
15th February, 2020	Chairperson attended the Valedictory Function of ICAR-Short Course as Chief Guest on the topic "**Participatory Seed Production of Rabi Crops for Entertainment Development"** at ICAR-IIWBR, Karnal.
17th February, 2020	Chairperson chaired the technical session-4 "Seed quality regulation and IPR regime in India" on Indian Seed Congress-2020 at JW Marriott, Aerocity, New Delhi and also delivered a lecture on "Benefit share mechanisms aligning with breeder and farmer rights under PPV&FR Act-Challenges & prospects".
19-20th February, 2020	Chairperson along with other staff of PPV&FRA attended the International workshop on DUS testing of Wheat and Barley under the Indo-German collaboration in seed sector at Indian Institute of Wheat and Barley Research Institute, Karnal, Haryana. Dr. Ravi Prakash, Registrar delivered a lecture on "PVP system in India" during the workshop.
27th February, 2020	Chairperson attended the अखिल भारतीय राजभाषा संघोष्टि at DRDO, DTRL, New Delhi.
03th March, 2020	Chairperson attended a पूसा कृषि विज्ञान मेला (Innovative Farmers Meet) at IARI
05th March, 2020	Chairperson delivered a Lecture on PPVFRA-2001 and related matters for benefit of Seed Industry *at* Seedman Association, Hyderabad
12th March, 2020	Chairperson attended the 1st meeting of the Expert Committee to Review and Recommend two Guidelines on " Genetically Engineered (GE) Plants Containing stacked Events" and " Environmental Risk Assessment (ERA of Genetically Engineered Microorganisms" at Conference room, Bio safety support unit, 1st Floor, NPC Building, Lodhi Road, New Delhi
12th March, 2020	Chairperson attended a DBT Task Force meeting at Room No. 816, 8th Floor, Department of Biotechnology, Lodhi Road, New Delhi., IARI
17th March, 2020	Chairperson attended a meeting in connection with tender for construction of Plant Authority Bhawan at committee Room, PPV&FRA.
19th March, 2020	Chairperson attended a Review meeting of Shivamogga projects to discuss about the progress made during 2019-20 at PPVFRA committee Room

8.11. PARTICIPATION OF REGISTRAR GENERAL IN VARIOUS MEETINGS AND DISCUSSIONS DURING 2019-20

Date	Description
2nd April, 2019	Registrar General attended Finance committee meeting of ICAS-VIII at Administration cum Training Block, ICAR-IASRI, New Delhi.
9th April, 2019	Registrar General attended special meeting of NARAKAS at NASC Complex, New Delhi.
10th April, 2019	Registrar General along with PPV&FRA staff has a meeting with NIC team regarding Development of Online System at PPV&FRA, New Delhi.
23rd April, 2019	Registrar General attended meeting for plant varieties provisions in the IP chapter of RCEP negotiation with Shri Rajiv Agrawal, Joint Secretary, Department for Promotion of Industry and Internal Trade (DPIIT), Udyog Bhawan, New Delhi.
25th-26th April, 2019	Registrar General attended 15th Review meeting of DUS centres for kharif crops 2019 at NASC Complex, New Delhi.
30th April, 2019	➢ Registrar General conducted 31st Authority meeting at NAAS Committee Room No-II, NASC Complex, New Delhi. The agenda related to technical, legal and progress of registry was discussed during the meeting. ➢ Registrar General attended Revised Cost Committee meeting for the construction of Office building of PPV&FRA under the chairmanship of Additional Secretary and Financial Adviser DAC&FW, Joint Secretary (Seeds) and Chief Adviser (Cost) at Krishi Bhawan, New Delhi.
4th May, 2019	Registrar General attended Launching of National Genomics and Genotyping Facility at the National Institute of Plant Genome Research, (NIPGR) New Delhi.
7th May, 2019	Registrar General attended review meeting for DUS guidelines of Bamboo Species at PPV&FRA, New Delhi.
8th May, 2019	Registrar General attended a panel discussion on DD Kisan Channel, at Khel Gaon, New Delhi
10th May, 2019	Registrar General attended the 3rd Dr A.B. Joshi Memorial Lecture of ISPGR Award Function on "Plant Genetic Resources for Food and Nutritional Security" at Dr. B.P. Pal Auditorium, ICAR-National Bureau of Plant Genetic Resources, Pusa Campus, New Delhi-110012.
20th-23rd May, 2019	Registrar General Participated in the Second meeting of the Ad-hoc Technical Experts Group on Farmers' Rights of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) at Rome, Italy.
28th May, 2019	Registrar General along with other staff of PPV&FRA attended the meeting on “Revision of Annual Fee Return” under the chairmanship of Dr. D.K. Yadav, ADG (Seeds), ICAR.
30th May, 2019	Registrar General attended meeting with Secretary, DAC&FW regarding

	pending issues related to PPV&FRA and DAC&FW at Krishi Bhawan, New Delhi.
18th June, 2019	➢ Registrar General attended meeting related to Plant Variety Provisions in RCEP negotiations with Mr. Rajiv Aggarwal, Joint Secretary, Department of Industrial Policy and Promotion (DIPP), Udyog Bhawan, New Delhi. ➢ Registrar General attended a meeting of Committee for Screening of the applications for the post of Financial Advisor, PPVFRA at Committee room, PPV&FR Authority, New Delhi.
21st June, 2019	Registrar General conducted a meeting of the project review committee to review the progress for construction of the Plant Authority Bhawan at PPV&FR Authority, New Delhi.
28th June, 2019	Registrar General attended the Delegated Investment Board meeting for the approval of revised estimates for construction of office building of Protection of Plant Varieties and Farmers' Rights Authority at Krishi Bhawan, New Delhi. The meeting was held under the chairmanship of Secretary, DAC&FW.
1st July, 2019	Registrar General and other staff of PPV&FRA attended 6th Quarterly meeting at NASC Complex, New Delhi
24th July, 2019	Registrar General conducted NIC meeting regarding online system of PVP in the Chamber of Registrar General, PPVFRA, New Delhi.
25th July, 2019	Registrar General conducted meeting for screening of the applications for the post of Legal Advisor at Committee room, PPVFRA, New Delhi.
1st July, 2019	Registrar General and other staff of PPV&FRA attended 6th Quarterly meeting at NASC Complex, New Delhi
24th July, 2019	Registrar General conducted NIC meeting regarding online system of PVP in the Chamber of Registrar General, PPVFRA, New Delhi.
25th July, 2019	Registrar General conducted meeting for screening of the applications for the post of Legal Advisor at Committee room, PPVFRA, New Delhi.
8th August, 2019	Registrar General along with Registrars and other staff of PPV&FRA attended a Review of the progress of software related to website, Registry work, National register, PVJ, Registration of Licensees agents, Annual and Renewal fee etc at Committee Room, PPVFRA
13th August, 2019	Registrar General attended a meeting on web-based system for submission and processing of application for registration of Plant Varieties with the officers of NIC at PPV&FR Authority, New Delhi
21st August, 2019	Registrar General attended preparatory meeting with stakeholders under Indo-German bilateral cooperation on seed development Krishi Bhawan, New Delhi
26th August, 2019	Registrar General, Registrars and Legal Advisor of PPV&FRA attended "Interface meeting with the Seed Sector" at Professor Jayashankar, Telangana State Agricultural University, Rajendranagar, Hyderabad-500030, Telangana

27th August, 2019	Registrar General attended the meeting on software requirement specification at Committee room, PPVFR Authority, New Delhi
19th September, 2019	Registrar General presided the Hearing at Committee Hall, PPV&FR Authority, New Delhi.
20th September, 2019	Registrar General participated in panel discussion for "Harmonizing Intellectual Property Rights Regulatory Regime in Seed Industry" organised by Indian Council of Food and Agriculture is organizing Seed World 2019 at Bangalore.
23rd September, 2019	Registrar General attended the expert committee meeting of Consultative Group with special emphasis on technical requirements to ascertain the correctness of particulars furnished in a statement of case referred in the said GI Applications at Conference Hall, Boudhik Sampada Bhawan, Plot No. 32, Sector 14, Dwarka, New Delhi.
25th September, 2019	Registrar General conducted 32nd Authority meeting at NAAS Committee room No. II, NASC Complex New Delhi. The meeting was conveyed to discuss various agenda items related to registry and administrative issues.
26th-27th September, 2019	Registrar General along with other staff of PPV&FRA attended the 16th Review Meeting of DUS test centres for Rabi crops-2019 at NAAS Committee Room-I, NASC Complex, New Delhi.
30th September, 2019	Registrar General attended the Inter Ministerial meeting to discuss National Report on the implementation of the Cartagena Protocol on Biosafety at Kavari Conference room, M/o Environment & Forest Climate Change, Indira Paryavaran Bhavan, Ali Ganj, Jorbagh Road, New Delhi.
10-11th October, 2019	Registrar General attended the Regional Workshop on "Enriching Custodian Farmers with PPV&FR Act to Safeguard Valued Plant Genetic Resources Towards Green Prosperity" as Guest of Honour of PPV&FRA at ICAR-CTCRI, Thiruvananthapuram.
22nd October, 2019	Registrar General attended the Plant Genome Saviour Awards at Dr. B.P. Pal auditorium, IARI, Pusa Campus New Delhi
23rd October, 2019	Registrar General attended a bilateral meeting for finalization of activities to be undertaken during next phase under Indo-German bilateral cooperation on seed development at Conference Hall, NASC Complex, Pusa New Delhi.
6th November, 2019	Registrar General conducted a committee to scrutinize the application for the post of Registrar at committee room, PPV&FRA, New Delhi.
7th November, 2019	Registrar General attended the NIC meeting at Committee room, PPV&FRA, New Delhi

Chapter 9: International Cooperations

9.1 INTERNATIONAL WORKSHOP ON "DUS TESTING OF WHEAT AND BARLEY" HELD AT ICAR-INDIAN INSTITUTE OF WHEAT AND BARLEY RESEARCH ON 19TH AND 20TH FEBRUARY, 2020

International Workshop on "DUS testing of Wheat and Barley" under the aegis of Indo German Bilateral Cooperation on Seed Sector was organized at ICAR-IIWBR, Karnal under the chairmanship of Dr. K. V. Prabhu, Chairperson, PPV&FRA, New Delhi and co-chaired by Dr. G. P. Singh, Director, ICAR-IIWBR, Karnal. A total of 50 participants from ICAR institutes, SAUs, Pvt. Seed companies and IPR attorneys attended the international workshop. Dr. Gyanendra Singh, PI-Crop Improvement, ICAR-IIWBR, Karnal welcomed the chief guest, all dignitaries and participants, while Dr. TK Nagarathna, Registrar, PPV&FRA provided the brief outline about the workshop.

Points emerged out were

1. All the extant varieties of bread wheat need to be registered before 27.07.2020 and durum, dicoccum and other species of wheat need to be registered before 18.08.2020. After that no wheat variety will be registered in India under extant category
2. Dr. K. V. Prabhu informed the house the agent or licensee of a variety have to be registered with PPV&FRA. He also explained the key issues in the licensing and revocation of license
3. Dr. G. P. Singh said that even the DUS testing guideline in Wheat and Barley is quite elaborative however the need based changes in DUS testing protocols/procedure in Wheat and Barley are required.
4. Need for harmonization of the DUS testing guideline of Wheat and Barley in India with UPOV
5. Chairperson, PPV&FRA proposed to have a session on PPV&FRA particularly in the Annual Wheat and Barley workers meet.

Points emerged out from the presentations were

1. All or any of the parental lines (as inbreds) and its hybrid can be applied for registration
2. DUS testing of hybrids along with parental lines is mandatory
3. Hybrids along with parents produced through single cross technique is accepted for registration
4. Three way crossed or double crossed or multi-parent chain crossed hybrids and also composites are not accepted as they never be identically reproduced by crossing same parents to establish stability and uniformity parameters in the resultant hybrid

Interaction session with representatives from private and public seed sectors

The doubts and queries raised by the breeders of public sector and pvt. seed companies were clarified by Dr. K. V. Prabhu, Chairperson, PPV&FRA. He informed the house that the

varieties protected by the company in any country other than India will not enjoy the protection status in India. The company has to submit fresh application for registration in India. The protected germplam or variety can be licensed and the users have to follow all the pre-decided conditions, otherwise it may attract judicial proceedings against them. He also apprised the group that protection of varieties will attract the royalty to the breeders of the germplasm.

The participants also visited the DUS testing fields of wheat and barley and interacted with experts.

The workshop ended with the vote of thanks to Dr KV Prabhu, Dr GP Singh, Dr Ralf Roessler, Dr Elmar Weissmann, all the experts and the trainees.

9.2 INTERNATIONAL WORKSHOP ON "DUS TESTING OF RAPESEED-MUSTARD" ON 13TH -14TH FEBRUARY, 2020.

ICAR-Directorate of Rapeseed-Mustard Research also hosted the International workshop on "DUS testing of Rapeseed-Mustard" on 13th -14th February, 2020. The workshop was organized jointly by Protection of Plant Varieties and Farmers' Right Authority (PPV&FRA), New Delhi under Ministry of Agriculture and Farmer's Welfare, Government of India and The Federal Ministry of Food and Agriculture (BMEL) Germany. The workshop was graced by the presence of Honourable chairperson, PPV&FRA, Dr. K. V. Prabhu; Director, ICAR-DRMR, Dr. P K. Rai and Registrars from PPV&FRA, delegates from Federal Ministry of Food and Agriculture (BMEL) Germany, working on DUS testing in rapeseed-mustard and hybrid breeding progamme participated though Indo-German cooperation on seed sector as well as 35 scientists working on rapeseed-mustard from all over India including research workers from private companies. The learned speakers included Mr. Thomas Gildemeister, Oilseed DUS expert from Federal Plant Variety Office (BSA), Germany, Dr. ElmarWeissmann, Senior Seed Sector Expert, Indo-German Cooperation on Seed Sector, Germany,Dr. Ravi Prakash, Registrar, PPV&FRA,Sh. Dipal Roy

Choudhury, Joint Registrar, PPV&FRA, Dr. A. K. Singh, PVE, PPV&FRA and Dr. Priyamedha, PI-DUS testing in Rapeseed-Mustard, ICAR-DRMR. The workshop ended with the DUS field visit and interaction among delegates.

CSAUA&T, Kanpur, Uttar Pradesh act as Collaborating DUS Centre for Indian Mustard, Karan Rai, Rapeseed, Gobhi Sarson, Linseed, Wheat. During the period total 2 New and 12 Farmers Indian Mustard candidate varieties under DUS testing.

Chapter 10: Financial Statements of the Authority as on 31.03.2020

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, 2020, Income & Expenditure Account and Receipt & Payment Account for the year ended 31 March, 2020 are given.

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 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. 5509.76 lakh as grants-in-aid from Department of Agriculture, Cooperation & Farmers Welfare, during the year 2019–20 and utilized Rs. 5244.81 lakh after adjusting unspent balance of Rs. 50.15 lakh of previous year leaving a balance of Rs. 315.10 lakh.

Balance Sheet as on 31st March, 2020		
		Amount in Rupees
CORPUS / CAPITAL FUND AND LIABILITIES	**Current Year**	**Previous Year**
Corpus / Capital Fund	866,458,098	505,617,861
Reserves and Surplus	-	-
Earmarked/Endowment Funds	-	-
Secured Loans and Borrowings	-	-
Unsecured Loans and Borrowings	-	-
Deferred Credit Liabilities	-	-
Current Liabilities and Provisions	166,734,169	103,433,964
TOTAL	**1,033,192,267**	**609,051,825**
ASSETS		
Fixed Assets	34,930,287	32,813,942
Less: Accumulated Depreciation	27,525,379	26,150,609
Net Fixed Assets	7,404,908	6,663,333
Capital Work in Progress	22,967,519	18,147,519
Investments-From Earmarked/Endowment Funds	-	-
Investments-Others	-	-
Current Assets, Loans Advances Etc.	1,002,819,840	584,240,973

Miscellaneous Expenditure		
(to the extent not written off or adjusted)		
TOTAL	**1,033,192,267**	**609,051,825**

Income and Expenditure for the year ended 31st March, 2020

Amount in Rupees

Income	**AUTHORITY FUND**		**GENE FUND**	
	2019-20	**2018-19**	**2019-20**	**2018-19**
Income from Sales/ Services	-	-	-	-
Grants/Subsides	238,859,655	167,390,734	-	-
Fees/Subscriptions	21,730,096	19,896,009	8,342,808	20,837,231
Income from Investments	-	-	-	-
Income from Royalty, Publication etc.	-	-	-	-
Interest Earned	27,379,051	14,519,413	12,167,874	5,988,663
Other Income	5,603,947	575,980	-	-
Increase/(Decrease) in stock of Finished goods and works in progress	-	-	-	-
Deferred Income (Depreciation on fixed asset)	1,374,769	901,521	-	-
Prior period Adjustment A/c		-	-	-
TOTAL (A)	**294,947,518**	**203,283,657**	**20,510,682**	**26,825,894**
EXPENDITURE				
Establishment Expenses	57,878,552	59,840,986	-	-
Other Administrative Expenses etc.	47,486,923	28,324,143	7,608,090	-
Expenditure on Grants, Subsidies etc.	144,344,078	87,550,609	-	-
Interest	9,403	17,673	944	649
Depreciation including Impairment Loss	1,374,769	901,521	-	-
Prior period Adjustment A/c	6,656,778	31,343,988		2,279,093
TOTAL (B)	**257,750,504**	**207,978,920**	**7,609,034**	**2,279,742**
Balance being excess of Income Over Expenditure (A-B)	**37,197,014**	**(4,695,263)**	**12,901,647**	**24,546,152**
Transfer to special Reserve(Specify each)	-	-	-	-
Transfer to /from General Reserve	-	-	-	
BALANCE BEING SURPLUS (DEFICIT) CARRIED TO CORPUS/CAPITAL FUND	**37,197,014**	**(4,695,263)**	**12,901,647**	**24,546,152**

Receipts and Payments for the year ended 31st March, 2020					
					Amount in Rupees
RECEIPTS	**Current Year**	**Previous Year**	**PAYMENTS**	**Current Year**	**Previous Year**
1. Opening Balances			**1. Expenses**		
a) Imprest (Cash In hand)			a) Establishment Expenses	43,847,114	44,055,110
Authority	2,601	25,000	b) Administrative Expenses	46,856,751	20,499,501
Ranchi Branch	1,137	3,186			
Guwahati Branch	1,121	-6,262	**2. Payments made against funds**		
Shivmogga Branch	661	-			
Pune Branch	9,766	-			
b) Bank Balances			a) Existing DUS Centres (**Annexure-IV)**	70,262,519	57,946,469
State Bank of India	14,053,733	20,066,070	b) New DUS Centres **(Annexure-III)**	27,827,017	28,224,113
Syndicate Bank		32,415,441	c) Referral Labs	-	-
A/C No. 91532140000064	52,388	-	d) Field Gene Bank (**Annexure-V)**	3,963,938	3,663,078
A/C No. 91532010008572	14,469,683	-	e) Other Department	5,762,086	-
A/C No. 91532140008630	1,365,857	-			
Remittance in Transit	-	-			
SBI (Gene Fund)	2,496,562	3,106,549			
SBI Guwahati Branch	34,405	8,015	3. Expenditure on fixed Assets and Capital Work in Progress		
SBI Ranchi Branch	24,009	16,056	a) Purchase of Fixed Assets(Authority)	2,035,942	2,454,170
SBI Palampur Branch	24,338	-			
Canara Bank Shivamogga Branch	12,717	-			
		-	b) Expenditure on Capital Work-in-Progress	4,820,000	-
			4. Advance for Construction of Building given to	310,000,000	

			Uttar Pradesh Rajkiya Nirman Nigam Ltd		
2. Grants received from Government of India	550,976,000	170,322,000			
			5. Grant release to Training Centres (**Annexure-VI)**	1,920,500	5,010,000
3. Interest Received On Bank deposits					
Gene Fund	-	-	6. Advance to outside Deptt.	349,850	2,203,164
Authority Fund (Incl Branches)	2,091,782	14,954,007			
Interest on Sweep(flexi deposit) (Syndicate)	2,662	-	7. Refilling of Franking Machine	200,000	200,000
Interest on FD (Syndicate Bank)	6,065,391	-			
Interest on Flexi (Gene Fund)			8. Contribution to Gene Fund 4,00,00,000		
Interest on FD (SBI)			Less:- Refund from Gene (2,00,00,000)	20,000,000	20,524,450
			9. Advance to Employee of PPVFRA	1,242,058	2,928,890
4. Refund of Grant from Field Gene Bank	-	-	10. Finance Charges	-	17,424
5. Refund of Grant from maintainance of Reference Varieties	1,385,537	385,249	11. TDS Deducted by bank		-
6.Refund of Grant from Training Centres	110,053	246,954	12. Fixed Deposit- Gene Fund	23,410,000	187,514,407
7. Refund of Grant for Development of DUS Guidelines (New DUS Centre)	87,858	-	13. Fixed Deposit-Authority		
			SBI	-	45,355,857
8. Refund of Advance from Employee of PPVFRA	205,725	834,917	Syndicate Bank-A/c No.-91534050003894	-	54,335,034
			A/C No. 91535030000206	-	54,000,000
9. Refund of Grant from Referral Laboratories	-	758,304	A/C No. 915352010008572	350,000,000	-

10. Unclassified Receipts	270,450	-			
11. Fees / Subscriptions/Other Income			14. Recurring Deposit-(CPF)	-	-
Application/Registration Fees	7,207,200	7,481,700			
Advance for Application Fees/Registration Fees	114,000	-			
PVJ Subscription Fees	2,172,500	152,000	15. Statutory Liabilities Paid	9,330,950	8,812,937
Fees for Notice of Opposition		-			
Annual Fees (Including Share from sale of Seeds)- Gene Fund	8,342,808	20,601,230	16. Other Remittances	93,526	45,257
DUS Test Fees	5,843,500	5,793,500			
Inspection Fees	-	-	**17. Creation of Auto Sweep(flexi deposit)**		
Annual Return Form	-	-	Creation of Sweep(flexi deposit)-SBI	-	11,983,000
Other Income (including prior period)	1,905,691	174,000	Creation of Sweep(flexi deposit)-SBI-GENE	-	1,060,000
Sale of Publications	-	-	Creation of Sweep(flexi deposit)-Syndicate	45,000	32,928,000
Annual Renewal Fees	6,506,896	5,855,009			
Sale of Old Newspapers, Scrap	46,485	53,282	18. Contribution to ITPGFRA	-	3,799,774
Recovery of used car	-	3,060			
Recoupment of Imprest/Tfrd to Bank	-	222,634	**19. Closing Balances**		
Amount of Refund/Reversal (Creditors)	-	-			
Contribution from Authority Fund4,00,00,000		-			
Less: Refund to Authority Fund (2,00,00,000)	20,000,000	21,059,050	a) Imprest (Cash In hand)		
Reversal of TDS deducted	-	-	Authority	25,000	2,601
			Ranchi Branch	1,337	1,137

12. Encashment of Sweep (flexi deposit)-SBI	-	19,395,643	Guwahati Branch	33	1,121
			Shivmoga Branch	1,891	661
13. Encashment of Sweep(flexi deposit)-SBI-GENE	-	122,830,859	Pune Branch	-	9,766
			b) Bank Balances		
14. Encashment of Sweep(flexi deposit)-Syndicate	-	112,368,091	State Bank of India	33,063,163	14,053,733
			Syndicate Bank		
15. Interest from Sweep (flexi deposit).		-	A/C No. 91532140000064	10,388	52,388
			A/C No. 91532010008572	68,452,522	14,469,683
16. Encashment of FD			A/C No. 91532140008630	1,555,493	1,365,857
SBI			Remmitance in Transit	-	-
A/C No. 34753570743	-	130,162	SBI (Gene Fund)	18,596,218	2,496,562
A/C No. 37371154750	-	2,147,370	SBI Guwahati Branch	128,471	34,405
A/C No. 37437532695	-	79,555	SBI Ranchi Branch	121,283	24,009
Syndicate Bank- A/c No.- 91534050003894	-	36,335,034	SBI Palampur Branch	108,189	24,338
SBI-Gene Fund	18,586,987	21,401,451	Canara bank Shivamogga Branch	408,033	12,717
Syndicate Bank-A/C No. 91532010008572	379,841,725	-	Bank of Maharashtra Pune Branch	129,921	-
17. CPF Recurring Deposit	240,000	838,671			
18. LS & PC	-	-			
19. Security Deposit	-	30,000			
20. Refund from outside Deptt	16,966	21,825			
TOTAL	**1,044,569,192**	**620,109,613**	**TOTAL**	**1,044,569,192**	**620,109,613**

Chapter 11: Citizen's Charter

11.1 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.

11.2 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.

11.3 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.

11.4 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

11.5 GRIEVANCES REDRESSAL MECHANISM:

Earlier Dr. R.C. Agrawal, Registrar-General, has served as 1st Appellate Authority for RTI matters in PPV&FRA till 22.11.2019.

Registrar, PPV&FRA, is designated as the 1st Appellate Authority for RTI matters from 23.11.2019 and can be contacted at:

Dr. Ravi Prakash,
Registrar
1st Appellate Authority
Protection of Plant Varieties and Farmers' Rights Authority
S-2, A Block, NASC Complex, DPS Marg,
New Delhi-110012.
Ph: 011-25843853, Fax: 011-25840478
E-mail: prakash.ravi@nic.in; www.plantauthority.gov.in

Deputy Registrar, PPV&FRA, is designated as the Central Public Information Officer to address the RTI matters and can be contacted at:

Sh. Uma Kant Dubey,
Deputy Registrar
Central Public Information Officer
Protection of Plant Varieties and Farmers' Rights Authority
S-2, A Block, NASC Complex, DPS Marg,
New Delhi-110012.
Ph: 011-25843853, Fax: 011-25840478
E-mail: uk.dubey@gov.in; www.plantauthority.gov.in

Annexure I: Members of PPV & FR Authority (As On 31 March, 2020)

List of Authority Members

S.No	Name	Designation	Address
1	Dr. S.K. Malhotra	Agriculture Commissioner	Department of Agriculture, Cooperation and Farmers Welfare, Ministry of Agriculture and Farmers Welfare, Govt. of India, Krishi Bhavan, New Delhi – 110 001
2	Dr. A.K. Singh	Deputy Director General (Crop Science)	Division of Crop Science, Ministry of Agriculture, Govt. of India, Indian Council for Agricultural Science, Krishi Bhavan, New Delhi - 110 001
3	Shri Ashwani Kumar	Joint Secretary (Seeds)	Department of Agriculture, Cooperation and Farmers Welfare, Ministry of Agriculture and Farmers Welfare, Govt. of India Krishi Bhawan, New Delhi – 110 001
4.	Dr. Anju Rathi Rana	Joint Secretary & Legal Advisor	Room No. 406B(A), 4th Floor, A Wing, Department of Legal Affairs, Shastri Bhawan, New Delhi-110001.
5	Dr. B.N.S. Murthy	Horticultural Commissioner	Department of Agriculture, Cooperation and Farmers Welfare, Ministry of Agriculture, Govt. of India, Room no 238, Krishi Bhawan, New Delhi – 110 001
6	Dr. Kuldeep Singh	Director	National Bureau of Plant Genetic Resources, Pusa, DPS Marg, New Delhi-110 012
7	Dr. Mohd. Aslam	Adviser/Scientist 'G'	Department of Biotechnology, Ministry of Science & Technology, Govt. of India, Room No. 809, 8th Floor, Block- 2, CGO Complex, Lodhi Road, New Delhi- 110003
8	Dr. Sujata Arora	Adviser	Ministry of Environment & Forests & Climate Change, Room No.V-235, Indira Paryavaran Bhawan, New Delhi - 110003
9	Shri Bihari Lal Sharma	Executive Director	Youth for Sustainable Development, B-2, M.C. Car Parking-cum-Commercial Complex, Near H.P. High Court, Shimla – 171 001
10	Shri Aruna Kumara V.K.	Director	Krishi Prayoga Pariwara, Krishi Nivas, Kuruvalli, Thirthahalli, Shimoga Dist. Karnataka – 577432

11	Shri M Prabhakar Rao	Chairman & Managing Director	Nuziveedu Seeds Private Limited, NSL Icon, 4th Floor, Opp. ICICI Bank, Road No. 12, Banjara Hills, Hyderabad, Telangana – 500 034
12	Dr. R.C. Srivastava	Vice Chancellor	Dr. Rajendra Prasad Central Agricultural University, Pusa, Samastipur – 848 125
13	Dr. Nikki Kumari (Hembrom)	--	MIG 52, Hanuman Nagar, Kankarbagh, Patna – 800 020
14	Principal Secretary(Agriculture)	Principal Secretary (Agriculture)	Government of Maharashtra, Mantralaya, Mumbai – 462004
15	Dr. Rajesh Rajora. IAS	Principal Secretary (Agriculture)	Government of Madhya Pradesh, Mantralaya, Room No. 83, Ballabh Bhavan, Bhopal-462004

Annexure II: Details of Human Resources of PPV&FR Authority as on 31.03.2020

S. No	Name	Designation	Pay Level as per 7th CPC
1.	Dr. K. V. Prabhu	Chairperson	Level 17 (₹ 225000/-)
2.	**Vacant (w.e.f. 23.12.2019)**	Registrar -General	Level 15 (₹ 182200-224100)
3.	Dr. Ravi Prakash	Registrar	Level 13 (₹ 123100-215900)
4.	Dr. T. K. Nagarathna	Registrar	
5.	**Vacant (w.e.f. 05.12.2018)**	**Registrar**	
6.	**Vacant (w.e.f. 01.07.2019)**	**Financial Advisor**	
7.	Sh. D. R. Choudhury	Joint Registrar	Level 12 (₹ 78800-209200)
8.	**Vacant (11.11.2017)**	Joint Registrar	
9.	Sh. U.K. Dubey	Deputy Registrar	Level 11 (₹ 67700-208700)
10.	Sh. R. S. Sengar	Deputy Registrar	
11.	Sh. D. S. Raj Ganesh	Legal Advisor	
12.	**Vacant (23.05.2018)**	**Legal Advisor**	
13.	Dr. A. K. Singh	PVE	Level 7 (₹ 44900-142400)
14.	Dr. D. S. Plania	Technical Assistant	Level 6 (₹ 35400-112400)
15.	Sh. Arvind Kumar Rai	Computer Assistant	
16.	Sh. Sanjay Kr. Gupta	Computer Assistant	
17.	Smt. Shipra Mathur	Computer Assistant	
18.	Sh. Nitesh Kumar Verma	Computer Assistant	
19.	Sh. Shyam Narayan Prasad	Computer Assistant	

Annexure III: Statement Showing Funds Released to New DUS Centres/Projects During 2019-20

Sr. No.	Name of the New DUS Centre	Crop	Release During 2019-20 (₹)
1	IIHR, ICAR-Unit, Bangalore	Papaya and Custard Apple	2,18,627
2	Dr. Y. S. Parmar University of Horticulture & Forestry, Solan.	Carnation	5,50,000
3	IIHR, ICAR-Unit, Bangalore	China Aster	1,89,308
4	TNAU, Coimbatore	Papaya and Custard Apple	2,37,097
5	UHS, Bagalkot	Moringa Oleifera Lam	3,46,711
6	IFGTB, Coimbatore	Tectona Grandis	4,41,620
7	CIAH, ICAR-Unit, Bikaner	Chironji and Tamarind	47,680
8	CISH, ICAR-Unit, Lucknow	Bael	5,23,761
9	CIAH, ICAR-Unit, Bikaner	Bael	2,28,766
10	NRC, ICAR-Unit, Puttur, Karnataka	Cashew	2,45,088
11	TNAU, Coimbatore	Neem, Karanj & Jatrapha	3,77,906
12	Dr. Y. S. Parmar University of Horticulture & Forestry, Solan	Willow (Salix Species)	4,34,992
13	IIHR, ICAR-Unit, Bangalore	Marigold	4,64,227
14	CCARI-ICAR, Goa	Kokum	8,05,394
15	NRCSS, Ajmer	Ajwain, Dill, Nigella, Celery & Anise	8,69,181
16	IFGTB, Coimbatore	Ailanthus	4,52,469
17	IIHR, ICAR-Unit, Bangalore	Gerbera	3,21,234
18	CTRI, ICAR-Unit, Rajahmundry	Flue Cured Virginia and Bidi	5,60,233
19	CPCRI, Karnataka	Arecanut	1,70,404
20	CIAH, ICAR-Unit, Bikaner	Datepalm	3,35,617
21	Dr. Y. S. Parmar University of Horticulture & Forestry, Solan	Seabuckthorn	2,41,860
22	CISH, (Central Ins for Subtropical Horticulture), ICAR-Unit, Lucknow	Anola	5,36,417

23	CISH, (Central Ins for Subtropical Horticulture), ICAR-Unit, Lucknow	Jamun	4,24,202
24	Dr. B. S. Konkan Krishi Viswavidyalaya, Dapoli	Nutmeg	3,49,396
25	IARI, Division of vegetable, ICAR-Unit, New Delhi	Radish and Carrot	12,46,483
26	IARI, Division of Fruit & Horticulture, ICAR-Unit, New Delhi	Lemon & Pummelo	9,28,182
27	ICAR Research Complex NEH Region, Umiam	Jackfruit	6,83,876
28	SASRD, Nagaland University	Chow- Chow	8,43,000
29	UAS, GKVK, Bangalore	Jackfruit	4,52,048
30	NRC, ICAR-Unit, Muzaffarpur	Litchi & Guava	5,50,000
31	IARI, New Delhi	Broccoli	4,81,674
32	BSKKV, Dapoli	Kokum	4,58,115
33	CITH, Srinagar	Olive	4,50,000
34	NEIST, JORHAT	Lemon Grass	8,00,000
35	IARI (Regional Station), Katrain Kullu Valley)	Radish & Carrot	4,60,028
36	ICAR- NEH Region, Umiam, Meghalaya	Lemon & Pummelo	8,92,507
37	SKAUST- K, Srinagar	Saffron	8,18,841
38	Dr. Y. S. Parmar University of Horticulture and Forestry, Solan	Dahlia	8,95,590
39	BSKKV, Dapoli, Maharastra	New Estb. of Seed Bank (Pulses, Vegetables and cereals of Farmers' varieties)	7,56,237
40	SHUATS, Allahabad, Uttar Pradesh	(New Estb. of Seed Bank) (Maize, Millet, Pulses and Veg. of Farmers Varieties of Vidhyan Region)	9,00,000
41	UAHS, Shivamogga, Karnataka	New Estb. of Seed Bank	7,11,746
42	UAHS, Shivamogga	Anthurium	9,00,000
43	ICAR, IIHR, Bangalore	Dolichos Bean	9,00,000
44	SKUAST, Srinagar	Kalazeera	9,00,000

45	HRC, Tripura	Banana	4,80,000
46	NEH, Region, Barapani (Nagaland)	Elephant foot Yam & Taro	2,00,000
47	BCKV, kalyani	Dahlia & Hibiscus	9,00,000
48	ACHF, NAU, Navsari, Gujrat	Eucalyptus Urophylla	2,34,500
49	DFR-ICAR, Pune	Rose	16,12,000
TOTAL			**2,78,27,017**

Annexure IV: Statement Showing Funds Released to Existing DUS Centres/Projects during 2019-20

Sr. No.	Name of DUS Centre	Crop	Release During 2019-20 (₹)
1	BCKV, (Bidhan Chandra Krishi Visavidyalaya), Kalyani	Yam and Taro	10,489
2	IIHR, ICAR-Unit, Bangalore	Tuberose	8,38,628
3	Central Tuber Crops Res Institute, Trivandrum	Sweet Potato and Cassava	4,00,000
4	NBRI, ICAR-Unit, Lucknow	Gladiolus, Bougainvillea & Canna	1,17,936
5	BCKV, (Bidhan Chandra Krishi Visavidyalaya), Kalyani	Pointed Gourd	5,14,405
6	CRRI, ICAR-Unit, Cuttack (Genetic Diversity)	Rice	27,11,000
7	IIHR, ICAR-Unit, Bangalore	Jasmine	3,65,328
8	CITH, (Central Institute for Tropical Horticulture), ICAR-Unit, Srinagar	Peach, Plum, Apple, Almond, Pear, Apricot & walnut	8,85,892
9	CISH, (Central Ins for Subtopical Horticulture), ICAR-Unit, Lucknow	Mango	8,68,869
10	RARI, Durgapur, Jaipur	Barley	2,99,667
11	IARI, ICAR-Unit, Division of Floriculture	Tuberose	1,90,000
12	IARI, Division of Floriculture, New Delhi	Bougainvillea	3,26,531
13	CIAH, ICAR-Unit, Bikaner	Watermelon and Muskmelon	2,12,894
14	MPKV, (Mathma Phule Krishi Viswavidyalaya), Rahuri, Pune	China aster	3,14,654
15	IARI, Division of Floriculture and Landscaping, New Delhi	Rose and Chrysanthemum	2,00,000
16	JNKVV, Jabalpur	Field Pea, Linseed	3,92,717
17	BCKV, (Bidhan Chandra Krishi Visavidyalaya), Kalyani	Betel Vine	4,90,949
18	CIMAP, (Central Institute for Medicinal and Aromatic Plants), Lucknow	Medicinal Plants	4,38,394
19	CIAH, (Central Ins for Arid Horticulture), ICAR-Unit, Bikaner	Ber	5,14,811
20	IARI, Division of Vegetable Science, New Delhi	Bottle Gourd	6,35,848

21	IARI, Regional Station, Katrain	Cabbage and Cauliflower	2,75,095
22	IIHR, ICAR-Unit, Bangalore	Mango	4,42,703
23	NRC, ICAR-Unit, Trichy	Banana	4,42,309
24	TRA, Tocklai	Tea	2,51,006
25	CARI, ICAR-Unit, Port Blair	Noni	2,74,586
26	TNAU, Coimbatore	Small Millet	8,60,000
27	NBPGR, ICAR-Unit, New Delhi	Grain Amaranth	2,95,000
28	TNAU, Coimbatore	Jasmine	5,50,000
29	DGR, (Directorate of Groundnut Research), ICAR-Unit, Junagarh	Groundnut	3,56,850
30	IARI, Division of Vegetable Science, New Delhi	Chilli	7,36,288
31	JNKVV, Jabalpur	Sesame and Niger	4,14,978
32	IIHR, ICAR-Unit, Bangalore	Watermelon and Muskmelon	5,94,399
33	Central Sericultural Research and Training Institute, Mysore	Mulberry	2,56,136
34	JAU, (Junagadh Agriculture University), Jamnagar	Castor	20,09,948
35	Dr. Y. S. Parmar University of Horticulture & Forestry, Solan	Poplar Germplasm	3,81,774
36	IFGTB (Institute of Forest Genetics and Tree Breeding), Coimbatore	Eucalyptus and Casuarina	3,18,155
37	IIHR, ICAR-Unit, Bangalore	Amaranth, Palak, Ridge Gourd	6,20,131
38	NRCSS, (National Research Centre for Seed Spices), ICAR-Unit, Ajmer	Seed Spices	6,45,582
39	AAU, (Assam Agriculture University), Jorhat	Rice	4,06,685
40	IARI, Division of Floriculture, ICAR-Unit, New Delhi	Marigold	6,40,136
41	VPKAS, (Vivekananda Parvatiya Krishi Anusandhan Shala), ICAR-Unit, Almora	Rajma, Soybean, Maize	6,55,391
42	DOGR, (Directorate of Onion and Garlic Research), ICAR-Unit, Rajgurunagar	Onion and Garlic	7,00,000
43	NRC (National Res Centre for Orchids), ICAR-Unit, Sikkim	Orchids	4,40,087
44	NRCP, ICAR-Unit, Sholapur	Pomegranate	5,98,307
45	IARI, Division Of Veg. Science, ICAR-Unit, New Delhi	Onion and Garlic	9,68,617
46	IISR, (Indian Institute of Sugarcane Research), ICAR-Unit, Lucknow	Sugarcane	6,65,176

47	IIHR, ICAR-Unit, Bangalore	Betel Vine	4,50,063
48	CSAUA&T, (Chandra Sekhar Azad University of Agriculture and Technology), Kanpur	Mustard, Wheat	10,36,000
49	IISR, (Indian Inst. of Spices Research), ICAR-Unit, Calicut	Spices	7,01,708
50	DSR, (Directorate of Soybean Research), ICAR-Unit, Indore	Soybean	5,65,888
51	IIPR, (Indian Ins of Pulses Research), ICAR-Unit, Kanpur	Mungbean, Uradbean, lentil, Rajma, Vegetable Pea	13,32,124
52	NRC, (National Res Centre of Grapes), ICAR-Unit, Pune	Grapes	4,62,973
53	IARI, ICAR-Unit, Regional Station, Karnal	Rice	7,61,090
54	Sugarcane Breeding Inst., ICAR-Unit, Coimbatore	Sugarcane	14,16,330
55	IGKV, Raipur	Grow out Test (Rice)	6,29,736
56	Sugarcane Breeding Inst., ICAR-Unit, Karnal	Sugarcane	3,74,861
57	IIWBR, ICAR-Unit, Karnal	Barley & Wheat	21,22,891
58	DRMR, (Directorate of Rapeseed and Mustard Research), ICAR-Unit, Bharatpur	Rapeseed and Mustard	6,93,994
59	IIHR, ICAR-Unit, Bangalore	Chilli	16,05,314
60	RAU Bikaner-Mandore AICPMIP, Jodhpur	Pearl Millet	5,85,471
61	PAU, (Punjab Agriculture University), Ludhiana	Oat, Cowpea & Guinea Grass, cotton	9,23,007
62	Central Tuber Crops Research Institute, ICAR-Unit, Trivandrum	Elephant Foot yam, Taro, Yam Bean & Greater Yam	2,55,689
63	PDKV, (Panjab Rao Deshmukh Krishi Viswavidyalaya), Akola	Chickpea , Red Gram	16,19,025
64	IARI, Division of Veg. Sc., New Delhi	Amaranth, Palak, Ridge Gourd, Bottle Gourd	5,00,000
65	KAU, (Kerala Agricultural University), Thrissur	Orchid	7,50,531
66	DMAPR, (Dir. Medicinal & Aromatic Plant Res.), Anand	M&A plants	6,66,527
67	CCSHAU, (Choudhary Charan Singh Hisar Agriculture University), Hisar	Cotton, Chickpea	5,57,858
68	IARI, ICAR-Unit, Regional Station, Indore	Wheat	4,06,608
69	CPRI, (Central Potato Res. Instt.), ICAR-Unit, Shimla	Potato	13,03,843
70	NEH, ICAR-Unit, Region Barapani, Manipur	Rice	11,72,410

71	IARI, Division of Veg. Sc., New Delhi	Cabbage and Cauliflower	6,64,497
72	PJTSAU, (Jayashankar Telengana State Agricultural University), Hyderabad	Maize	15,91,950
73	TNAU, (Tamil Nadu Agricultural University), Coimbatore	Rice, Sunflower, Groundnut	4,99,736
74	Central Tuber Crops Research Institute, ICAR-Unit, Regional Station, Bhubaneswar	Sweet Potato and Cassava	2,00,000
75	IIMR, ICAR-Unit, Hyderabad (Millets)	Sorghum	3,83,172
76	CRIJAFR, (Central Res Ins for Jute and Allied Fibres Research), Barrackpore & CSRS, Budbud	Jute	3,37,852
77	IIOR, ICAR-Unit, Hyderabad	Sunflower, Castor & safflower	7,96,508
78	CPCRI, ICAR-Unit, Kerala	Coconut	3,96,778
79	UAS, GKVK, Bangalore	Small Millet	9,05,536
80	CISH, (Central Ins. For Subtropical Horticulture), ICAR-Unit, Lucknow	Guava & Litchi	4,76,103
81	IIPR, (Indian Ins. of Pulses Research), ICAR-Unit, Kanpur	Chickpea, Pigeon pea	15,70,974
82	MPKV, Rahuri	Sorghum, Pearl Millet, Chickpea	16,13,540
83	IIHR, ICAR-Unit, Hassarghatta, Bangalore	Vegetables (Bottle Guard)	23,25,216
84	UAS, (University of Agriculture Sciences), Dharwad	Cotton, Soybean, Groundnut, Durum Wheat and Sesame	17,90,962
85	IIHR, ICAR-Unit, (Indian Ins. for Horticultural Research), Bangalore	Rose & Chrysanthemum	5,53,737
86	IIRR, ICAR-Unit, Hyderabad	Rice	11,95,431
87	IIMR, ICAR-Unit, New Delhi	Maize	23,87,021
88	CICR, Coimbatore	Cotton	4,56,440
89	CICR, ICAR-Unit, (Central Ins. for Cotton Research), Nagpur	Cotton	27,67,774
90	IIVR, ICAR-Unit, (Indian Ins. of Veg. Research), Varanasi	Okra, Brinjal, Tomato, Cabbage, Cauliflower	19,27,000
91	IIHR, Bangalore	Chrysanthemum	4,75,000
92	IARI, New Delhi	Chrysanthemum	5,25,000
Total			**7,02,62,519**

Annexure V: Statement Showing Funds Released to Field Gene Banks during 2019-20

S. No.	Name of Centres	Release During 2019-20 (₹)
1	BAU Ranchi	6,62,041
2	Dr. Balasaheb Konkan Krishi Vidyapeeth, Dapoli	9,97,736
3	Dr. Y. S. Parmar University of Horticulture & Forestry (Temperate Fruits) (Apple, Peach, Plum, Pear & Walnut)	7,36,860
4	NBPGR, New Delhi	15,67,301
TOTAL		**39,63,938**

Annexure VI: Statement Showing Funds Released to the Organisation/Centre for Training & Awareness during 2019-20

S. No.	Name of Centers	Release During 2019-20 (₹)
1	Bidhan Chandra Krishi Viswa Vidyalaya, Kalyani, (BCKV)	80,000
2	SKUAST, Rajouri, jammu	80,000
3	CSAU&T, Kanpur	1,60,000
4	CTCRI, Trivendrum	4,00,000
5	MSSRF, Chennai	1,60,000
6	Indian Institute of Wheat & Barley, Karnal	1,60,500
7	IIHR, Bangalore	80,000
8	Orissa Uni. of Agri. & Tech., Bhubaneswar (OUAT)	5,00,000
9	IARI, Regional Station, Indore	80,000
10	ICAR-DRMR, Bharatpur	2,20,000
TOTAL		**19,20,500**

Annexure VII: Crops Under Registration

Sr. No.	Crop	Botanical name
1.	Rice	*Oryza sativa* L.
2.	Bread wheat	*Triticum aestivum* L
3.	Maize	*Zea mays* L.
4.	Sorghum	*Sorghum bicolor* (L.) Moench
5.	Pearl millet	*Pennisetum glaucum* (L.) R.Br.
6.	Chickpea	*Cicer arietinum* L.
7.	Mungbean	*Vigna radiata* (L.) Wilczek
8.	Urdbean	*Vigna mungo* (L.) Hepper
9.	Fieldpea	*Pisum sativum* L.
10.	kidney bean	*Phaseolus vulgaris* L.
13	Indian mustard	*Brassica juncea* L. Czern & Coss
14	Karan rai	*Bracissa carinata* A Braun
15	Rapeseed(toria)	*Brassica rapa* L.
16	Gobhi sarson	*Brassica napus* L.
17	Groundnut	*Arachis hypogaea* L.
18	Soybean	*Glycine max* (L.) Merrill
19	Sunflower	*Helianthus annuus* L.
20	Safflower	*Carthamus tinctorius* L.
21	Castor	*Ricinus communis* L.
22	Sesame	*Sesamum indicum* L.
23	Linseed	*Linum usitatissimum* L.
24	Diploid cotton	*Gossypium arboreum* L.
25	Diploid cotton	*Gossypium herbaceum* L.
26	Tetraploid cotton	*Gossypium hirsutum* L.
27	Tetraploid cotton	*Gossypium barbadense* L.
28	Jute	*Corchorus olitorius* L.
29	Jute	*Corchorus capsularis* L.
30	Sugarcane	*Saccharum* L.
31	Black pepper	*Piper nigrum* L.
32	Small cardamom	*Elettaria cardamomom* Maton
33	Turmeric	*Curumma longa* L.

34	Ginger	*Zingiber officinale* Rosc.
35	Tomato	*Lycopersion lycopersicum* (L.) Karsten ex. Farw.
36	Brinjal	*Solanum melongena* L.
37	Okra	*Abelmoschus esculentus* (L.) Moench.
38	Cauliflower	*Brassica oleracea* L.var. *botrytis*
39	Cabbage	*Brassica oleracea* L. var *capitata*
40	Potato	*Solanum tuberosum* L.
41	Onion	*Allium cepa* L.
42	Garlic	*Allium sativum* L.
43	Rose	*Rosa* spp.*(*other than *R.damascena)*
44	Chrysanthemum	*Chrysanthemum* spp.
45	Mango	*Mangifera indica* L.
46	Duram wheat	*Triticum durum* Desf.
47	Dicoccum wheat	*Triticum dicoccum* L.
48	Other Triticum species	
49	Isabgol	*Plantago ovata* Forsk
50	Menthol mint	*Mentha arvensis* L.
51	Damask Rose	*Rosa damascena* Mill
52	Periwinkle	*Catharanthus roseus* L.
53	Brahmi	*Bacopa monnieri* L.Pennell
54	Coconut	*Cocos nucifera* L.
55	Orchids	*Vanda*
56	Orchids	*Dandrobium*
57	Orchids	*Cymbidium*
58	Pomegranate	*Punica granatum* L
59	Orchid	*Cattleya* Lindl.
60	Orchid	*Phalaenopsis* Blume
61	Eucalyptus	*Eucalyptus camaldulensis* Dehnh.
62	Eucalyptus	*Eucalyptus tereticornis* Sm.
63	Casurina	*Casuarina equisetifolia* L
64	Casurina	*Casuarina junghuhniana* Miq.
65	Bitter Gourd	*Momordica charantia* L.
66	Bottle Gourd	*Lagenaria siceraria (*Mol.*)* Standl.
67	Cucumber	*Cucumis sativus* L.
68	Pumpkin	*Cucurbita moschata* Duch. ex Poir.

69	Barley	*Hordeum vulgare* L.
70	Coriander	*Coriandrum sativum* L.
71	Fenugreek	*Trigonella foenum graecum* L.
72	Almond	*Prunus dulcis* (Mill.) D.A. Webb
73	Apple	*Malus domestica* Borkh
74	Pear	*Pyrus communis* L.
75	Apricot	*Prunus armeniaca* L.
76	Cherry	*Prunus avium* L.
77	Walnut	*Juglans regia* L.
78	Grapes	*Vitis* spp.
79	Indian jujube (Ber)	*Ziziphus mauritiana* Lamk.
80	Tea	*Camellia sinensis*
81	Tea	*Camellia assamica*
82	Tea	*C.assamica* ssp *lasiocalyx.*
83	Acid Lime	*Citrus aurantifolia* Swingle
84	Mandarin	*Citrus reticulata* Blanco
85	Sweet Orange	*Citrus sinensis* (L.) Osbeck
86	Bougainvillea	*Bougainvillea Comm. Ex* Juss.
87	Banana	*Musa* spp.
88	Orchid	*Oncidium* Sw.
89	Canna	*Canna* L.
90	Gladioulus	*Gladioulus* L.
91	Muskmelon	*Cucumis melo* L.
92	Watermelon	*Citrullus Lanatus* (Thunb.) Mansf.
93	Jasmine	*Jasminum auriculatum*. L.
94	Tuberose	*Polianthes tuberose* L.
95	Papaya	*Carica papaya* L.
96	China Aster	*Callistephus chinensis* (L.)Nees.
97	Peach	*Prunus persica* L Batsch.
98	Japanese Plum	*Prunus salicina* L.
99	Strawberry	*Fragaria x ananasan* Duch.
100	Chilli, Bell Pepper and Paprika	*Capsicum annuum* L.
101	Finger Millet	*Eleusine coracana* (L.) Gaertn.
102	Foxtail Millet	*Setaria italic* (L.) Beauv

103	Vegetable Amaranth	*Amaranthus tricolor* L.
104	Ridge gourd	*Luffa acutangula* (L.) Roxb.
105	Spinach beet	*Beta vulgaris var. bengalensis* Roxb.
106	Carnation	*Dianthus caryophyllus* L.
107	Orchid	*Paphiopedilum Pfitz.*
108	Noni	*Morinda citrifolia* L.
109	Bael	*Aegle marmelos* (L.) Correa
110	Jamun/Black plum	*Syzygium cumini* (L.) Skeels.
111	Nutmeg	*Myristica fragrans* Houtt.
112	Jasmine/Mogra	*Jasminum sambac* L.
113	Custard apple / Sugar apple	*Annona squamosa* L.
114	Kalmegh /King of Bitters	*Andrographis paniculata* (Burm.f.) Wall. ex Nees
115	Karanj	*Pongamia pinnata* (L.) Pierre.
116	Neem	*Azadirachta indica* A. Juss.
117	Indian Gooseberry	*Emblica officinalis Gaertn*.
118	Guava	*Psidium guajava L*.
119	Litchi	*Litchi chinensis* Sonn.
120	Marigold	*Tagetesspp.* L.
121	Betelvine	*Piper betle* L.
122	Deodar	*Cedrus deodara* (Roxb.) G.Don
123	Chir Pine	*Pinus roxburghii* Sargent
124	Mulberry	*Morus spp.*
125	Jasmine	*Jasminum multiflorum* L.
126	Common/ Sweet Buckwheat	*Fagopyrum esculentum*
127	Tartary/ Bitter Buckwheat	*Fagopyrum tataricum*
128	Rajgeera (the King's grain) or Ramdana (Lord Rama's grain).	*Amaranthus hypocondricus*
129		*Amaranthus cruentus*
130		*Amaranthus caudatus*
131		*Amaranthus edulis*
132	Faba bean	*Vicia faba* L.
133	Jatropha	*Jatropha curcas* L.
134	Proso Millet	*Panicum maliaceum* L.
135	Barnyard Millet	*Echinocloa frumentaceae* (Roxb.) Link

136	Little Millet	*Panicum sumatrense* Roth. Ex. Roemer And Schultes
137	Kodo Millet	*Paspalum scorbiculatum* L.
138	Elephant Foot Yam	*Amorphophallus paeoniifolius*
139	Taro	*Colocasia esculenta*
140	Giant SwampTaro	*Cyrtosperma chamissionis/C.merkusii*
141	Cashew	*Anacardium occidental L.*
142	Arecanut	*Areca catechu L.*
143	Chironji	*Buchananialanzan Sperng.*
144	Tamarind	*Tamarindusindica* L.
145	Sweet potato	*Ipomoea batatas* (L.) Lam
146	Cassava	*Manihotesculenta* Crantz.
147	Poplar	*Populusdeltoides* Bartr.
148-154	Willow (7 species)	*Salix tetrasperma, Salix nigra, Salix jessoensis, Salix x rubens, Salix matsudana, Salix alba, Salix acmophylla* .
155	Oat	*Avena sativa* L.
156	Date Palm	*Phoenix dactylifera* L.
157	Moringa	*Moringa oleifers* L.
158	Melia	*Melia dubia Cav.*
159	Pointed Gourd (Registration open only for extant variety)	*Trichosanthes dioica Roxb.*
160	Crossandra (Registration open only for extant variety)	*Crossandra infundibuliformis (L.) Nees.*
161	Cowpea (Registration open only for extant variety)	*Vigna unguiculata (L.) Walp. ssp. unguiculata and Vigna unguiculata (L.) Walp. ssp. sesquipedalis (L.) Verdc. (L.) Walp.*

Annexure VIII: Certificates of Registration issued During 2019-20

S.No.	Registration No.	Type of variety	Denomination	Crop	Applicant Name
1.	104 of 2019	Extant (VCK)	NSFL-701A	Sunflower	Nuziveedu Seeds Ltd
2.	105 of 2019	New	Rajendra Hybrid Makka-3	Maize	Indian Council of Agricultural Research
3.	106 of 2019	Extant (Notified)	Sankeshwar 814 (Co Snk 05104)	Sugarcane	University of Agricultural Sciences
4.	107 of 2019		Sankeshwar 049 (Co Snk 05103)		
5.	108 of 2019		DHRS 1	Finger Millet	
6.	109 of 2019	New	DBW 168	Wheat	Indian Council of Agricultural Research
7.	110 of 2019	Extant (Notified)	DBW 173		
8.	111 of 2019		DBW 71		
9.	112 of 2019		BRG 5	Pigeon pea	University of Agricultural Sciences
10.	113 of 2019		CSV 32F (SPV 2128)	Sorghum	Indian Council of Agricultural Research
11.	114 of 2019		Central Barley DWRB 137	Barley	
12.	115 of 2019		Bhima Safed	Onion	
13.	116 of 2019		UAS-334	Wheat	University of Agricultural Sciences
14.	117 of 2019		UAS 375		
15.	118 of 2019		Phule Madhur (RSSGV 46)	Sorghum	Mahatma Phule Krishi Vidyapeeth
16.	119 of 2019		Pusa Malwi (HD 4728)	Durum Wheat	Indian Agricultural Research Institute
17.	120 of 2019		Bhima Shubhra (NRCWO-4/W-009)	Onion	Indian Council of Agricultural Research
18.	121 of 2019		CSV 30F	Sorghum	
19.	122 of 2019		Dapoli Safed- 1	Finger Millet	Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth
20.	123 of 2019		SWARNA TRIPTI	Fieldpea	Indian Council of Agricultural Research
21.	124 of 2019		Krishi Gaurav (VR-338)	Chilli	
22.	125 of 2019		Kashi Sinduri (IVPBC-535)	Paprika	

23.	126 of 2019		Kashi Ganga (DVBG-1)	Bottle gourd	
24.	127 of 2019		Kashi Sharad (IIVR Sel-2)	Tomato	
25.	128 of 2019		Kashi Vishesh (CH-86)		
26.	129 of 2019		Kashi Amrit (DVRT-1)		
27.	130 of 2019		Kashi Anupam		
28.	131 of 2019		Kashi Hemant (IIVR Sel-1)		
29.	132 of 2019		Kashi Taru (IVBL-0)	Brinjal	
30.	133 of 2019		BRG-4 (BRG10-2)	Pigeon pea	University of Agricultural Sciences
31.	134 of 2019		Raj Vijay Wheat 4106 (MP 4106)	Wheat	Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya
32.	135 of 2019	EDV	NC-113 Bt	Tetraploid Cotton	Nuziveedu Seeds Ltd
33.	136 of 2019		NC-2153 BGII		
34.	137 of 2019		NC-126 Bt		
35.	138 of 2019		NCS-913 Bt		
36.	139 of 2019		NC-1207 BG-II		
37.	140 of 2019		NC-47 (GMS)		
38.	141 of 2019		Mallika BGII (NCS 207 BGII)		
39.	142 of 2019		NC-1108 Bt		
40.	143 of 2019		Mallika Bt (NCS 207 Bt)		
41.	144 of 2019		Bunny Bt(NCS 145 Bt)		
42.	145 of 2019		JKCH 226 Bt	Tetraploid Cotton	JK Agri Genetics Ltd
43.	146 of 2019		JK VARUN (JKCH 555) Bt		
44.	147 of 2019		JK ISHWAR (JKCH 634) Bt		
45.	148 of 2019	New	C 5714		Maharashtra Hybrid Seeds Company Limited
46.	149 of 2019		C 5538		
47.	150 of 2019		C 5715		
48.	151 of 2019		NC-811(GMS)		Nuziveedu Seeds Ltd
49.	152 of 2019		NC-2051		
50.	153 of 2019	Extant (Notified)	GNR-3	Rice	Navsari Agricultural University
51.	154 of 2019	Farmer	Nataki		Arjun Singh

52.	155 of 2019		KANAK CHAMPA		Baliram Munda
53.	156 of 2019		KALAMDANI		Baliram Munda
54.	157 of 2019	Extant (VCK)	Bidhan Rupali(BC-4)	Jute	Indian Council of Agricultural Research
55.	158 of 2019	New	Pusa Basmati 1509 (IET 21959)	Rice	Indian Agricultural Research Institute
56.	159 of 2019		NP-922R	Rice	Nuziveedu Seeds Ltd
57.	160 of 2019		NC-1185	Tetraploid Cotton	
58.	161 of 2019	Extant (Notified)	Somnath (WGL-347:IET-20898)	Rice	Professor Jayashankar Telangana State Agricultural University
59.	162 of 2019	Extant (VCK)	KORYLAL	Rose	W. Kordes Sohne Rosenschulen GmbH & Co KG
60.	163 of 2019	Farmer	NMK-1 Golden	Custard Apple	Sh. Kaspate Navnath Malhari
61.	164 of 2019	Farmer	HANGOLE	Apricot	Hassan Khan
62.	165 of 2019		Sirkanth		Nadeem Hussain
63.	166 of 2019		GYALCHIMA TILI		Tsering Angmo
64.	167 of 2019		Khantey Halman		Mohammad Hussain
65.	168 of 2019		Nirma Chuli		Tsewang Punchok
66.	169 of 2019		Shalichuli		Hazi Moosa
67.	170 of 2019		Shikanda Tili		Miskin Tsering
68.	171 of 2019		Kir Chuli		Mohd Yaseen
69.	172 of 2019		Scho Chuli		Nadeem Hussain
70.	173 of 2019		Bichuli		Hazi Mohd Raza
71.	174 of 2019		Gultili		Miskin Tsering
72.	175 of 2019		Shabyar Chuli		Hazi Mohd Hassan Grongjhu
73.	176 of 2019		Narmo gosmin		Khatija Banoo
74.	177 of 2019		Khan Chuli		Haji Ali Khan
75.	178 of 2019		Sarita Purple Seedless	Grapes	Dattatraya Nanasaheb Kale
76.	179 of 2019		Nanasaheb Purple Seedless		Dattatraya Nanasaheb Kale
77.	180 of 2019		JAY SEEDLESS		HariBhau Maruti Waykar
78.	181 of 2019		SUDHAKAR SEEDLESS		Sudhakar Bhaskar Kshirsagar

79.	182 of 2019	New	Manjari Medika		National Research Centre for Grapes
80.	183 of 2019	Farmer	KHUSTA CHULI	Apricot	Hazi Mohd Hassan Grongjhu
81.	184 of 2019		KHARA ZANGI		Ali Jaffar
82.	185 of 2019		Khantey Chuli		Musa Mohd
83.	186 of 2019		KHANCHU CHAN		Fatima Banoo
84.	187 of 2019		KHANTEY STINGCHOS		Mohd Issaq
85.	188 of 2019		Stong Narmo		Ghulam Mehdi
86.	189 of 2019		ZGOKSUM		Ahmad Ali
87.	190 of 2019		NARMO GOCTSOS CHULI		Hussain Ali
88.	191 of 2019		SNO CHULI		Rahim Ullah
89.	192 of 2019		MERAK		Kacho Villayat Ali Khan
90.	193 of 2019		PIONG-PONG CHULI		Mukhtar Hussain
91.	194 of 2019		BADAM CHULI		Hazi Mohd Hassan Grongjhu
92.	195 of 2019		STARGACHA CHULI		Mohd Ali
93.	196 of 2019		STONNCHOLEY		Ghulam Nabi
94.	197 of 2019		ZAN CHULI		Mohd Yaseen
95.	198 of 2019		Khantey Phating		Sadiq Ali Mallah
96.	199 of 2019	New	KML 2006	Maize	Kaveri Seed Company Ltd
97.	200 of 2019		KML 5253		
98.	201 of 2019		KML 2293		
99.	202 of 2019		KML 2078		
100.	203 of 2019		NM-250		Nuziveedu Seeds Ltd
101.	204 of 2019	Extant (VCK)	GP-M27		Yaaganti Seeds Pvt Ltd
102.	205 of 2019	Extant (Notified)	JS-20-69	Soybean	Indian Council of Agricultural Research
103.	206 of 2019		KANAKAMAHALAKSHMI	Sugarcane	Acharya N.G. Ranga Agricultural University
104.	207 of 2019		Bhaskara	Cashew	Indian Council of Agricultural Research
105.	208 of 2019		PKV Pink (AKS 311)	Safflower	Dr. Panjabrao Deshmukh Krishi Vidyapeeth
106.	209 of 2019		DRR Dhan 43 (IET	Rice	Indian Council of

			22080)		Agricultural Research
107.	210 of 2019		Jagjeevan (IET-19487) (RP-4631-46-6-5-1-1-1)		
108.	211 of 2019		IR-64 Drt I (IR87707-44-5-B-B-B) (IET 22836)		
109.	212 of 2019		IGRKVR-1244 (R 1244-1246-1-605-1) (IET 19796)		Indira Gandhi Krishi Vishwavidyalaya
110.	213 of 2019		Amara (MTU 1064)		Acharya N.G. Ranga Agricultural University
111.	214 of 2019		CR Dhan 304 (IET 22117)		Indian Council of Agricultural Research
112.	215 of 2019		Srisatya (RGL-1880)		Acharya N.G. Ranga Agricultural University
113.	216 of 2019		DRR Dhan-40 (IET 21542) RP Bio 4918-248-S)		Indian Council of Agricultural Research
114.	217 of 2019		Nellore Mahsuri (NLR-34449)		Acharya N.G. Ranga Agricultural University
115.	218 of 2019		DRR DHAN 44 (IET 22081)		Indian Council of Agricultural Research
116.	219 of 2019	Extant (VCK)	RCH-134 BG II	Tetraploid Cotton	Rasi Seeds Pvt Ltd
117.	220 of 2019		ACG-28-II (AJEET-28 BG-II)		Ajeet Seeds Ltd
118.	221 of 2019		JKC 725		JK Agri Genetics Ltd
119.	222 of 2019		C 5118		Maharashtra Hybrid Seeds Company Limited
120.	223 of 2019		C 5618		
121.	224 of 2019		PC-P8011 Bt		Prabhat Agri Biotech Ltd
122.	225 of 2019		JKC 757		JK Agri Genetics Ltd
123.	226 of 2019		3944192 B		Bharati Seeds
124.	227 of 2019	New	NJ-7055	Jute	Nuziveedu Seeds Ltd
125.	228 of 2019	Extant (VCK)	JKC 612	Tetraploid Cotton	JK Agri Genetics Ltd
126.	229 of 2019		PC-P1512		Prabhat Agri Biotech Ltd
127.	230 of 2019	Extant (Notified)	KHP-10	Rice	University of Agricultural and Horticultural Sciences
128.	231 of 2019	Farmer	CHAMAR MONI		Syed Arafat Ali

129.	232 of 2019		Sursuriya		Masang Odeya
130.	233 of 2019		Dahni Goda Dhan		Urlu Munda
131.	234 of 2019		Safed Hambala		Durga Munda
132.	235 of 2019		Changro Jira Phul		Manikchand
133.	236 of 2019		Badhmecha		Babulal Dahiya
134.	237 of 2019		Sonaguti Dhan		Ram Sahay Munda
135.	238 of 2019		Kere Madras Chudi		Dr. Richariya Kisani Samwardhan Samiti
136.	239 of 2019		Sufal Dhan-1		Sufal Kandir
137.	240 of 2019		Jereng Dhan		Birsa Munda
138.	241 of 2019		Lal Mota Dhan		Sanika Hassa Purtti
139.	242 of 2019		DUD KALAM		Dilip Roy
140.	243 of 2019		Rekha Dokee Dhan		Sukhram Vek
141.	244 of 2019		KARPURKANTI		Sunil Jana
142.	245 of 2019		KATRAI BHOG		Chittya Ranjan Santra
143.	246 of 2019		CHAMOR MONI		Ujjwal Mondal
144.	247 of 2019		KERALA SUNDARI		Utpal Das
145.	248 of 2019		Pila Dhan		Pilaram
146.	249 of 2019		AHIRMAN		Pradip Halder
147.	250 of 2019		BOROJHERI		M. R. Gupta
148.	251 of 2019		Jhori Dhan		Jageshwar
149.	252 of 2019		Santosh Lal Dhan		Santosh Kumar
150.	253 of 2019		Lalu Dhan		Rajiv Kumar
151.	254 of 2019		Sinki Dhan		Arend Krishak Samudaye
152.	255 of 2019	New	CITH-W-1	Walnut	Indian Council of Agricultural Research
153.	256 of 2019		CITH-W-2		
154.	257 of 2019		CITH-W-3		
155.	258 of 2019		CITH-W-4		
156.	259 of 2019	Extant (Notified)	Pusa Double Zero Mustard 31 (PDZ-1)	Indian mustard (Sarso)	Indian Agricultural Research Institute
157.	260 of 2019	Farmer	Sundargarh-KALAJIRA	Rice	Gurucharan Pradhan

158.	261 of 2019	Extant (VCK)	NC-201	Tetraploid Cotton	Nuziveedu Seeds Ltd
159.	262 of 2019		NC-217		
160.	263 of 2019		PC-P99		
161.	264 of 2019		C 5624		Maharashtra Hybrid Seeds Company Limited
162.	265 of 2019	Extant (Notified)	CR Dhan 500 (IET20220)	Rice	Indian Council of Agricultural Research
163.	266 of 2019	New	PC- P751	Tetraploid Cotton	Prabhat Agri Biotech Ltd
164.	267 of 2019	Extant (VCK)	NC-166		Nuziveedu Seeds Ltd
165.	268 of 2019		NC-187		
166.	269 of 2019	Extant (Notified)	RHB-0711 (PhuleDhara)		Mahatma Phule Krishi Vidyapeeth
167.	270 of 2019	New	NP-279(POOJITHA)	Rice	Nuziveedu Seeds Ltd
168.	271 of 2019		C 5711	Tetraploid Cotton	Maharashtra Hybrid Seeds Company Limited
169.	272 of 2019		SIRI	Rice	Nuziveedu Seeds Ltd
170.	273 of 2019		3A	Cabbage	
171.	274 of 2019	Extant (VCK)	NTF-9035	Tomato	
172.	275 of 2019	New	S-EP-039	Brinjal	Sungro Seeds Private Limited
173.	276 of 2019	Extant (VCK)	NBJ-98		Nuziveedu Seeds Ltd
174.	277 of 2019		NBJ-33		
175.	278 of 2019		NBJ-34		
176.	279 of 2019		NBJ-67		
177.	280 of 2019		NBJ-95		
178.	281 of 2019		NBJ-39		
179.	282 of 2019		NBJ-23		
180.	283 of 2019		PUSA SADABAHAR	Tomato	Indian Council of Agricultural Research
181.	284 of 2019		BJ 60283	Brinjal	Maharashtra Hybrid Seeds Company Limited
182.	285 of 2019		BJ 60214		
183.	286 of 2019		S-EP-040		Sungro Seeds Private Limited

184.	287 of 2019		B 2037	Pearl Millet	Maharashtra Hybrid Seeds Company Limited
185.	288 of 2019	New	NBJ-29	Brinjal	Nuziveedu Seeds Ltd
186.	289 of 2019	Extant (VCK)	S-EP-023		Sungro Seeds Private Limited
187.	290 of 2019	New	NTF-9048	Tomato	Nuziveedu Seeds Ltd
188.	291 of 2019	Extant (VCK)	NTF-9036		
189.	292 of 2019		NTF-9042		
190.	293 of 2019		S-EP-008	Brinjal	Sungro Seeds Private Limited
191.	294 of 2019		NBJ-97		Nuziveedu Seeds Ltd
192.	295 of 2019	New	S-EP-021		Sungro Seeds Private Limited
193.	296 of 2019	Extant (VCK)	S-EP-063		
194.	297 of 2019		NTF-9014	Tomato	Nuziveedu Seeds Ltd
195.	298 of 2019		NTF-9041		
196.	299 of 2019		S-EP-318	Brinjal	Sungro Seeds Private Limited
197.	300 of 2019		S-EP-028		
198.	301 of 2019	Extant (VCK)	S-EP-054		
199.	302 of 2019		S-EP-012		
200.	303 of 2019		TM 61476	Tomato	Maharashtra Hybrid Seeds Company Limited
201.	304 of 2019	New	TM 61485		
202.	305 of 2019	Extant (VCK)	SCF-5057	Cauliflower	Sungro Seeds Private Limited
203.	306 of 2019	New	JKCMS-24	Pigeon pea	JK Agri Genetics Ltd
204.	307 of 2019		CSV 28	Sorghum	Indian Council of Agricultural Research
205.	308 of 2019	Extant (VCK)	SCF-5016	Cauliflower	Sungro Seeds Private Limited
206.	309 of 2019		PUSA AGETI	Cabbage	Indian Council of Agricultural Research
207.	310 of 2019	New	MOK 60034	Okra/Lady's Finger	Maharashtra Hybrid Seeds Company Limited
208.	311 of 2019	Extant (VCK)	NBJ-17	Brinjal	Nuziveedu Seeds Ltd
209.	312 of 2019		NCFD-7122	Cauliflower	
210.	313 of 2019		BJ 60248	Brinjal	Maharashtra Hybrid

					Seeds Company Limited
211.	314 of 2019	New	NBJ-02		Nuziveedu Seeds Ltd
212.	315 of 2019		NBJ-07		
213.	316 of 2019		NBJ-01		
214.	317 of 2019	Extant (VCK)	S-EP-446		Sungro Seeds Private Limited
215.	318 of 2019	New	BJ 60209		Maharashtra Hybrid Seeds Company Limited
216.	319 of 2019		AJEET-110 (ATW-102)	Wheat	Ajeet Seeds Ltd
217.	320 of 2019		NCFD-53	Cauliflower	Nuziveedu Seeds Ltd
218.	321 of 2019	Extant (VCK)	BJ 60281	Brinjal	Maharashtra Hybrid Seeds Company Limited
219.	322 of 2019	New	NR 486	Sorghum	Indian Council of Agricultural Research
220.	323 of 2019	Extant (VCK)	BJ 60282	Brinjal	Maharashtra Hybrid Seeds Company Limited
221.	324 of 2019		BJ 60287		
222.	325 of 2019		BJ 60255		
223.	326 of 2019		OK-78	Okra/Lady's Finger	Nuziveedu Seeds Ltd
224.	327 of 2019		OK-79		
225.	328 of 2019	Extant (VCK)	NBJ-03	Brinjal	
226.	329 of 2019	New	S-EP-495		Sungro Seeds Private Limited
227.	330 of 2019	Extant (VCK)	S-EP-032		
228.	331 of 2019		BA-1028	Tomato	Nuziveedu Seeds Ltd
229.	332 of 2019		SCF-5029	Cauliflower	Sungro Seeds Private Limited
230.	333 of 2019	New	S-EP-006	Brinjal	
231.	334 of 2019	Extant (VCK)	BJ 60252		Maharashtra Hybrid Seeds Company Limited
232.	335 of 2019		BJ 60301		
233.	336 of 2019		NBJ-94		Nuziveedu Seeds Ltd
234.	337 of 2019	New	PSP68	Pearl Millet	Bayer Bioscience Pvt Ltd
235.	338 of 2019	Extant (VCK)	TM 61460	Tomato	Maharashtra Hybrid Seeds Company Limited
236.	339 of 2019		TM 61469		

237.	340 of 2019	New	W07NV037	Wheat	
238.	341 of 2019	Extant (VCK)	BJ 60218	Brinjal	
239.	342 of 2019	New	SCF-608	Cauliflower	Sungro Seeds Private Limited
240.	343 of 2019	Extant (VCK)	MOK 60036	Okra/Lady's Finger	Maharashtra Hybrid Seeds Company Limited
241.	344 of 2019	Extant (VCK)	SCF-5026	Cauliflower	Sungro Seeds Private Limited
242.	345 of 2019	New	NTF-9049	Tomato	Nuziveedu Seeds Ltd
243.	346 of 2019	Extant (VCK)	S-EP-124	Brinjal	Sungro Seeds Private Limited
244.	347 of 2019	New	SCF-5061	Cauliflower	
245.	348 of 2019	Extant (VCK)	BJ 60259	Brinjal	Maharashtra Hybrid Seeds Company Limited
246.	349 of 2019	New	TM 61486	Tomato	
247.	350 of 2019		S-EP-062	Brinjal	Sungro Seeds Private Limited
248.	351 of 2019	Extant (VCK)	S-EP-043		
249.	352 of 2019		BJ 60205		Maharashtra Hybrid Seeds Company Limited
250.	353 of 2019	New	NTF-9047	Tomato	Nuziveedu Seeds Ltd
251.	354 of 2019		Nirmal-554(NTL-554)	Pigeon pea	
252.	355 of 2019	Extant (VCK)	NBJ-19	Brinjal	
253.	356 of 2019	New	NCFD-83	Cauliflower	
254.	357 of 2019	Extant (VCK)	BJ 60308	Brinjal	Maharashtra Hybrid Seeds Company Limited
255.	358 of 2019	New	PP63	Pearl Millet	Bayer Bioscience Pvt Ltd
256.	359 of 2019		DGB-017		M/s Crystal Crop Protection Limited
257.	360 of 2019		NCFD-56	Cauliflower	Nuziveedu Seeds Ltd
258.	361 of 2019		MIP-007	Pearl Millet	M/s Crystal Crop Protection Limited
259.	362 of 2019		NTM-62	Tomato	Nuziveedu Seeds Ltd
260.	363 of 2019		JKR-104	Pigeon pea	JK Agri Genetics Ltd

261.	364 of 2019	Extant (Notified)	VAMSADHARA (RGL-11414)	Rice	Acharya N.G. Ranga Agricultural University
262.	365 of 2019		DRR Dhan41 (IET22729) (RP 5311-PR 26703-3B-PJ7)		Indian Council of Agricultural Research
263.	366 of 2019		Badshabhog Selection 1		Indira Gandhi Krishi Vishwavidyalaya
264.	367 of 2019		Surabhi (IET 24760)		Nuziveedu Seeds Ltd
265.	368 of 2019		Chandra (IET 23409) (MTU 1153)		Acharya N.G. Ranga Agricultural University
266.	369 of 2019		DUBRAJ SELECTION 1		Indira Gandhi Krishi Vishwavidyalaya
267.	370 of 2019	Extant (Notified)	TARUNBHOG SELECTION 1	Rice	
268.	371 of 2019		Indra (MTV - 1061)		Acharya N.G. Ranga Agricultural University
269.	372 of 2019		TARANGINI (MTU-1156)		
270.	373 of 2019		SIDDHI (WGL-44) (IET-19387)		Professor Jayashankar Telangana State Agricultural University
271.	374 of 2019		DRRH-3 (DRRH-44) (IET-19543)		Indian Council of Agricultural Research
272.	375 of 2019		DRRH-2 (DRRH-20) (IET-18076)		
273.	376 of 2019	Extant (VCK)	AC-710	Tetraploid Cotton	Asian Agri Genetics Ltd
274.	377 of 2019		NC-2151		Nuziveedu Seeds Ltd
275.	379 of 2019		IISR KEDARAM	Turmeric	Indian Council of Agricultural Research
276.	380 of 2019	New	IISR PRAGATI		
277.	381 of 2019	Extant (VCK)	WCV02	Maize	Dow AgroSciences India Pvt. Ltd.
278.	382 of 2019		BS112		
279.	383 of 2019	New	TWV 14		
280.	384 of 2019	Extant (Notified)	Phule Bharati (JL 776)	Groundnut	Mahatma Phule Krishi Vidyapeeth
281.	385 of 2019		GNR-5 (NVSR-6137)	Rice	Navsari Agricultural University
282.	386 of 2019	Extant (VCK)	NP 8001-A	Rice	Nuziveedu Seeds Ltd
283.	387 of 2019		PC-P-17 Bt	Tetraploid Cotton	Prabhat Agri Biotech Ltd

284.	388 of 2019		NC - 5040		Nuziveedu Seeds Ltd
285.	389 of 2019		C 5081	Diploid Cotton	Maharashtra Hybrid Seeds Company Limited
286.	390 of 2019	Extant (VCK)	NP 1001-R	Rice	Nuziveedu Seeds Ltd
287.	391 of 2019		NC-161	Tetraploid Cotton	Nuziveedu Seeds Ltd
288.	392 of 2019		NC-1130		Nuziveedu Seeds Ltd
289.	393 of 2019		JKC 611		JK Agri Genetics Ltd
290.	394 of 2019		BIO 60102I1		DCM Shriram Limited
291.	395 of 2019		JKC 721		JK Agri Genetics Ltd
292.	1 of 2020		NBJ-N03	Brinjal	Nuziveedu Seeds Ltd
293.	2 of 2020		NBJ-15		
294.	3 of 2020		S-EP-001		Sungro Seeds Private Limited
295.	4 of 2020	New	NCFD-60	Cauliflower	Nuziveedu Seeds Ltd
296.	5 of 2020		NCPL-1029	Cabbage	
297.	6 of 2020	Extant (VCK)	S-EP-044	Brinjal	Sungro Seeds Private Limited
298.	7 of 2020	New	NCPL-1006	Cabbage	Nuziveedu Seeds Ltd
299.	8 of 2020	Extant (VCK)	S-EP-047	Brinjal	Sungro Seeds Private Limited
300.	9 of 2020		OK-48	Okra/Lady's Finger	Nuziveedu Seeds Ltd
301.	10 of 2020	New	AJEET-349	Wheat	Ajeet Seeds Ltd
302.	11 of 2020	Extant (VCK)	NBJ-18	Brinjal	Nuziveedu Seeds Ltd
303.	12 of 2020		BA-2385	Tomato	
304.	13 of 2020	New	FN-9005	Tomato	
305.	14 of 2020	Extant (VCK)	NBJ-35	Brinjal	
306.	15 of 2020		NBJ-63		
307.	16 of 2020		NBJ-12		
308.	17 of 2020		NBJ-11		
309.	18 of 2020		NBJ-31		
310.	19 of 2020		NBJ-32		
311.	20 of 2020		NTF-9050	Tomato	
312.	21 of 2020		NBJ-04	Brinjal	
313.	22 of 2020		MIP-008	Pearl Millet	M/s Crystal Crop Protection Limited

314.	23 of 2020		NS-509A	Sorghum	Nuziveedu Seeds Ltd
315.	24 of 2020	New	DGJ-027	Sorghum	M/s Crystal Crop Protection Limited
316.	25 of 2020	Extant (VCK)	J 1119	Sorghum	Maharashtra Hybrid Seeds Company Limited
317.	26 of 2020		S-EP-002	Brinjal	Sungro Seeds Private Limited
318.	27 of 2020		SCF-5033	Cauliflower	Sungro Seeds Private Limited
319.	28 of 2020		BJ 60210	Brinjal	Maharashtra Hybrid Seeds Company Limited
320.	29 of 2020		NTF-9013	Tomato	Nuziveedu Seeds Ltd
321.	30 of 2020		SCF-5022	Cauliflower	Sungro Seeds Private Limited
322.	31 of 2020		BA-1089	Tomato	Nuziveedu Seeds Ltd
323.	32 of 2020		NBJ-62	Brinjal	
324.	33 of 2020		BA-1599	Tomato	
325.	34 of 2020		NTF-9051		
326.	35 of 2020	Extant (Notified)	WB 2	Wheat	Indian Council of Agricultural Research
327.	36 of 2020		Central Barley DWRB123 (DWRB123)	Barley	
328.	37 of 2020		GNN-7	Finger Millet	Navsari Agricultural University
329.	38 of 2020		WH 1124	Wheat	CCS Haryana Agricultural University
330.	39 of 2020	New	Palamuru jonna (SPV-2122)	Sorghum	Indian Council of Agricultural Research
331.	40 of 2020	Extant (Notified)	GNV-3	Little Millet	Navsari Agricultural University
332.	41 of 2020		Gujarat Junagadh Gram 6 (GJG 6)	Chickpea	Junagadh Agricultural University
333.	42 of 2020		PHULE NACHANI-1 (KOPN 235)	Finger Millet	Mahatma Phule Krishi Vidyapeeth
334.	43 of 2020		Gujarat Anand Mung Bean-5 (GAM-5)	Green gram	Anand Agricultural University
335.	44 of 2020		Karan Vandana (DBW 187)	Wheat	Indian Council of Agricultural Research
336.	45 of 2020		Pusa Wheat 1612 (HI 1612)		

337.	46 of 2020		Kufri Mohan (MS/5-1543)	Potato	
338.	47 of 2020		Pusa Ujala (HI 1605)	Wheat	
339.	48 of 2020		Kufri Frysona (MP/98-71)	Potato	
340.	49 of 2020	Farmer	MIHI GANDHESWARI	Rice	Amarkanan Rural Socio-Environmental Welfare Society (ARSW Society)
341.	50 of 2020		CHATUI MUKHI		
342.	51 of 2020		KHAJURPHUL		
343.	52 of 2020		KALO GANDHESWARI		
344.	53 of 2020		MOTIBAS		
345.	54 of 2020		SHYAM		
346.	55 of 2020		PARAMANANDA		
347.	56 of 2020		Meghjawain		Shashank Kumar Ohdar
348.	57 of 2020		Sambhu Dhan		Sambhunath Sethia
349.	58 of 2020	Extant (VCK)	C 5534	Tetraploid Cotton	Maharashtra Hybrid Seeds Company Limited
350.	59 of 2020		PC-P17		Prabhat Agri Biotech Ltd
351.	60 of 2020		PC-P801		
352.	61 of 2020		C 5605		Maharashtra Hybrid Seeds Company Limited
353.	62 of 2020	New	C 5713		
354.	63 of 2020	Extant (VCK)	PSCP-04		Pravardhan Seeds Pvt Ltd
355.	64 of 2020	Farmer	Ganga Prasad-1	Rice	Kalam Sai
356.	65 of 2020		Kapur Bhog		Sutam Sai
357.	66 of 2020		BAND GODA		Anjliyus Dungdung
358.	67 of 2020	Extant (VCK)	C 5707	Tetraploid Cotton	Maharashtra Hybrid Seeds Company Limited
359.	68 of 2020		NC-171		Nuziveedu Seeds Ltd
360.	69 of 2020		PC-P102		Prabhat Agri Biotech Ltd
361.	70 of 2020		PC - P061 Bt		
362.	71 of 2020	New	B126	Rice	Bayer Crop Science LP
363.	72 of 2020		B099		
364.	73 of 2020		M048		
365.	74 of 2020		NP-9361		Nuziveedu Seeds Ltd

366.	75 of 2020		NPS-2098R		
367.	76 of 2020	Farmer	RAJGA		Shri Bhadu Sai
368.	77 of 2020		JENJENE		Dhaneshwar Sai
369.	78 of 2020		BERMIFOOL		Smt. Nirali Uraw
370.	79 of 2020		GANGTAI		Dhaneshwar Sai
371.	80 of 2020		RANIKAJAL		Mohanlal
372.	81 of 2020		BHAJANA		Yudhisthir Varik
373.	82 of 2020		SONACHUR		Manrakhan Singh
374.	83 of 2020		SAVANSAR		Shri Bhuneshwar Singh
375.	84 of 2020		KAILASH RANA		Kailash Rana Manger
376.	85 of 2020		BOCHI		Bhuben Barman
377.	86 of 2020	Extant (Notified)	VNR 2375 PLUS (IET 21423) (VNR-203)		VNR Seeds Pvt Ltd
378.	87 of 2020	Farmer	BIROI		Punjan Barman
379.	88 of 2020		DUDHKALAM-1		
380.	89 of 2020		KHAIYAM DHAN		
381.	90 of 2020		PAHARIBOCHI SELECTION-1		
382.	91 of 2020		MANGAMUTHI		
383.	92 of 2020		BITTI		Ramkrishna Barman
384.	93 of 2020		DHUSURI BARATEE		
385.	94 of 2020		KALO DHYAPA		
386.	95 of 2020		KHAMA		Harendra Nandi
387.	96 of 2020		KAUKA		
388.	97 of 2020		JAL DHYAPA-3		Jotin Chandra Mandal
389.	98 of 2020		HARINKAJLI		Ashamanjon Barman
390.	99 of 2020		Desi Masoor Goal	Lentil	Rajdev Prajapati
391.	100 of 2020		Desi Matar Chotka	Fieldpea	Om Prakash Singh
392.	101 of 2020		CHIKNI LAL (LOOSE PENICLE)	Sorghum	Yaha Mogi Mata Sthanik Biyanee Savardhan Samitee
393.	102 of 2020		Desi Safed-2	Fieldpea	Pramod Kumar Dangi & Others
394.	103 of 2020		Chana-15	Chickpea	Ramdhari Ram
395.	104 of 2018		Desi Lal	Lentil	Yogendra Yadav
396.	105 of 2020		Desi Matar Chota-2	Fieldpea	Vinay Kumar Yadav
397.	106 of 2020		LURKI	Brinjal	Bhramar Bauri

398.	107 of 2020		MOTHI SAFED JUWAR	Sorghum	Yaha Mogi Mata Sthanik Biyanee Savardhan Samitee
399.	108 of 2020		MOTHI MANI JUWAR		
400.	109 of 2020		Desi Safed	Lentil	Anand Kumar
401.	110 of 2020		A.H.J.P-07 (HJP-07)	Pigeon pea	Jay Prakash Singh
402.	111 of 2020		Dehati Masur-1	Lentil	Dinesh Rajak
403.	112 of 2020		A.H.J.P-09 (HJP-09)	Pigeon pea	Jay Prakash Singh
404.	113 of 2020	Extant (VCK)	FN-9022	Tomato	Nuziveedu Seeds Ltd
405.	114 of 2020	Farmer	Chana-2000	Chickpea	Akam Singh
406.	115 of 2020		Chana-1		Prithvinath Singh
407.	116 of 2020		KANTA MAKRA	Brinjal	Dipak Mondal
408.	117 of 2020		PATAKATA		Asim Kumar Mahato
409.	118 of 2020		Alankar Adoli	Black gram	Maniram Sakay
410.	119 of 2020		LAL BHENDI	Okra/Lady's Finger	Sh. Anant Digambar Prabhuazgaonkar
411.	120 of 2020	Extant (VCK)	TM 61481	Tomato	Maharashtra Hybrid Seeds Company Limited
412.	121 of 2020	New	JKCMS-9	Pigeon pea	JK Agri Genetics Ltd
413.	122 of 2020		BA-1559	Tomato	Nuziveedu Seeds Ltd
414.	123 of 2020		AJEET-111 (ATW-109)	Wheat	Ajeet Seeds Ltd
415.	124 of 2020		TM 61487	Tomato	Maharashtra Hybrid Seeds Company Limited
416.	125 of 2020	Extant (VCK)	FN-1902		Nuziveedu Seeds Ltd
417.	126 of 2020	New	NPA-84	Pearl Millet	Nirmal Seeds Pvt Ltd
418.	127 of 2020		NPA-168		
419.	128 of 2020	Farmer	Buti Chana	Chickpea	Shravan Kumar Yadav
420.	129 of 2020	Extant (Notified)	PUSA WHEAT 8777 (HI 8777)	Durum Wheat	Indian Council of Agricultural Research
421.	130 of 2020		PUSA TEJAS (HI 8759)		
422.	131 of 2020		PHULE VIKRAM (Phule G 0405)	Chickpea	Mahatma Phule Krishi Vidyapeeth
423.	132 of 2020		HJ 541	Sorghum	CCS Haryana Agricultural University

424.	133 of 2020		Gujarat Junagadh Pigeonpea 1 (GJP-1)	Pigeon pea	Junagadh Agricultural University
425.	134 of 2020	Extant (VCK)	OK-425	Okra/Lady's Finger	Nuziveedu Seeds Ltd
426.	135 of 2020	New	KTL 3290	Tomato	Kaveri Seed Company Ltd
427.	136 of 2020	Extant (Notified)	PKV-NL-260 (NL-260)	Linseed	Dr. Panjabrao Deshmukh Krishi Vidyapeeth
428.	137 of 2020	New	NM - 183	Maize	Nuziveedu Seeds Ltd
429.	138 of 2020		PHBET		Pioneer Overseas Corporation
430.	139 of 2020		BIO 82015HI		DCM Shriram Limited

Annexure IX: 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	Chairmen-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 Resource Institute (Bioversity Internationl)
ITPGRFA	International Treaty on Plant Genetic Resource for Food and Agriculture
KAU	Kerala Agriculture University
KVK	Krishi Vigyan Kendra
NASC	National Agricultural Science Center
NGO	Non-Governmental Organization

NORV	Notified and Released Varieties of India
NSAI	National Seed Association of India
NRCPB	National Research Center on Plant Biotechnology
NSRTC	National Seed Research and Training Center
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 Common Knowledge
WTO	World Trade Organization

Protection of Plant Varieties and Farmers' Rights Authority

(A Statutory Authority Created by an Act of Parliament)

Department of Agriculture, Co-operation & Farmers' Welfare

Ministry of Agriculture and Farmers' Welfare,

Government of India

NASC Complex, DPS Marg, New Delhi-110012

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