

ICAR-NBPGR Newsletter



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From the Director's Desk

ICAR-NBPGR celebrated its 50th foundation day on August 1, 2025. On this occasion, a dedicated Genome Editing Laboratory and Post-entry Quarantine Facility at ICAR-National Bureau of Plant Genetic Resources (NBPGR), New Delhi, was inaugurated by the Hon'ble Dr M. L. Jat, Secretary, DARE and Director General, ICAR. During July-September 2025, 103 import cases facilitated



the import of 5,129 accessions from 20 countries. To support domestic research, 597 accessions were supplied to 36 indenters after signing the Material Transfer Agreement (MTA). In the National Herbarium of Cultivated Plants, a total of 55 new specimens were added, taking the total number of specimens to 26,707. A total of 10,821 samples of imported germplasm, including transgenic, were processed for quarantine clearance. A total of thirteen post-entry quarantine facilities were certified by ICAR-NBPGR for the growing imported germplasm. During this period, a total of 1,425 germplasm accessions of different crops were evaluated, including 954 accessions of proso-millet, 271 accessions of barnyard millet and 200 accessions of maize. One buckwheat line (EC977202) emerged as a prominent early-maturing and in amaranth, the accession IC38758 was identified as an early-flowering type. DNA Fingerprinting services were provided to 32 samples of seven agri-horticultural crops received from different public/private sector organizations, and GMO testing services were provided for 7 samples of Maize. KASP (Kompetitive Allele-Specific PCR) assay was developed for fusarium head blight (FHB) resistance in durum wheat and also established an open-access database, FHBMarkerDb, that integrates SNPs, QTLs, genes, and pathways related to Fusarium Head Blight resistance across wheat, barley, maize, and oats (<https://nbpgr.org.in/FHBMdb/>). On the 97th Foundation Day of the Indian Council of Agricultural Research (ICAR), celebrated on 16th July, 2025, four technologies developed by ICAR-National Bureau of Plant Genetic Resources, New Delhi, were recognized by ICAR, and Certificates were awarded. A Field Day on "*Abelmoschus* spp. and *Solanum* spp." was organized on September 24, 2025 to demonstrate the available variability in *Abelmoschus* and *Solanum* germplasm. At ICAR-NBPGR, a training in virtual mode was organized on "Biosecurity and Biosafety: Policies, Diagnostics, Phytosanitary Treatments and Issues".

ICAR-NBPGR participated in 97th ICAR Foundation Day, celebrated on 16th July, 2025 and the exhibition "Arogya Utsav & Expo 2025" from August 24-25, 2025, at Bharat Mandapam, Pragati Maidan, New Delhi, to showcase the crop diversity conserved in the National Gene Bank.



New collections added to the National Herbarium of Cultivated Plants (NHCP)

A total of 55 new herbarium specimens were added, taking the total number of NHCP specimens to 26,707. Among the new specimens, three new species, namely (i) *Solanum donianum* Walp. and (ii) *Macrotyloma axillare* (E.Mey.) Verdc. from Karnataka and (iii) *Meyna spinosa* Roxb. ex Link from Jharkhand, as well as two new genus, namely *Anredera cordifolia* (Ten.) Steenis from Karnataka and (ii) *Neltuma glandulosa* (Torr.) Britton & Rose from Delhi were added.

One economic product *Artocarpus lacucha* Roxb. ex Buch.-Ham. was also added to NHCP collections. Nine Authentication Certificates were issued to various research scholars/applicants. Around 800 herbarium specimens' data were curated, images digitized, calibrated and uploaded to the NHCP Portal.

Export and Import of Germplasm

ICAR-NBPGR processed 103 import cases and facilitated the import of 5,129 accessions from 20 countries during July-Sept. 2025. ICAR-NBPGR continued to support domestic research and supplied 597 accessions to 36 various indenters for research use after signing the Material Transfer Agreement (MTA). This includes 17 accessions of buckwheat (14), amaranth (1), rice bean (1), and quinoa (1) from RS-Shimla, as well as 5 accessions each of bitter melon and okra, and 10 accessions of pumpkin from RS-Thrissur.

Plant Quarantine

Import quarantine: At ICAR-NBPGR, a total of 10,821 samples of imported germplasm, including transgenic, were processed for quarantine clearance. Out of these samples, 1,276 samples were found to be infected with various kinds of pests. Out of the total infected samples, 1,224 were salvaged and released to the indenters, while 10 samples were rejected due to heavy infection.

A total of 577 samples of exotic *Glycine max* (422), *Vigna unguiculata* (149),



Figure 1: Post-entry quarantine inspections of imported germplasm grown at indenters site

and *Vigna radiata* (06) were grown in post-entry quarantine greenhouses for the release of virus-free germplasm to the indenters. A total of thirteen post-entry quarantine facilities were certified by ICAR-NBPGR for the growing of imported germplasm.

Seed Health Testing: In addition, 1,470 samples were exported after quarantine clearance. Total of 15 phytosanitary certificates issued. Seed health status of 2,670 samples of indigenous germplasm, including 162 samples for transgenic material, was carried out for its pest-free conservation in the National Genebank. Out of these 2,339 samples were healthy, while 331 were found to be infected. Out of the infected samples, 06 samples were rejected, and the remaining 325 samples were salvaged before release for gene bank storage.

Germplasm Conservation

Seed Genebank: 900 new accessions, primarily of Cereals, Vegetables, Fibre crops, Millets and Pseudo cereals were added to the seed Genebank. Additionally, 1,703 regenerated accessions were also added to the collection. This brings the total number of accessions conserved to 4,73,718.

In-vitro and cryogene bank: The *In Vitro* Active Genebank continued to maintain a wide diversity of 2,056 accessions, representing 71 genera and 183 species, with a total of 45,000 cultures belonging to different crop groups of different crop groups, viz., tropical fruits, temperate and minor fruits, tuber crops, bulbous and ornamental crops, medicinal and aromatic plants, spices and industrial crops. Two new accessions were added, belonging to the tropical fruit and bulbous groups, as well as other groups. In the *In Vitro* Base Genebank, 3 new accessions from Spices and Industrial crops were added to bring the total number conserved to 360. The Cryogenebank preserved both orthodox and recalcitrant germplasm along with dormant buds, pollen and genomic resources, maintaining a total of 15,296 accessions as of June 2025, including two newly added accessions in fruits and nuts.

Germplasm Characterization and Evaluation

A total of 1,425 germplasm accessions of different crops were evaluated, including 954 accessions of proso millet at Issapur farm, 271 accessions of barnyard millet at Issapur farm and Jodhpur, and 200 accessions of maize at Pusa farm of ICAR-NBPGR. In addition, 450 accessions of sesame germplasm were also characterized under the CRP-Agrobiodiversity project.



Figure 2: Early maturing buckwheat accession EC977202 **Figure 3:** Early flowering amaranth accession IC38758

At RS-Shimla, a total of 280 germplasm accessions comprising 129 of amaranth, 51 of buckwheat, and 100 of chenopod were characterized and evaluated. Among the buckwheat, EC977202 emerged as a prominent early-maturing line, initiating early flowering at 29 days and reaching maturity at 78 days, making it highly suitable for short-duration cropping systems. In amaranth, the accession IC38758 was identified as an early flowering type, initiating flowering at 62 days.

Trait-specific germplasm of okra (*Abelmoschus esculentus*): A total of 35 accessions of okra were characterized for major fruit characters. Six accessions were found to be ridge-less, two with mild ridges or ridges initiating from half the length of the fruit. Maximum values for fruit weight were exhibited by EC930079 (37.50 g), whereas fruit length was exhibited by EC930111 (22.75 cm). The fruit colour varied from light green to green, green with purple shade, red, light green with dark green ridges etc. wide variability was found in fruit shape also.



Figure 4: Variability in okra fruits

Genomic Resources and Bioinformatics

DNA profiling and GMO testing services: During the period (July-September 2025), 32 samples of seven agri-horticultural crops (Cotton, Groundnut, Mustard, Rice, Sesame, Sorghum and Soybean), received from different public/private sector organizations, were DNA profiled using SSR markers. GMO testing services were conducted for 7 samples of Maize in compliance with ISO 17025. Eight transgenic samples of *Medicago truncatula*, imported from the USA (IQ 225/2025), were tested for the respective transgenic element *tnt1* and to ensure the absence of embryogenesis deactivator gene, before their release to the importer.

New Marker Development: The KASP (Kompetitive Allele-Specific PCR) assay was developed for FHB resistance in durum wheat. The KASP assay was subsequently employed to validate and genotype trait-associated SNPs identified in the durum wheat panel.

GWAS was performed for 3,566 wheat accessions against leaf rust pathotypes, 77-5 and 77-9, and identified 48 marker–trait associations (MTAs), of which 23 were robust across models. Further, the KASP assay was validated for yield-related traits across twelve environments, strengthening marker-assisted breeding for climate-resilient wheat.

Renewal of ISO17025 accreditation of GM Detection Research Facility: External assessment of this facility by the NABL assessors, for renewal of ISO17025 accreditation was held on 16-17 August 2025. Following assessment, the validity of NABL accreditation was extended till 22 October 2029.

Database Development: Established an open-access database, **FHBMarkerDb** – that integrates SNPs, QTLs, genes, and pathways related to Fusarium Head Blight resistance across wheat, barley, maize, and oats (<https://nbpgr.org.in/FHBDb/>).

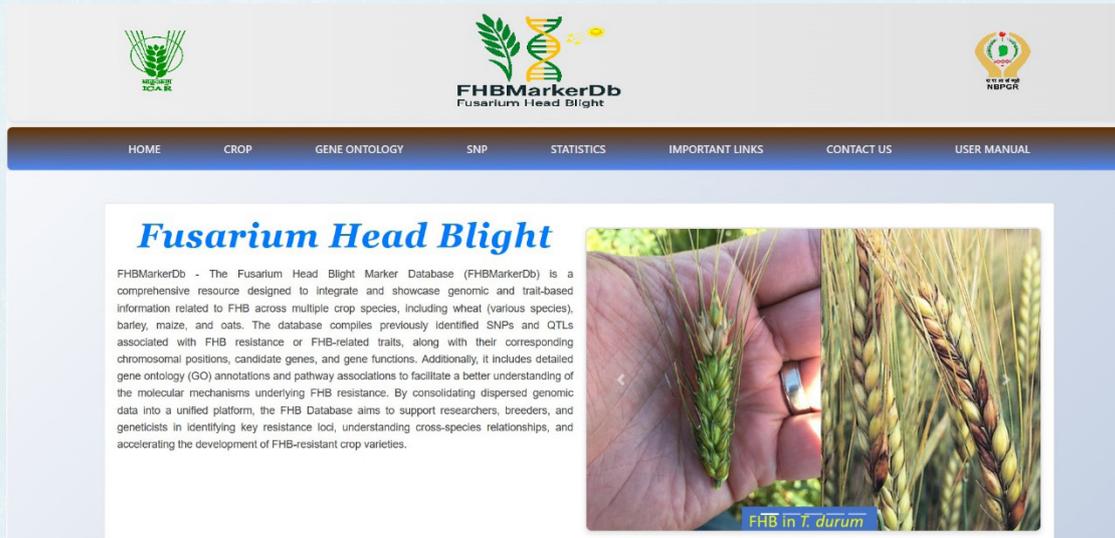


Figure 5. Fusarium Head Blight Database

Technology Developed and Recognised

ICAR- NBPGR Technologies Recognition: On the 97th Foundation Day of the Indian Council of Agricultural Research (ICAR), celebrated on 16th July, 2025, four technologies developed by ICAR-National Bureau of Plant Genetic Resources, New Delhi, were recognized by ICAR, and Certificates were awarded.



Figure 6. ICAR- NBPGR technologies recognized by the Indian Council of Agricultural Research (ICAR), on the 97th Foundation Day celebrated on 16th July, 2025.

Germplasm Field Day



Figure 7: Field Day on “Abelmoschus spp. and Solanum spp”

A Field Day on “*Abelmoschus* spp. and *Solanum* spp.” was organized on September 24, 2025 to demonstrate the available variability in *Abelmoschus* and *Solanum* germplasm, including wild relatives, cultivated types, cross derivatives and amphidiploids. A total of 22 delegates representing four ICAR institutes and four State Agricultural Universities participated in the event. Special emphasis was laid on wild and cultivated species of *Abelmoschus*, highlighting morphological variability, useful traits, and promising cross derivatives and amphidiploids for resistance breeding. *Solanum* species, particularly their performance against bacterial wilt and shoot and fruit borer at the field level, with notable pre-breeding lines and resistant sources, were displayed.

Exhibitions and Fairs

ICAR-NBPGR showcased the crop diversity conserved in the National Genebank on the 97th ICAR Foundation Day, celebrated on 16th July, 2025.



Figure 8: Participation of ICAR-NBPGR in 97th ICAR Foundation Day.

ICAR-NBPGR participated in the exhibition “Arogya Utsav & Expo 2025” from August 24-25, 2025 at Bharat Mandapam, Pragati Maidan, New Delhi and showcased the medicinal crop diversity conserved in National genebank.



Figure 9: Participation of ICAR-NBPGR in the exhibition “Arogya Utsav & Expo 2025”

Trainings and Workshops

4th Training on “Biosecurity and Biosafety: Policies, Diagnostics, Phytosanitary Treatments and Issues” was organized from August 19-28, 2025 by ICAR-NBPGR, New Delhi

At ICAR-NBPGR, a training in virtual mode was organized under the DBT-funded project “National Programme for Quarantine and GM Diagnostics of Genetically Engineered Plant Material” especially for researchers from ICAR institutes, State Agricultural Universities, the private sector and plant quarantine officials from the Directorate of Plant Protection, Quarantine and Storage (DPPQS). The training course was attended by 93 participants (14 from ICAR institutes, 26 from SAUs and other universities, 21 from private sector 27 from DPPQS, 2 from CSB and 2 from CCRI and 1 from ICARDA) from different parts of the country, representing all the Indian states.

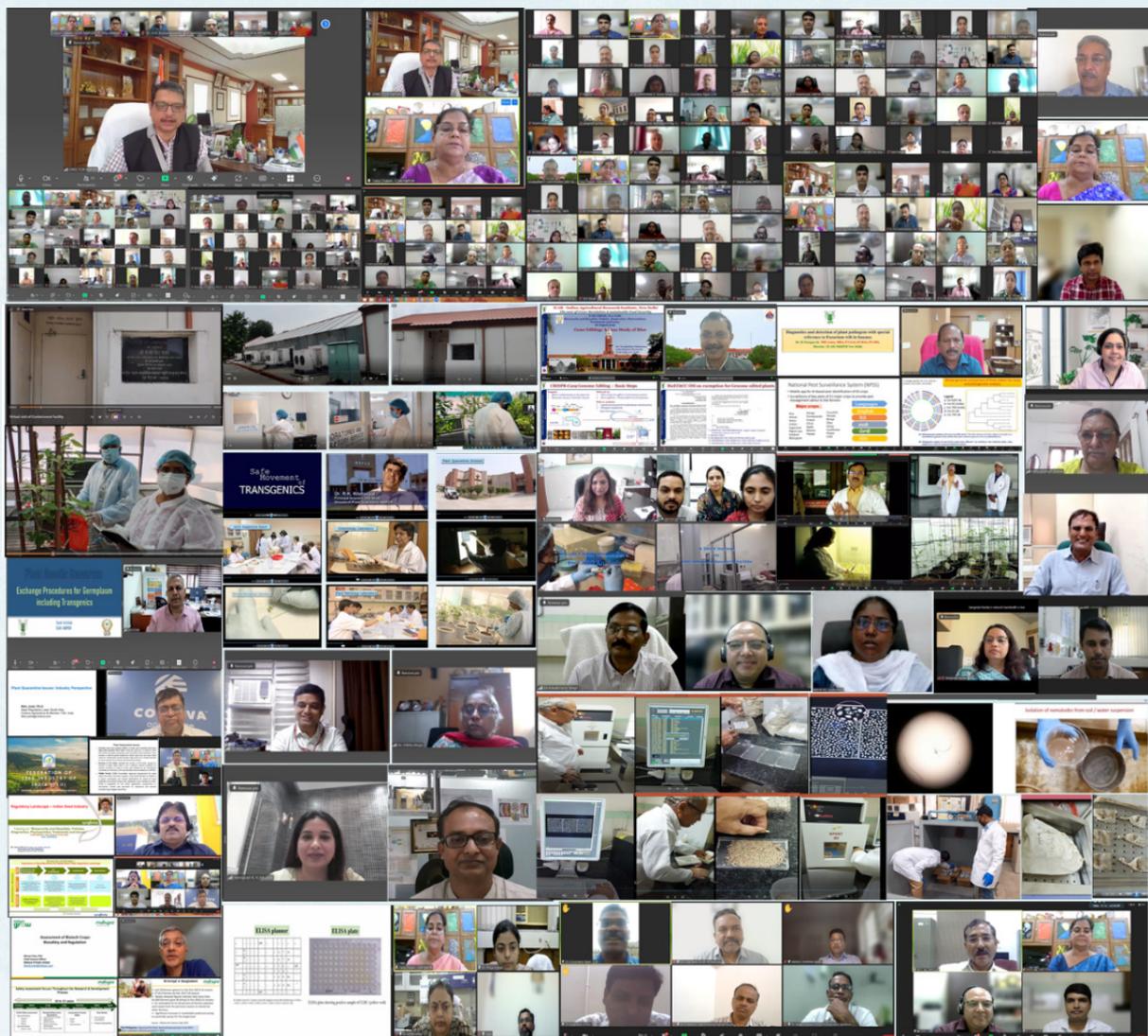


Figure 10: 4th Training on “Biosecurity and Biosafety: Policies, Diagnostics, Phytosanitary Treatments and Issues” was organized by ICAR-NBPGR, New Delhi from August 19-28, 2025

Personnel News

Awards and recognitions:

1. Dr Jyoti Kumari received “Dr S. Rajaram Outstanding Women Scientist Award-2025” by the Society for Advancement of Wheat and Barley Research (SAWBAR).
2. Dr Moolchand Singh, Principal Scientist, participated in the “Vichar Vimarsh” program entitled “Rabi Faslon ki Buvai evam fasal prabandhan” on DD Kisan Channel on 11.09.2025.

New appointments or retirement of staff, promotions and transfers

Shri. Priyanshu Pankaj, Assistant, was relieved from ICAR-NBPGR on 01.09.2025 to join ICAR-IARI, New Delhi.

Memoranda of Understanding (MoUs) and official visitors

Serial No	Name of University	Month of Signing MoU*
1	Vasantao Naik Marathwada Krishi Vidyapeeth, Parbhani, Maharashtra	August, 2025
2	Narayan Institute of Agricultural Sciences Gopal Narayan Singh University, Jamuhar, Sasaram, Rohtas, Bihar	September, 2025
Other MoUs		
1	Just Agriculture Education Group, Jalandhar Punjab	July, 2025

*Valid for a period of five years from date of signing MoU

Important visitors:

Hon’ble Dr. ML Jat, Secretary DARE and Director General ICAR, New Delhi visited ICAR-NBPGR, Regional Station, Ranchi on Sept. 10, 2025, with Dr. DK Yadava, Deputy Director General (Crop Science) ICAR to overview of the station’s mandate, ongoing research activities and significant achievements.



Figure 11: Dr. ML Jat, Secretary DARE and Director General ICAR, New Delhi, visited ICAR-NBPGR, Regional Station, Ranchi.

New Projects/Initiatives

Title	PI	Funding Agency	Budget
Harnessing genetic potential of underutilized wheat germplasm through pre-breeding for biotic stress resilience	Sundeeep Kumar	NASF	16.90 Lakh
Identification and Characterization of High Yielding, GABA-Enriched Tomato Germplasm for Enhanced Nutritional Value	Manjusha Verma	Bioversity International-CIAT	15 lakh
Mainstreaming cash-generating potential underutilized crops to enhance food, nutritional and livelihood security in face of changing climate in vibrant villages of Kumaun Himalayas	Rahul Dev (CCPI)	NMHS-National Mission on Himalayan Studies	20 lakh
Development of DUS test guidelines for Grasspea (<i>Lathyrus sativa</i> L.), Yard long bean (<i>Vigna unguiculata</i> subsp. <i>sesquipedalis</i>), Pilipsera (<i>Vigna stipulacea</i> (Lam.) Kuntze) and Winged bean (<i>Psophocarpus tetragonolobus</i> (L.) DC)	Kuldeep Tripathi	PPVFRA	45 lakh
Enhancement of post-entry quarantine greenhouse facilities for imported soybean and other legume crops germplasm	V. Celia Chalam	CFH-Corpus Fund Head -ICAR	200.40 Lakh

Deputation:

- Dr Sunil Archak attended the 14th meeting of the Working Group on Enhancement of the MLS of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) that was organized at Lima, Peru, July 07-11, 2025. He participated in the meeting as the Co-Chair of the Working Group. He also visited to Genebank, particularly to *in vitro* and cryo conservation facilities of the International Potato Centre (CIP).
- Dr Monika Singh participated in the workshop on the “Detection and Identification of Living Modified Organisms” and the “Role of Customs Officials in implementing the Cartagena Protocol on Biosafety,” held at Ljubljana, Slovenia, from 22-26 September 2025 as a nominated expert in LMO detection (Organized and sponsored by the Convention on Biological Diversity).

Important Highlights

Success Story: ICAR-NBPGR developed the world’s first genomic prediction (GP) model for multi-rust resistance in wheat, by evaluating five GP models across 347 accessions. The BayesB and GBLUP models showed the highest prediction accuracy, while GWAS-guided GP improved selection efficiency. Two accessions, CRP-165/42 and HGP1-435, were identified as donors with broad-spectrum rust resistance.

Facilities Developed / Refurbished

A dedicated Genome Editing Laboratory has been established at the Division of Genomic Resources, ICAR–National Bureau of Plant Genetic Resources (NBPGR), New Delhi, under the ICAR Funded project “Enhancing climate resilience and ensuring food security with genome editing tool”. The laboratory was inaugurated on 1st August 2025 by Hon’ble Dr M. L. Jat, Secretary, DARE and Director General, ICAR.



Figure 12: Genome Editing laboratory inaugurated Dr M. L. Jat, Secretary, DARE and Director General, ICAR.

A refurbished Post-entry Quarantine Facility for growing of imported germplasm of legumes and pulses has been inaugurated by Dr. M. L. Jat, Secretary (DARE) & Director General, Indian Council of Agricultural Research, New Delhi. The facility will strengthen the post-entry quarantine activities of the ICAR-NBPGR and ensure the biosecurity of country from exotic plant viruses.



Figure 13: A refurbished Post-entry Quarantine Facility inaugurated Dr M. L. Jat, Secretary, DARE and Director General, ICAR.

Hindi Pakhwada and other Hindi activities

- Hindi Day was organized on 15.09.2025 with 15 participants at RS-Thrissur station
- Dr. Pradheep K participated through online the *RajBhasha Hindi Mahoutsav Mas* programme detailing “Use of AI tools in connecting languages” organized by ICAR-NBPGR held on 30.09.2025.

Upcoming events:

- Training program on “Harnessing genomic resources for augmenting germplasm evaluation and utilization for sustainability and climate change mitigation (Physical mode)” has been scheduled from 6-15 January 2026, hosted by ICAR-NBPGR, New Delhi.
- Training program on “Genome Edited and Genetically Engineered (GE) Crops: Biosafety Considerations, Policies, Challenges and Detection Strategies (Virtual Mode),” has been scheduled for 19-24 January 2026, hosted by ICAR-NBPGR, New Delhi.
- PGR workshop at TNAU, Coimbatore and SCSP programme in Dakshina Kannada dist. of Karnataka.

Human Resource Development

Students guided: During the period, 37 students of various courses, including graduation and post-graduation from different universities and institutes (SHUAT, Prayagraj (14), Swami Keshwananad Raj Agriculture University, Bikaner (1), Amity University, Noida (2), Chaudhary Charan Singh University (8), Janta Vedic college, Baraut, Baghpat (1), Galgotias University, Greater Noida (11)) were trained on various PGR-related activities by NBPGR Scientists.

Outreach, Social Activities and Students Exposure:

150 students from two universities visited the NBPGR and were briefed on the importance of PGR and its management activities.



Figure 14: Study tour of B.Sc. (Agriculture) 1st Year students of ICAR-IARI Jharkhand at ICAR-NBPGR, Regional Station, Ranchi.



Figure 15: Study tour of B.Sc. (Agriculture) 4th Year students of Gopal Narayan Singh University, Sasaram, Rohtaas, Bihar, under RAWE Programme at ICAR-NBPGR, Regional Station, Ranchi.

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