# ICAR-NBPGR Newsletter

ICAR-National Bureau of Plant Genetic Resources
(Indian Council of Agricultural Research)
An ISO 9001 - 2008 Certified Institute




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## ICAR-NBPGR Extends Warm Welcome to Dr J.S. Sandhu as the New Deputy Director General (Crop Science)

The ICAR-NBPGR family congratulates and welcomes **Dr Jeet Singh Sandhu**, who joined ICAR as DDG (Crop Science) on February 2, 2015. Prior to this post, Dr Sandhu was working as Agriculture Commissioner, Department of Agriculture & Cooperation, Ministry of Agriculture, since 2013. During his tenure (2010-13) as Assistant Director General (Seed), ICAR, Dr Sandhu had close interaction with the Bureau, being instrumental in monitoring all its activities and was the crucial link to ICAR. An alumnus of G.B. Pant University of Agriculture and Technology, Pantnagar, Dr Sandhu obtained his degree in M.Sc. (Plant Breeding) in 1982 and Ph.D. in 1985. His significant contributions as a pulse plant breeder during various positions at Punjab Agricultural University, Ludhiana (1986-2010) earned him several awards and honours such as Team Award (Chickpea); CGIAR'S King Baudouin Award 2002 and ICRISAT Doreen Mashler 2002; Award of Plaque to Best Research Worker for the year 2007-08, PAU, Ludhiana; and Indian Society of Pulses Research and Development (ISPRD) Recognition Award, 2009. ICAR-NBPGR wishes Dr Sandhu great success in his new assignment as DDG (Crop Science).

**Dr J.S. Sandhu, DDG (Crop Science), ICAR being welcomed by Dr K.C. Bansal, Director ICAR-NBPGR, during his visit to the institute for an interactive meeting with all scientists on February 28, 2015**

Dr Sandhu visited ICAR-NBPGR on February 28, 2015 to interact with the scientists and take an appraisal of the activities being undertaken by each. He advised on the future expectations from the scientists and the Bureau.

## ICAR-NBPGR becomes ISO 9001-2008 Certified Institute

The ICAR-NBPGR has been awarded the ISO 9001:2008 Certificate of Registration for its quality management system to act as the nodal institute at the national level for acquisition and management of plant genetic resources for food and agriculture and to carry out the related research and human resource development for sustainable growth of agriculture. The ISO certificate was awarded with effect from March 7, 2015.


CERTIFICATE OF REGISTRATION
Quality Management Systems
ISO 9001:2008
IAF
Equalitas Certifications Limited

# PGR ACTIVITIES

## Exploration and Germplasm Collecting

### Exploration and collecting of wild relatives of pigeonpea

*Rhyncosia rufescens* collected from Shervaroy Hills of Eastern Ghats

An exploration was undertaken for collecting wild relatives of pigeonpea from parts of Shevaroy hills, Pacchhamalais and Kolli Hills of Namakkal, Salem, and Tiruchirapally districts of Tamil Nadu. The exploration was conducted by ICAR-NBPGR Regional Station (RS), Hyderabad in collaboration with ICAR-Indian Institute of Pulses Research (ICAR-IIPR), Kanpur, AICRP on Pulses, and Plant Genetic Resources (PGR) Department, Tamil Nadu Agricultural University (TNAU), Coimbatore. A total of 29 collections were made including *Cajanus albicans, C. rugosus, C. scarabaeoides, C. platycarpus, C. sericeus, C. cajanifolius, Rhyncosia rufescens, R. minima, Crotalaria shevroyensis, C. micans, C. longipes, C. laburnifolia and Crotolaria sp., Tephrosia* spp. and *Abrus precatorius.* In addition, 43 samples including hill types of pigeon pea, lablab bean, French bean, cowpea, green gram and horsegram were also collected.

### Exploration and collecting from Eastern Ghats

An exploration and collecting mission was undertaken by ICAR-NBPGR, RS, Thrissur, to Eastern Ghats region in Erode, Dharmapuri and Krishnagiri districts of Tamil Nadu for collecting cowpea, horsegram and millets germplasm during December 27, 2014 and January 1, 2015. Burgoor forest area in Erode district and Chitheri hills in Dharmapuri district were surveyed for the first time, visiting hamlets of Sholagar and Malaiyaali tribes. Sorghum and finger millet were common and minor millets like proso millet, kodo millet and foxtail millet were rare in cultivation by the tribals. A total of 65 samples in 17 crops were collected.

### Exploration to collect paddy germplasm

An exploration was undertaken by ICAR-NBPGR, RS, Hyderabad, to collect paddy germplasm from parts of Tumakuru, Uttara Kannada, Belagaavi, Chikmagaluru, Chitradurga, Davanagere, Dharwada and Haveri districts of Karnataka. The survey was undertaken in collaboration with ICAR-Directorate of Rice Research, Hyderabad. A total of 111 samples were collected. The important landraces collected were *Arya, Baliga halaga, Bangara sanna, Beli nellu, Bili doddi, Bili hegge, Bili kagga, Byrinellu, Dasar patte, Devamalliga, Dodda bhatta, Dodda byaranellu, Dodda gerasalu, Doddiga, Gamand bhatta, Gandhasale, Gumkadale, Halaga, Halaja, Halugidda, Hanasu, Hola bhatta, Huggi bhatta, Jaddu bhatta, Javagu, Jeerage sanna, Kagga, Kajaya, Kanada tumba bhatta, Kare bhatta, Kari akkala Sali, Kari doddi, Kari kaal doddiga, Kari kagga, Kari kalavi, Karijaddu, Karri bhatta, Karse mullu nellu, Kempa devamallige, Kempnellu, Kempotti bhatta, Krishna leela, Malakanthi, Malgudi sanna, Mallige, Mara bhatta, Marnamy budda, Masale putta bhatta, Matta haliga, Mattalaga, Mudigere sanna, Mullare, Mullunellu, Mysore mallige, Mysore olya, Mysore sanna, Naga bhatta, Narikela, Natti kiruvanna, Parimala sanna, Putta bhatta, Raja mudi, Sampige, Sanna bhatta, Sannakki, Sanne raja kaime, Sidda sanna, Slira, Urula chippiga, Valya, Votgya* and *Yedakuni*. Significant variability was observed for plant height (short/ medium/ tall/ very tall), panicle length, size and no. of panicle branches, grains/ panicle, glume colour (black, brown, dark brown) seed length, grain type, kernel colour (white, red), maturity (very early, early, middle, late, very late), tolerance/ resistance to different biotic (blast, loose smut) and abiotic (moisture, drought) stresses etc.

## Germplasm Exchange

### Import

A total of 8,048 accessions of various crops including 2,273 trial entries and 5,775 accessions of germplasm were introduced from 20 countries. Some of the promising introductions are listed below:

**Barley (EC836449-745), Lebanon**: For yellow rust screening.

**Cotton (EC838248-71), USA**: Segregating population of ST 457 x tx1145.

**Cotton (EC838272), USA**: ST 457 parental line.

**Rice (EC837147-78), IRRI, Philippines**: Blast monogenic line.

**Rice (EC837459-585), IRRI, Philippines**: High Zn lines.

**Rice (EC838493-96), France**: T-DNA/tos17 inserted mutants lines.

**Rice (EC839761-64), IRRI, Philippines**: Submergence, drought lines.

**Tomato (EC840590-92), The Netherlands**: Short introgression lines-TY lines.

**Wheat (EC836757, EC838629) CIMMYT, Mexico**: Male sterile Vorobey backcross with *timopheevi* cytoplasm.

**Wheat (EC836758, EC838630) CIMMYT, Mexico**: Vorobey maintainer for Vorobey A lines, *aestivum* cytoplasm.

**Wheat (EC836759) CIMMYT, Mexico**: Heat tolerant.

**Wheat (EC836760-61) CIMMYT, Mexico**: Male sterile Neloki backcross with *timopheevi* cytoplasm.

**Wheat (EC836762) CIMMYT, Mexico**: Neloki maintainer for neloki A lines.

**Wheat (EC836763-64) CIMMYT, Mexico**: Australian hybrid mercury (Male R568G).

**Wheat (EC838631) CIMMYT, Mexico**: Male sterile Navojoa backcross with timopheevi cytoplasm.

**Wheat (EC838632), CIMMYT, Mexico**: Navojoa heat tolerant CIMMYT variety, maintainer for Navojoa A line, aestivum cytoplasm.

**Wheat (EC838633), CIMMYT, Mexico**: Male sterile Neloki backcross with timopheevi cytoplasm.

**Wheat (EC838634) CIMMYT, Mexico**: Neloki maintainer for Neloki A lines, aestivum cytoplasm.

**Wheat (EC838635-36), CIMMYT, Mexico**: Timopheevi restorer line, good pollinator, Rf genes recovered from Australian hybrid mercury (Male R568G).

**Wheat (EC841516), USA**: Large kernel size and superior yielding ability, resistance to diseases, prevalent in Oklahoma and surroundings states. Favourable dough strength, exceptional recovery of isolated gluten fractions from compressive deformation.

## Export

A total of 290 samples of wheat (*Triticum aestivum*) were sent to UK for research purposes.

## Plant Quarantine

A total of 4,873 samples were processed of which 175 were found infested/infected. The infestation/ infection/ contamination was due to insects, fungi/ bacteria, nematodes and weed seeds. Seventeen samples were rejected, the remaining 158 infected/infested samples were salvaged through various physico-chemical methods. The interceptions are listed below:

| Pest | Crop | Source/ Country |
|---|---|---|
| **Fungi** | | |
| *Tilletia barclayana* | *Oryza sativa* | Brazil |
| *Ascochyta lentis* | *Lens culinaris* | Australia |
| **Nematode** | | |
| *Pratylenchus* spp. | *Malus domestica* | Netherlands |
| *Aphelenchoides besseyi* | *O. sativa* | Philippines |
| **Weed** | | |
| *Emex australis, Malva parviflora, Nicotiana plumbaginifolia* | *Cicer arietinum* | Morocco |

A total of 2,729 samples were received from Germplasm Conservation Division for seed health testing which were examined visually and 385 samples were X-rayed and six samples were rejected. The remaining 2,723 samples were salvaged using non-chemical methods.

At ICAR-NBPGR RS, Hyderabad, a total of 6,087 samples of import germplasm (4,595 samples) and export germplasm (1,492 samples) were processed for quarantine clearance. Import germplasm (5,216 samples) was released to the consignees after necessary mandatory treatments. In all, seven Phytosanitary Certificates were issued. During processing, *Rhizoctonia solani*, *R. bataticola, Lasiodiplodia* sp. and *Stenocarpella zeae, Pestalotia* sp., *Sitophilus oryzae,* and *Tribolium castaneum* were intercepted on maize imported from different countries. *Macrophomina phaseolina* and *Myrothecium roridum* on *Jatropha curcas* from USA, *Alternaria helianthi* and *Corcyra cephalonica* on sunflower from Argentina and *Caryedon serratus* on *Acacia* from Australia were also intercepted.

## Germplasm Characterization and Evaluation

### Germplasm characterization of vegetables

At NBPGR, RS, Thrissur, characterization of following vegetable crops was carried out:

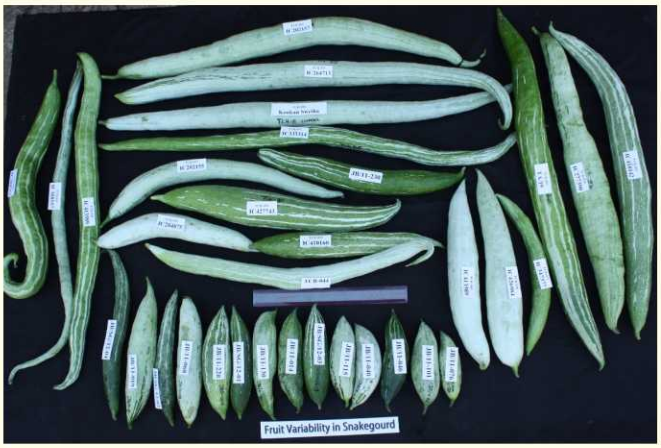
**Ash gourd (*Benincasa hispida*)** : Characterization of 39 accessions was undertaken with three check varieties, for seven quantitative and 10 qualitative traits. Wide variability for fruit size, weight, length and shape was noticed. Majority of the North-Eastern Hill (NEH) region collections were of a different morphological look, with characteristic round stem, highly lobed, small and dark green leaves and unique fruit shape (pear-shaped, ridged, fine seeded and sometimes non-ashy, green skin). Highest average single fruit weight was 7.8 kg (SKY/AC-311) and 7.2 kg (IC596989), while the lowest of 0.55 kg was recorded in 'Neykumbalam' (JJK/Misc.14-11) and 0.85 kg in 'Marunnukumbalam' (JJK/Misc.14-10), the two later ones being Kerala medicinal landraces. Fruit length ranged from 16 cm (JN/98-02, JJK/Misc.14-11) to 44 cm (IC596989, SKY/AC-246, SKY/AC-264). Pear-shaped fruits were recorded in JB/12-198B, JB/12-207, JB/11-52 and IC596992.

**Fruit variability in germplasm of ash gourd**

Cylindrical elongated fruit shape was observed in SKY/AC-260, SKY/AC-270 and SKY/AC-238. Accession JB/12-298B had unique non-waxy green fruit surface.

**Snap melon (*Cucumis melo* var. *momordica*)**: One collection (JJK/Misc.14-13) was found useful for dual purpose with tender fruits used as substitute of oriental pickling and matured melon for curries. It has an attractive dark green and white mottled skin and elongated shape with an average fruit weight of 1.8 kg.

**Snake gourd (*Trichosanthes anguina*)**: Accessions (16) collected from North-eastern region were characterised for fruit characters. Fruits were short and their length ranged between 16-40 cm and single fruit weight from 100-250 g. Fruit colour was either white mottled or olive green with white stripes. All the 16 collections were found highly susceptible to leaf crinkle virus.




**Fruit variability in snake gourd including those from North-eastern region**

**Yard long bean (*Vigna unguiculata* subsp. *sesquipedalis*)**: Forty accessions of vegetable cowpea collected from NEH region were characterized for five qualitative and six quantitative traits. Wide variability was observed in length (12-53.6 cm) and colour of pods. Severe virus infection was recorded in all accessions, except MTYLB-32, MTYLB-33 and KPSC 1575.

**Promising collections in yard-long bean**

### Germplasm characterization at Shimla

Germplasm comprising accessions of field pea (462), lentil (16) and oats (293) were grown for characterization and evaluation at ICAR-NBPGR, RS, Shimla. Accessions IC372415, IC372462 for early flowering, IC209576, IC209526 for tillers/plant and EC246123 for flag leaf length in oats were found promising.

### Amaranth characterization and evaluation

At ICAR-NBPGR, RS, Akola, grain amaranth accessions comprising trial (65), DUS trial (11), germplasm (1,070) and vegetable amaranth (85) were grown. Data were recorded for characterization as well DUS traits. Further, monitoring of grain amaranth trials under AICRN on Potential Crops was also undertaken at MPKV, Rahuri.


**Characterization of grain amaranth varieties for developing DUS test guidelines**

# GERMPLASM FIELD DAYS AND FAIRS

**Participants of the germplasm field day for oilseed, pulses and potential crops**

### Germplasm Field Day for *Rabi* Oilseeds, Pulses and Potential Crops

A Germplasm field day on *rabi* oilseeds, pulses and potential crops was organized on March 18, 2015 at ICAR-NBPGR, New Delhi, in which 50 scientists, belonging to 12 organizations of 11 states, participated. Accessions of linseed (250), lentil (750) and potential crops (100) were screened by the participants and desired accessions selected for different traits for crop improvement.

### Germplasm Field Day for Wheat and Barley

A germplasm field day on wheat and barley was organized at ICAR-NBPGR Farm, Issapur, and ICAR-NBPGR Farm, IARI, New Delhi on March 26, 2015. The Field Day was attended by 45 participants from ICAR institutes, SAUs and Govt. Departments. The participants were taken to the NBPGR Issapur Farm and shown 4,316 wheat accessions comprising core set (~2,805 accessions), reference set (~348 accessions), set for rainfed evaluation (1,483 accessions) and a set of 253 accessions grown for evaluation against terminal heat and drought tolerance. Besides, a set of 257 accessions of barley obtained from National Genebank were also shown to breeders. The participants also visited NBPGR, IARI Farm to see a set of 650 accessions of wheat grown for evaluation against abiotic stresses. The participants appreciated the entire range of variability exhibited in the core set and selected the material of their choice and provided valuable feedback for evaluation of specific traits for further utilization of the germplasm.

**Participants screening of germplasm of wheat**

### Participation in Fairs

ICAR-NBPGR, New Delhi, participated in the 'Pusa Krishi Vigyan Mela', organized by IARI at New Delhi from March 10-12, 2015, by exhibiting posters and live models at the thematic stall and other activities at general stall using posters, live materials, pamphlets and brochures. ICAR-NBPGR, RS, Shillong participated in 'North Eastern Zone Regional Agriculture Fair 2014-15' at ICAR, RC for NEHR, Umaim during January 9-10, 2015. The stalls were visited by number of farmers, scientists, personnel from KVKs and school children.

# PGR STUDENTS

## Students receive degree in PGR at IARI Convocation

During the 53rd Convocation of the Indian Agricultural Research Institute (IARI), New Delhi, held on February 20, 2015, one Ph.D. and four M.Sc. students obtained degrees in the discipline of Plant Genetic Resources (PGR).

The IARI (PGR) students who obtained degrees during the 53rd IARI Convocation – Mr Rajappa J.J., Ms Padmavati Gore, Mr Pavan Malav, Mr Badal Singh and Mr Anil Patidar (from left to right)

| Student | Thesis Title |
|---|---|
| **Ph.D.** | |
| Rajappa, J.J. (Roll # 9724) | Generation and characterization of conserved orthologous markers in greengram |
| **M.Sc.** | |
| Badal Singh (Roll # 20325) | Genetic resource of genus *Garcinia* in India and studies on reproductive biology to establish agamospermy |
| Anil Patidar (Roll # 20326) | Unraveling physiological and molecular mechanism of terminal-heat stress tolerance in bread wheat (*Triticum aestivum* L.) germplasm |
| Pavan K. Malav (Roll #20327) | Morphological, molecular and biochemical variability of *Ocimum tenuiflorum* (Lamiaceae) genotypes in India |
| Padmavati G. Gore (Roll # 20328) | Analysis of population genetic structure in different species of the genus *Lens* |

## Ms Padmavati Receives IARI Merit Medal

Ms Padmavati G. Gore, received the IARI Merit Medal during the 53rd Convocation of IARI, New Delhi, for her overall performance in the M.Sc. (PGR) undertaken during the academic years 2012-14. Each year IARI awards five such medals each to meritorious students completing M.Sc. and Ph.D.

## PGR Students Receive ISPGR Awards

The Dr K.L. Mehra Memorial Awards bestowed by the Indian Society of Plant Genetic Resources (ISPGR) being received by Mr Manish Mittal (left) and Ms Padma Gore (right) for being the best PGR students for the year 2014 and 2015, respectively. Award being given by Dr K.C. Bansal, Director, ICAR-NBPGR in the presence of Dr R.S. Paroda, Professor H.Y. Mohan Ram and Dr B.S. Dhillon, during the ISPGR Award Ceremony held on March 5, 2015.


## Forthcoming Event

## Short Course on Crop Wild Relatives: Identification, Collecting and Utilization

**August 19-28, 2015**

Realizing the role of crop wild relatives (CWR) in crop improvement, domestication and use of native diversity, ICAR-NBPGR, New Delhi, is organizing the above-mentioned course. The objective is to enhance participant's knowledge about native diversity in CWR and its management. Topics covered would include diversity distribution, exploration, taxonomic identification, appropriate collecting strategies, seed storage behaviour, and their potential use.

**For further information contact:**

Course Director Dr S.P. Ahlawat , Head, Division of Plant Exploration and Germplasm Collection, ICAR -NBPGR, Pusa Campus, New Delhi - 110 012, Phone: 011-25848405(O); Mob. 09650850740; Fax: 011 -2584 2495

E mail : exploration@nbpgr.ernet.in; ahlawatsp@gmail.com

Or visit CBP Vortal (http://www.iasri.res.in/cbp) or ICAR-NBPGR website (http: //www.nbpgr.ernet.in)

# PGR FOR BENEFIT OF FARMERS

## Farmers's Variety of Pigeonpea Registered

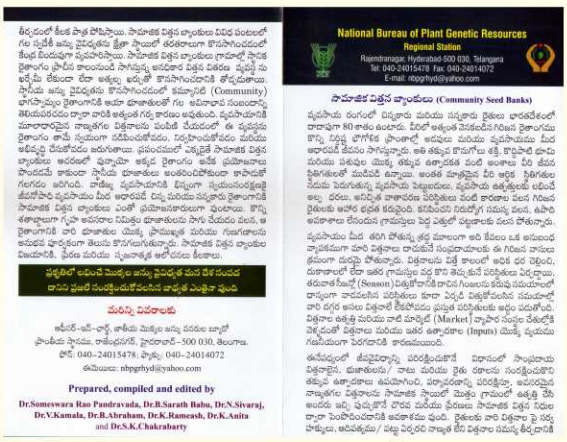
A promising farmer's variety (*Erramachcha kandi*) of pigeonpea (*Cajanus cajan*) was registered (Certificate # 65/2015) by the PPV&FRA, New Delhi. It became the first Farmer's variety for Telangana State and third in the country for pigeonpea to be registered. The variety is characterized by very tall plant habit (235 cm), medium maturing, heavy bearing (269 pods/ plant), long green pods (9.4 cm) with brown streaks, seed cream with reddish-brown mottles/speckles, with high seed weight (18 g), protein (22.0%), high soluble sugars (23.9%) and low starch (30.4%). Registration was facilitated by the NBPGR, RS, Hyderabad and submitted by the Biodiversity Management Committee, Jhari Village, Kerameri Mandal, Adilabad District, Telangana.

Plant habit of *Erramachcha kandi*

Pods and seeds

## Brochure on Community Seed Banks in Regional Language (Telegu)

To encourage establishment of community seed banks for the benefit of farmers in the states of



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సామాజిక విత్తన బ్యాంకులు (Community Seed Banks)

Prepared, compiled and edited by
Dr.Someswara Rao Pandravada, Dr.B.Sarath Babu, Dr.N.Sivaraj, Dr.V.Kamala, Dr.B.Abraham, Dr.K.Rameash, Dr.K.Anita and Dr.S.K.Chakrabarty

Brochure on Community Seed Banks in Telegu

Telangana and Andhra Pradesh, a fore-page brochure entitled "*Saamaajika vittana byankulu*" (Community Seed Banks) has been published by NBPGR, RS, Hyderabad. The authors include Drs S.R. Pandravada, B. Sarath Babu, N. Sivaraj, V. Kamala, B. Abraham, K. Rameash, K. Anita and S.K.Chakrabarty.

## Biodiversity Fair and PGR Awareness Programme

A Biodiversity Fair cum Grassroot Level Awareness Programme on 'Plant Genetic Resources Conservation' was organized on February 21, 2015 by NBPGR, RS, Hyderabad, in association with ASHA, an NGO for the Tribal population. The event was held at Chintur, East Godavari District, Andhra Pradesh under the Tribal Support Project (TSP).

A tribal farmer speaking (above) and view of the participants (below) on the occasion of the awareness programme on PGR conservation

# PERSONNEL NEWS

**Dr J.C. Rana**, Principal Scientist and Officer-in-Charge, ICAR-NBPGR, RS, Shimla received the first **Prof. M.S. Swaminathan National Award for Outstanding Research on Hill Agriculture** constituted by ICAR Research Complex for NE Region, Barapani, Shillong, on January 1, 2015. The award comprises a citation and cash prize worth Rupees one lakh. Dr Rana's research work is mainly focussed on the management and sustainable utilization of plant genetic resources of Indian Himalayan Region.

**Dr Yasin J.K.,** Scientist, Division of Genomic resources, ICAR-NBPGR, New Delhi, was conferred with **SRDA Gold Medal – 2014** in the field of Agriculture, during International Conference on "Technological interventions in agricultural sciences to enhance productivity, nutritional quality and value addition (TIAS-2014)" held from February 17-19, 2015 at Central Institute of Horticulture, Department of Agriculture and Co-operation, Ministry of Agriculture, Government of India.

## Appointments

**Dr R.K. Tyagi**, Principal Scientist, joined as Head, Division of Germplasm Conservation, ICAR-NBPGR, New Delhi w.e.f. February 20, 2015.

**Dr S.P. Ahlawat** joined as Head, Division of Plant Exploration and Germplasm Collection, ICAR-NBPGR, New Delhi w.e.f. February 26, 2015.

**Dr N. Dikshit**, Senior Scientist, became Officer-in-Charge, ICAR-NBPGR, RS, Akola w.e.f. January 24, 2015.

## Retirements

**Mr H.S. Chauhan**, Administrative Officer, ICAR-NBPGR, New Delhi, superannuated on January 31, 2015.

**Ms Kuljit Kaur**, Assistant Administrative Officer, ICAR-NBPGR, New Delhi, superannuated on January 31, 2015.

**Dr (Ms) E. Roshini Nayar**, Principal Scientist, Division of Plant Exploration and Germplasm Collection, ICAR-NBPGR, New Delhi, superannuated on February 28, 2015.

**Mr Prakash Chand**, Senior Technical Assistant, ICAR-NBPGR RS, Shimla superannuated on February 28, 2015.

**Mr Harender Singh**, Senior Technical Officer (T-6), Division of Germplasm Evaluation, ICAR-NBPGR, New Delhi, superannuated on March 31, 2015.

## Transfers

**Dr M. Abdul Nizar**, Senior Scientist, transferred from ICAR-NBPGR, RS, Akola to Thrissur w.e.f. January 24, 2015.

**Mr K.C. Kundu**, Assistant (P-II), transferred from ICAR-NBPGR, New Delhi to ICAR-NBPGR, RS, Ranchi.

## Promotions

**Mr Avdesh Kumar**, promoted from Assistant to Assistant Administrative Officer w.e.f. January 30, 2015.

**Mr Subhash Chander Sharma**, promoted from Assistant to Assistant Administrative Officer w.e.f. March 9, 2015.

## HRD

Under International cooperation in agriculture research fellowship program (RTF-DCS) sponsored by Department of Science and Technology, Govt. of India a six month training to **Dr Mohammad Abubakkar Gumi**, Lecturer, Department of Biological Science, Usmanu Danfodiyo University, Nigeria, is being imparted under mentorship of **Dr Tapan Kumar Mondal**, Senior Scientist, Division of Genomic Resources. The research work of Mr. Gumi will focus on allele mining of abiotic stress responsive genes in African rice.

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