



# IARI News



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## Research

### Varieties of Wheat, Rice and Mustard Released

Seven new crop varieties—three in wheat- Pusa Gautami (HD 3086), Pusa Amulya (HD 3090) & Nilgiri Khapli (HW 1098), two in rice- Pusa Basmati 1509 & Pusa 1612 and two in mustard- Pusa Mustard 29 (LET-36) & Pusa Mustard 30 (LES-43) were released.

Wheat variety Pusa Gautami (HD 3086) has been recommended for commercial cultivation in irrigated timely sown conditions of North Western Plains Zone. It recorded an average yield of 5.46 t/ha with a genetic potential of 7.1 t/ha. This variety matures in 143 days. It showed a very high level of resistance against stripe and leaf rusts, loose smut and flag smut. This variety has the highest



Wheat variety Pusa Amulya

extraction rate (70.5), *chapati* score (7.65) and wet gluten per cent (31.3) so it finds favour with the milling and baking industries.

Wheat variety Pusa Amulya (HD 3090) is suitable for cultivation

under late sown irrigated conditions of Peninsular Zone. Pusa Amulya, an early maturing (101 days) and semi-dwarf (80 cm) genotype, recorded an average yield of 4.21 t/ha with a genetic potential of 6.31 t/ha. It showed a high degree of resistance against leaf and stem rusts. It has an average grain protein content (13.3%), high hectolitre weight value (79.4 kg/hl), and good bread quality score (7.17).



Wheat variety Pusa Gautami

*Dicoccum* wheat variety Nilgiri Khapli (HW 1098) was released for cultivation in *dicoccum* growing areas of India. It gives an average yield of 4.047 t/ha and 3.273 t/ha under normal and late sowing conditions, respectively. HW 1098





*Dicoccum* wheat variety Nilgiri Khapli

produces bold, lustrous grains having 1000-grain weight of 46.5 g, comparable level of protein (16.8%), sedimentation value (29.0 ml) and  $\beta$ -carotene (3.39 ppm) coupled with high degree of rust resistance.

Rice variety Pusa Basmati 1509 was released for *basmati* growing regions of western Uttar Pradesh and Delhi for irrigated and transplanted conditions. It matures in 115 days which is 30 days earlier as compared to Pusa Basmati 1121. Due to short duration, it can be planted up to the end of July, thus, saving 4-5 irrigations. It possesses



Rice varieties PS 5 (left) and Pusa 1612 (right)

strong aroma and better cooking quality than Pusa Basmati 1121.

Rice variety Pusa 1612 was released for Punjab, Haryana, Delhi and J&K for irrigated and

transplanted conditions. Average yield of this variety is 5.1 t/ha which is significantly superior to Pusa Basmati 1, Taraori Basmati and Pusa Basmati 1121. It possesses leaf blast resistance genes *Piz5* and *Pi54* and takes 120 days to seed maturity.

Indian mustard variety Pusa Mustard 29 (LET-36) having low erucic acid (<2%) was released for Delhi, Haryana, Jammu, Punjab and northern Rajasthan under timely sown irrigated conditions. Average yield of this variety is 2.169 t/ha. It matures in 143 days. 1000-seed weight of this variety is about 4.0 g with 37.2% oil content.

Indian mustard variety Pusa Mustard 30 (LES-43) having low erucic acid (<2%) was released for Uttar Pradesh, Uttarakhand, Madhya Pradesh and eastern Rajasthan under timely sown irrigated conditions. It matures in 137 days and has an average yield of 1.824 t/ha. It is the first bold seeded variety (1000-seed weight 5.38 g) having 37.7% oil content.



Rice varieties Pusa 1121 (at top) and Pusa 1509 (at bottom)



Pusa Mustard 29





Pusa Mustard 30

### Hybrids / Varieties of Vegetable Crops Identified

Two hybrids of ash gourd – Pusa Urmi (DAGH-16) & Pusa Shreyali (DAGH-14) and one variety of bitter gourd – Pusa Aushadhi (Sel-1) were identified in XXXI Annual Workshop of AICRP-VC.

The ash gourd hybrid Pusa Urmi (DAGH-16) was identified for *kharif* cultivation in Zones VI (Rajasthan, Gujarat, Haryana and Delhi) and VIII (Karnataka, Tamil Nadu and Kerala). Its vines are medium long (7.5 m) and fruits are oblong - ellipsoid with greenish - white rind and white flesh. The average yield is 41.1 t/ha in Zones VI & VIII. The average fruit weight is 10.0 kg and average number of fruits per plant is 4.6.



Fruits of ash gourd hybrid Pusa Urmi

The ash gourd hybrid Pusa Shreyali was identified for cultivation in Zone IV (Punjab, U.P., Bihar and Jharkhand). Its vines are medium long (7.0 m) and fruits are oval in shape with white rind and flesh. The average fruit yield is 47.0 t/ha. The variety has an average fruit weight of 9.0 kg and bears 4.1 fruits per plant. It is ideal for easy packing and long distance transportation.



Fruits of ash gourd hybrid Pusa Shreyali

The bitter gourd var. Pusa Aushadhi was identified for cultivation in Zone VI (Rajasthan, Gujarat, Haryana and Delhi). It has higher female : male flower ratio (3:1) compared to commercial variety, Pusa Do Mausami (1:9). Its fruits are light green, medium long (16.5 cm) and medium thick. Fruits have 7-8 continuous narrow ridges



Fruits of bitter gourd variety Pusa Aushadhi

and mature in 48-52 days. The average fruit weight is 85 g with an average yield of 12.80 t/ha.

### Genetic Stocks Registered

Wheat lines, HW 3601 (IC 0598203; INGR 13051) and HW 3631 (IC 0598414; INGR 13052) with resistance to stem and leaf rust diseases were registered as genetic stocks in NBPGR, New Delhi.

### New Anti-sprouting Agent Developed

A new compound containing modified  $\alpha$ ,  $\beta$  unsaturated ketone for use as anti-sprouting agent for potato tubers was developed. Efficacy was evaluated at 25, 50, 100 and 200 ppm levels on two varieties of potato, viz., Kufri Jyoti (medium dormancy) and Kufri Giriraj (Short Dormancy). It was observed that there was no peeping in any of the treated tubers till 60 days of storage, whereas, the control tubers started sprouting by that time. Peeping in tubers was observed at 90 days at 25 ppm, 120 days at 25 and 50 ppm, 150 days at 100 ppm and 180 days at 200 ppm levels. After 180 days, on an average, the



Control  
Treated  
Control and treated tubers (200 ppm) after 120 days of storage at 12°C

weight loss in control tubers was 13.1%, whereas, it was least at 200 ppm (6.8%) followed by 100 ppm (7.4%), 50 ppm (8.4%) and 25 ppm (11.1%). No negative effect of test compound was observed on the processing quality of potatoes. Activity of the test compound was comparable to commercial sprout suppressing agent (CIPC), where single treatment at 40 ppm dose can suppress sprouting till about four months.

### Cloning, Sequencing and Expression Analysis of DnaK from *Bacillus pumilus*

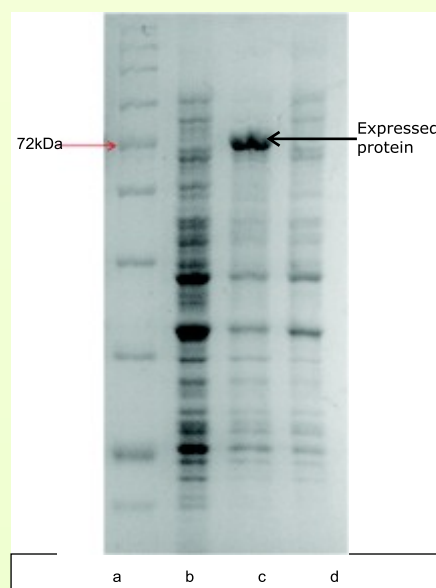
A set of thermo-tolerant strains isolated from hot springs of Manikaran and Bakreshwar (India) were selected with an aim to isolate *dnaK* gene which encodes heat shock protein, DnaK/Hsp 70. The gene *dnaK* along with its flanking region was successfully amplified from 5 different strains (4 from Bakreshwar and one from Manikaran). Restriction fragment length polymorphism (RFLP) revealed that amplicons were almost identical in sequence. The *dnaK* gene from one representative, *Bacillus pumilus* strain B3 isolated

from Bakreshwar hot springs was successfully cloned and sequenced. The *dnaK* gene was flanked by gene *grpE* on one side. The *dnaK* gene was 1842 bp in length encoding a polypeptide of 613 amino acid residues. Calculated molecular weight and pI of the protein were 66,128.36 Da and 4.72, respectively. The deduced amino acid sequence of this gene shared high sequence homology with other DnaK

proteins and its homologue Hsp 70 from other microorganisms, but possessed 36 substitutions and two insertions, as compared to DnaK protein of *Bacillus subtilis*. The *dnaK* gene of *Bacillus pumilus* was successfully expressed in *Escherichia coli* BL 21 (DE3) using pET expression system. Heterologous expression of *dnaK* of *Bacillus pumilus* in *E. coli* BL 21 (DE3) allowed the growth of *E. coli* up to 50 °C and survival up to 60 °C for 16 hours, suggesting that *dnaK* from *Bacillus pumilus* imparts tolerance to host cells under high temperature. This novel gene can be an important component for possible utilization in abiotic stress management of plants.

### Identification of Donors for High Nitrogen Use Efficiency (NUE) in Wheat

One hundred ten exotic and indigenous wheat genotypes were evaluated under low (no fertilizer N) and recommended dose of nitrogen (120 kg N/ha) conditions in field for two years on the basis of biomass, grain yield, grain and straw N content and NUE. EC556434, BT-Schomburgk, PBW 394, Arrino and Roller were identified as genotypes with high NUE, while Stretton, Kater-1, Bevy-1(Med) and Gluyas early were identified as genotypes with low NUE. These genotypes can be used for mapping QTLs and genetic improvement programmes aimed at NUE.



SDS-PAGE of crude cell extracts of transformants: a. Protein molecular mass marker; b. *E. coli* transformant (uninduced); c. *E. coli* transformant induced (cell lysates collected 1 h after induction); and d. *E. coli* transformant induced (cell lysates collected immediately after induction)

### Yield Response of Important Field Crops to Elevated Air Temperature and CO<sub>2</sub> Level

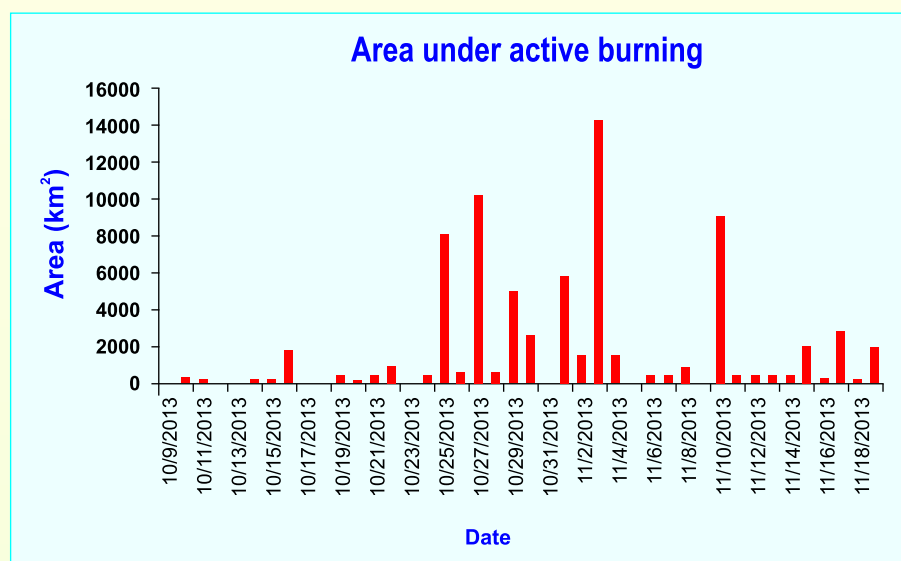
Field experiments were carried out to study the yield responses of



important field crops, namely, rice, wheat, chickpea, greengram, groundnut, mustard and potato to elevated air temperature and CO<sub>2</sub> fertilization at IARI. The results revealed that economic yield reduced gradually with differential magnitude in different crops with rise in atmospheric temperature. On the other hand CO<sub>2</sub> fertilization enhanced the yield to varying degree in these field crops with the highest effect in chickpea and the least in cereals (rice and wheat). Among the crops rice, chickpea and mustard showed greater degree of thermal tolerance, while wheat and groundnut proved to be more thermal sensitive. Greengram and potato showed moderate degree of thermal tolerance. Results indicated that elevated CO<sub>2</sub> (550 ppm) could alleviate the negative impact of temperature increase up to 4 °C in chickpea and 5 °C in mustard. In other crops, elevated CO<sub>2</sub> could counter-effect the temperature increase to lesser extent with least degree in wheat (1.5°C).

### Monitoring Crop Residue Burning in Punjab and Haryana States

A study was taken up for real time monitoring of residue burning between October 10 and November 20, 2013 using satellite data available from recently established Satellite Ground Station. The daily thermal infrared images from MODIS and AVHRR sensors were used to determine a large anomaly in the land-surface-temperature (LST), an indicator of active fire. Fire intensity was also estimated



Graph showing date-wise area under active fire due to crop residue burning in Punjab and Haryana

based on the extent of LST anomaly and the fire map was overlaid with wind speed and direction to indicate a likely area receiving pollutant's load. Though residue burning was detected as early as on October 16, the majority of burning was carried out between October 25 and November 3, 2013. Among different dates, residue burning in large areas was detected on October 25, October 27, November 3 and November 10, 2013. Maximum area of 14205 sq km with active fire was detected on November 3, 2013. After accounting for overlapping areas with burning on different dates, it was estimated that crop residue burning was carried out in about 36959 sq km during the period. The prevailing surface wind direction on dates with significant burning area was easterly and hence, pollution load was not felt in Delhi and its adjoining areas. Using emission factors from experimental studies and area estimate from satellite data, total GHG emission and pollution load

from crop residue burning could be estimated.

## Education

### National Agricultural Education Day Lecture Organized

IARI organized 'National Agricultural Education Day Lecture' on November 13, 2013 at Dr. B.P. Pal Auditorium in the memory of Dr. Abul Kalam Azad, a great freedom fighter, an eminent educationist and the first Union Minister of Education. Shri Tejendra Khanna, former Lt. Governor, NCT of Delhi presided over the function. Dr. H.S. Gupta, Director, IARI introduced the Speaker of the function. On this occasion, Prof. G.K. Chadha, President, South Asian University, New Delhi delivered an impressive and informative lecture on an interesting topic "Emerging Problems and Challenges of Higher Education and Research in India".





Prof. G.K. Chadha, President, South Asian University, New Delhi delivering National Agricultural Education Day Lecture

#### Fourth Dr. B.P. Ghildyal Memorial Lecture Organized

The 4<sup>th</sup> Dr. B.P. Ghildyal Memorial Lecture in the memory of late Dr B.P. Ghildyal, the famous Soil Physicist, was organized by the Indian Society of Agrophysics on December 13, 2013 at NRL Auditorium, IARI, New Delhi. Dr. T.N. Chaudhury, Ex. Assistant Director-General (Soils), ICAR chaired the session. Mrs. Ghildyal along with family members also graced the occasion. Dr. L.S. Rathore, Director-General, Indian Meteorological Department, Ministry of Earth Sciences, Govt. of India delivered the lecture on “Weather Information for Sustainable Agriculture”. Dr. Rathore highlighted the importance of meteorological information for agriculture, accuracy of observation & prediction of weather, agro-meteorological advisory services by IMD. He also elucidated the future needs and strategies in agro-meteorological research.

#### Pusa Harit Kranti Park

A replica of the IARI Central Library was erected at the traffic

island opposite the IARI main gate symbolizing the splendid journey of the Seat of Green Revolution. A garden is also developed on the island that enhances the aesthetics of the surrounding area. The park showcases some of the technologies generated by the Institute through 8 illumination boards that highlight the achievements of the Institute.

#### Extension

##### IARI Participates in Agricultural Exhibitions/Melas

The Institute participated and put up stalls to display its products, technologies, and publications in

the following exhibitions/ melas: i) International Dussehra Festival from October 14 to 21, 2013 at mela ground, Kullu, Himachal Pradesh; ii) Global Agri Connect-2013 organized by National Skill Foundation of India from October 25 to 27, 2013 at IARI, New Delhi. A “Certificate of Appreciation” was awarded to IARI; iii) International Trade Fair, 2013 held from November 14-27, 2013 at Pragati Maidan, New Delhi. The theme of the exhibition was ‘Inclusive Growth’; and iv) International Seminar cum Exhibition on “Indian Farm to Fork” from November 29 to 30 organized by PHD Chamber of Commerce and Industries at PHD House, New Delhi.

#### Agricultural Extension Activities Organized at KVK, Shikohpur

- *Field Days on Arhar, Paddy, Guar, and Cauliflower:* Four field days were organized on *arhar*, *paddy*, *guar*, and *cauliflower* crops under FLD programme in Khanpur, Lohatki, Teekli and Daboda villages in which 120 farmers participated.



Replica of the IARI Library installed at Pusa Harit Kranti Park



- *Animal Health Day*: An animal health day was organized on October 26, 2013 in Kumbhawas village. In this programme 162 animals were treated. A *kisan goshti* was also organized on this occasion.
- *Field days on On-Farm Trials*: Two field days were organized on “Disease Management” and “Leaf Blight Management” on October 18, 2013 and October 31, 2013, respectively, in which 87 participants were present.



Dr. Narendra Kohli releasing Institute's *Rajbhasha Patrika Pusa Surbhi*

### Kisan Mela

Ambuja Cement Foundation, Darlaghat, Himachal Pradesh in collaboration with IARI organized a *kisan mela* on November 15, 2013 at Shimla centre of IARI in which more than 500 farmers from different parts of Himachal Pradesh participated.

## Hindi Awareness Programmes

### Annual Hindi Prize Distribution Function

Annual Hindi Prize Distribution Function was celebrated on October 19, 2013 at Dr. B.P. Pal Auditorium. All the winners of different competitions organized during *Hindi Chetna Maas* were awarded prizes during the function. Dr. Narendra Kohli, famous Hindi Litterateur was the Chief Guest. Institute's *Rajbhasha Patrika, Pusa Surbhi* was released on this occasion by the chief guest. *Hasya Play "Hanso-Hanso Jaldi Hanso"* was staged during the function which brought cheers and smiles to the audience.

### Hindi Workshop

A Hindi workshop on “Technical Terminology” was organized on December 10 and 11, 2013 for technical officers at NRL Auditorium. Fifty technical officers of the Institute participated in this workshop. The participants discussed the formation of different technical terms and their usage among the farmers and extension workers.

### Hindi Chetna Maas

*Hindi Chetna Maas* was also observed at Pusa, Bihar by the Institute from September 14 to October 13, 2013, in which various competitions like, *Kavya Paath, Shabd Gyan, Shurtilekh, Krishi Sambandhi Prashna*, etc., were organized.

## Capacity Building

### Trainings

- A training programme on “Advances in Methodological Paradigm and Tools in Extension Research” was organized from September 17 to October 7, 2013 under the

ICAR's Centre of Advanced Faculty Training (CAFT) scheme for upgrading the knowledge and skills of extension researchers, faculty and practitioners. A total of 25 trainees from ICAR institutes and SAUs participated in the training programme representing eleven states.

- ZTM & BPD Unit, IARI organized EDP on “Vegetable Seed Production” from October 1 to 5, 2013 in collaboration with the Division of Vegetable Science. Participants from 11 different states attended the said training programme.
- The following on-campus training programmes were organized for the benefit of farmers: i) “Organic Farming and its Certification for Extension Staff and Farmers” on October 11, 2013 (25 farmers and officials of Delhi Development Department participated); ii) “Good Agricultural Practices for Extension Staff and Farmers” on October 15, 2013 (25 farmers and officials of Delhi





EDP on "Vegetable Seed Production Technology"

Development Department participated); iii) "Pre-seasonal Training Programme for Extension Staff of Delhi Government" on October 24-25, 2013 (25 farmers and officials of Delhi Development Department participated); iv) "Skill Development Training & Exposure Visit of Farmers, Entrepreneurs and Officials" from October 24 to November 2, November 11 to 20, and December 11 to 20, 2013 (22, 22 and 25 progressive farmers, respectively, participated); and v) "Innovations in Transfer of Technology" from November 26 to December 3, 2013 (16 officials from 14 states participated).

- Eight vocational trainings were organized at the *Krishi Vigyan Kendra* (KVK), Shikohpur on: i) "Dress Designing and Tailoring" from October 5 to December 4, 2013 at Ghamroj village (25 farm women participated), ii) "Fruit Plant Nursery" from October 24 to 30, 2013 (15 rural youth participated), iii) "Motor

Winding" from November 11 to 20, 2013 at the Division of Agricultural Engineering (9 rural youth from Gurgaon participated), iv) "Value Addition of Soybean and Pearl Millet" from November 12 to 23, 2013 (30 rural women participated), v) "Production Technology on Button Mushroom Cultivation" from November 21 to 26, 2013 (20 rural youth and farm women participated), vi) "Protective Cultivation of Flowers" from December 2 to 7, 2013 (42 rural youth from Shikohpur and nearby villages participated),

vii) "Dairy Farming" from December 3 to 13, 2013 (44 rural youth from different villages participated) and viii) "Protective Cultivation of Vegetables" at Ghamroj village (30 rural youth participated). At KVK, Shikohpur two trainings for extension personnel were also organized on: i) "Animal Production & Management" on October 11, 2013 (25 agriculture development officers of Department of Agriculture, Gurgaon participated) and "Integrated Nutrition Management" on October 25, 2013 (22 agriculture development officers of Department of Agriculture, Gurgaon participated).

- A model training Course was conducted on "Value Addition in Flower Crops" from November 4 to 11, 2013. The training was attended by 19 participants from Orissa, Nagaland, Tamil Nadu, Meghalaya, Himachal Pradesh, Andhra Pradesh, Uttar Pradesh, Uttarakhand, Gujarat



A vocational training on "Dairy Farming"





A vocational training on "Value Addition of Soybean and Pearl Millet"

and New Delhi. The trainees were also exposed to various field visits including flower *mandi*, Ghazipur, Delhi.

- An 8-day model training course was organized on "Developing Competencies of Extension Professionals in the Changing Agricultural Scenario" from November 15 to 22, 2013 for 24 officials of eleven state development departments.
- Institute successfully organized two training programme of three-day each from November 21 to 23, 2013 and November 26 to 28, 2013 on "Enhancing Motivation for High Job Performance" for the technical staff of the Institute.
- The NAIP funded national training was organized on "Project Formulation, Risk Assessment, Scientific Report Writing & Presentation" from December 9 to 13, 2013. The training programme was attended by 24 participants representing 16 organizations from 13 states.
- A training programme on "Pruning and Grafting of Temperate Fruit Crops" in collaboration with Ambuja Cement Foundation, Darlaghat, Himachal Pradesh was organized on December 20, 2013 at IARI Research Farm, Dhanda, Shimla in which 40 farmers participated.
- A model training on "Integrated Farming Systems for Enhancing Resource Use Efficiency and Livelihood Security of Small and Marginal Farmers" was organized from December 20 to 27, 2013. Forty agricultural officers / researchers/scientists from fourteen states of the country participated in the training programme.

### Workshops

- IARI - Voluntary Organizations (VOs) joint workshop was organized with 28 VOs from all over India on October 4, 2013 under the chairmanship of the Director, IARI to review the progress of partnership for assessment and transfer of IARI

technologies in distant parts of the country. The Workshop was attended by 19 VO's representatives besides IARI officials.

- A stakeholders' workshop was organized on the theme "Adaptation to Climate Change for Sustainable Livelihoods in Drought Prone Districts in Madhya Pradesh" on October 24, 2013 at KVK, Dhar, Madhya Pradesh.

## Miscellany

### New Projects Sanctioned

- "Biotechnology and molecular characterization of salinity-induced response(s) in pigeon pea (*Cajanus cajan* L.) - towards the salinity tolerance" funded by DBT. Principal Investigator: Dr. Archana Singh, Division of Biochemistry.
- "Screening soybean germplasm for  $\alpha$ -tocopherol content and assessing the expression of  $\gamma$ -tocopherol methyl transferase ( $\gamma$ -TMT) gene in contrast" funded by DBT. Principal Investigator: Dr. Vinutha T., Division of Biochemistry.
- "Development of forewarning model using regression and simulation approach for management of rice leaf folder *Cnaphalocrosis medinalis* Guenee (Lepidoptera: Pyralidae)" funded by DST (SERB). Principal Investigator: Dr. M. Sujithra, Division of Entomology.

- “Elucidating the role of novel regulatory genes from rice in response to water deficit stress and their functional validation” funded by DST (SERB). Principal Investigator: Dr. Aruna Tyagi, Division of Bio-chemistry.
- “Generation advancement and development of new genotypes through pre-breeding in lentil and *Kabuli* chickpea” funded by DAC (NFSM) sub-project 1 “Breaking yield barriers in lentil through introgression of useful genes from unadapted landraces and wild gene pool” Principal Investigator: Dr. H.K. Dikshit, Division of Genetics. sub-project 2 “Widening genetic base through pre-breeding for the development of high yielding cultivars of *Kabuli* chickpea” Principal Investigator: Dr. C. Bhardwaj, Division of Genetics.
- “Molecular mechanisms of salicylic acid mediated improvement in shelf-life and fruit quality of tomato” funded by DST (SERB). Principal Investigator: Dr. Ajay Arora, Division of Plant Physiology.
- “Genetic diversity of *Chilo partellus* populations in relation to augmentative biocontrol with *Trichogramma chilonis*” funded by DBT. Principal Investigator: Dr. M.K. Dhillon, Division of Entomology.
- “Developing chickpea cultivars suited to mechanical harvesting

and tolerant to herbicides” funded by DAC, NFSM. Principal Investigator: Dr. Shailesh Tripathi, Division of Genetics.

### Patent Published

- Cross-Flow Flexible membrane Filtration Assembly

### Crop Varieties Filed for Protection under PPV & FRA, 2001

- Fifteen extant varieties and two new varieties of mustard have been filed for protection under Protection of Plant Variety and Farmers’ Right Act, 2001.

### Technologies Commercialized

- Kubota Agricultural Machinery licensed to M/s Kubota Agricultural Machinery India Pvt.Ltd., Chennai
- RNAi and other cutting edge technological interventions to develop insect-pest, disease and viruses tolerant tomato hybrid for Indian and international market licensed to M/s Advanta India Ltd.
- Fruit and Vegetable Grader and Power Operated Winnower licensed to Varsha Associates, Karnataka
- Liquid formulation of zinc solubilizing bacteria licensed to Kirti International, New Delhi
- Wheat variety HD 3059 licensed to Bhawani Seed and Biotech, Mathura

- Wheat varieties HI 1563 and HI 1544 licensed to Syngenta India Limited, Pune
- Rice variety-Pusa Basmati 1509 licensed to Metahelix Life Sciences Ltd., Bangalore; M/s Kamboj Export, Bangalore; Ajeet Seeds Ltd., Aurangabad, Maharashtra; Kaveri Seed Company Ltd., Secunderabad, Andhra Pradesh; KRBL Ltd., Delhi; M/s Sriyanshi Hybrid Seeds, Mathura (UP); Bioseed Research India, New Delhi; Kohinoor Seed Fields India Pvt. Ltd., New Delhi; Ganga Kaveri Seeds Pvt. Ltd., Hyderabad; and VNR Seeds Pvt. Ltd., Raipur, Chhattisgarh.

### Consultancy/Contract Research Projects

- Consultancy project along with MoU between IARI Regional Station, Wellington and M/s Krishidhan Seeds Pvt. Ltd., Jalna
- Consultancy project along with MoU between IARI Regional Station, Wellington and M/s Rasi Seeds Pvt. Ltd., Attur
- Contract Research Project for “Field Testing of Agrinos Green Technology Products for Use in Seed Treatment” between IARI and M/s Agrinos India Pvt. Ltd.

### Corporate Membership

Twenty new corporate members were registered with Business Planning & Development Unit of the Institute during this period raising the membership to a total of 350.



### **Executive Director of Global Crop Diversity Trust Visits IARI**

Dr. Marie Haga, Executive Director of Global Crop Diversity Trust (GCDT) located at Bonn, Germany visited IARI on November 21, 2013 to discuss the potential of utilizing crop wild relatives in different crops improvement and breeding options. She was accompanied by two other scientists of GCDT and discussed with breeders of various crops and vegetables.



Dr. Marie Haga, Executive Director, GCDT being greeted by Dr. K.V. Prabhu, Joint Director (Research), IARI

### **Visit of Delegations from Abroad**

During the period, October-December, 2013, three delegations- one each from Fiji, Morocco & Canada, and two delegations from Nepal visited the Institute. The Fijian delegation was led by H.E. Mr. Inia Batikoto Seruiratu, Minister for Agriculture, Fisheries, Forests and Rural Maritime Development, Fiji; and the Nepali delegation was led by Prof. Mahendra Singh, Board Member, University Grants Commission, Kathmandu, Nepal.



H.E. Mr. Inia Batikoto Seruiratu, Minister for Agriculture, Fisheries, Forests and Rural Maritime Development, Fiji (right) addressing the officials of IARI during his visit to the Institute.

## Dr. K.V. Prabhu Takes over as Joint Director (Research)



Dr. K.V. Prabhu joined as Joint Director (Research), Indian Agricultural Research Institute, New Delhi on October 26, 2013. Born on May 20, 1958 in Hubli town of Karnataka, Dr. Prabhu did his B.Sc. (Agriculture) in 1979, M.Sc. (Genetics and Plant Breeding) in 1982 from Banaras Hindu University and Ph.D. in Genetics from IARI in 1986. Before joining this prestigious post, Dr. Prabhu held the post of Head, Division of Genetics from 2006 and Incharge, National Phytotron Facility of IARI from 2003.

Dr. Prabhu has been closely associated with the crop improvement programme of wheat, barley, *Brassica* and rice. As a result he has been active contributor in the development of 23 varieties of which four are of rice, seven of Indian mustard, eight of wheat and two of barley. Dr. Prabhu was one of the first team leaders of India to integrate plant biotechnology into plant breeding to bring precision in plant breeding in early 1990s in mustard and wheat. Under his able leadership as Coordinator/Investigator, more than a dozen national and international projects have been carried out.

During his professional career, Dr. Prabhu has been conferred many awards/honours, viz., Jawaharlal Nehru Award of ICAR; ICAR Recognition Award 2008; Fellow of the National Academy of Agricultural Sciences; Platinum Jubilee Award of Indian Science Congress Association; B. P. Pal Award; V. S. Mathur Memorial Award; Borlaug Award 2012; Rafi Ahmad Kidwai Award 2012; etc. Dr. Prabhu represented India on different assignments from institutions and organizations such as FAO of the United Nations to more than 15 countries including four in Africa.

Dr. Prabhu guided four M.Sc. and 17 Ph.D. students, and four are presently working for their Ph.D. research under his guidance. He has so far published 91 research papers in journals of national and international repute.

## Dr. R.K. Jain Takes over as Dean & Joint Director (Education)



Dr. R.K. Jain joined as Dean & Joint Director (Education), Indian Agricultural Research Institute, New Delhi on December 18, 2013. Dr. Jain was born on May 21, 1956 at Rohtak, Haryana. He obtained his B.Sc. degree from S.D. College, Ambala Cantt. in 1974, M.Sc. degree from G.B. Pant University of Agriculture & Technology, Pantnagar in 1977 and Ph.D. from IARI, New Delhi in 1988. He did his Post Doctorate from CSIRO, Melbourne, Australia; University of Florida, Gainesville, and University of Georgia, Tifton, USA. Before joining this prestigious post, Dr. Jain held the post of Head, Division of Plant Pathology from 2007.

Dr. Jain served as Scientist (Plant Pathology) in Central Rice Research Institute, Cuttack from 1978 to 1986. Subsequently, he joined IARI as Senior Scientist in the Division of Plant Pathology in 1986. As an outstanding Plant Virologist, his research canvass includes emerging plant viruses such as *Tobacco streak virus* (TSV) affecting sunflower and groundnut, *Papaya ringspot virus* (PRSV) affecting papaya, and *Groundnut bud necrosis virus* (GBNV) affecting tomato with reference to assess their distribution profile and genetic diversity, development of diagnostics and virus resistant transgenic plants (VRTPs).

He is a recipient of IARI Gold Medal, 1989; M.J. Narasimhan Award 1999; IARI Best Teacher Award, 2004; Vasvik Award, 2007; Hari Krishna Shastri Memorial Award, 2010; and B.B. Mundkur Memorial Award, 2011.

Dr. Jain was awarded FAO Fellowship during the period 1990-91 and DBT Overseas Associateship during the period 1997-98. He is a Fellow of National Academy of Agricultural Sciences, Indian Phytopathological Society, and Indian Virological Society. He was the President, Indian Phytopathological Society in 2009, Vice-President of Indian Virological Society in 2011, and Editor-in-Chief of Indian Journal of Virology from 2008 to 2011.

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