



IARI NEWS



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RESEARCH

Wheat Varieties Identified

The wheat variety HI 1605 (Pusa Ujala) is identified for release in peninsular zone under restricted irrigation condition. It is a widely adapted high yielding bread wheat genotype, giving 14.1 % to 18.8 % higher yield over bread wheat checks, NI 5439, NIAW 1415 and DBW 93. It has a potential yield of 4.4 t/ha with an average yield of 2.91 t/ha. HI 1605 showed significant increase in grain yield under one irrigation (53.0%) and two irrigations (71.4%) conditions as compared to no irrigation; and showed superior performance over all check varieties of the zone, viz., NI 5439, DBW 93 and HD 2987. It showed good levels of field

resistance to stem and leaf rusts, and also to flag smut, Karnal bunt, leaf blight and foot rot. This is a good quality wheat genotype with high protein content (~13%), good grain appearance (~6.5), high sedimentation value (~55 ml), high extraction rate (~74%), good bread, *chapatti* and biscuit quality with good levels of micronutrients like iron (43.0 ppm) and zinc (35.0 ppm).

A durum wheat variety HI 8759 (Pusa Tejas) is identified for release in central zone under high fertility irrigated conditions and it is widely adapted, high yielding *durum* wheat genotype, giving 3.8% to 12.0% higher yield over *durum* wheat checks HI 8498, MPO 1215, HI 8737 and HD 4728. It has a



HI 8759 (Pusa Tejas)

potential yield of 7.55 t/ha with an average yield of 5.69 t/ha. Under timely sown conditions, it showed significant yield superiority over the *durum* checks, MPO 1215 (21.5%), HI 8498 (12.3%) and HI 8737 (7.1 %). While under late sown conditions, it showed significant superiority over the *durum* wheat check MPO 1215 (15.6 %). It showed good levels of field resistance to stem and leaf rusts, with maximum ACI values 6.0 for stem rust and 4.1 for leaf rust. It can contribute to “nutritional security” in central India, because of its high protein content (~12.0%), good levels of yellow pigment (~5.7 ppm), and essential micronutrients like iron (42.1 ppm) and zinc (42.8 ppm).

Locally Adapted Host Differentials for Indian Pathotypes of Wheat Leaf Rust Developed

Majority of the leaf rust differentials in set ‘A’ and most varieties in set ‘B’ are winter types, which require a long photoperiod

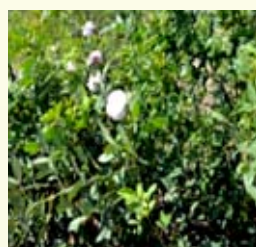


HI 1605 (Pusa Ujala)

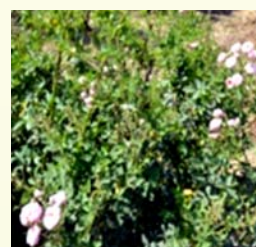
for flowering. Hence, maintenance of these differentials is difficult, particularly in the plains of India due to their long duration and often there is either seed set failure or production of shriveled grain. Hence, need was felt for developing near-isogenic *Lr* lines in the background of a locally adapted variety. NP 4 was selected as a background parent which is not known to carry any *Lr* gene or suppressor factor for leaf rust resistance, and being early maturing, slow rusting, lodging-tolerant, non-shattering, heat and drought tolerant, and bold seeded variety. The differential sets were developed in NP4 background viz., HI KK1 (NP4+*Lr*1) (IC0620368, INGR16024), HI KK2 (NP4+*Lr*2a) (IC0620369, INGR16025), HI KK3 (NP4+*Lr*2c) (IC0620370, INGR16026), HI KK4 (NP4+*Lr*3a) (IC0620371, INGR16027), HI KK5 (NP4+*Lr*9) (IC0620372, INGR16028), HI KK6 (NP4+*Lr*10) (IC0620373, INGR16029), HI KK7 (NP4+*Lr*15) (IC0620374, INGR16030), HI KK8 (NP4+*Lr*17a) (IC0620375, INGR16031), and HI KK9 (NP4+*Lr*20) (IC0620376, INGR16032).

Screening of Various Species of Rose for Powdery Mildew Tolerance

Field screening for powdery mildew (*Sphaerotheca pannosa* var. *Rosae*) resistance/tolerance was done in 20 species and 50 varieties of rose under natural conditions. Among species, *Rosa slancensis* (EC037349) (Relative Resistance Index -RRI: 0.8) and *R. glutinosa* (EC025999) (RRI: 0.83) were found



Rosa slancensis



R. glutinosa



Rosa brunonii

highly resistant to powdery mildew. However, *Rosa brunonii* (IC 564794) (RRI: 0.63) and *R. multiflora* (EC032219) (RRI: 0.76) were found moderately resistant to powdery mildew. Further, these resistance species were utilized in hybridization with different rose varieties for development of pre-breeding lines resistant to powdery mildew.

Screening of Bougainvillea Varieties for Betalains

Twenty varieties of bougainvillea were screened for betalains and it was found that betacyanin content in bracts was ranged from 0.336 mg/g (Shubhra) to 2.373 mg/g (Spring Festival) and betaxanthin content from 0.315 mg/g (Shubhra) to 1.297 mg/g (Spring Festival). However, betacyanin content in leaves was ranged from 1.06 mg/g (Spring Festival) to 3.584 mg/g (Marry Palmer Special) and betaxanthin content from 1.147

mg/g (Pink Beauty) to 4.612 mg/g (Chitra). Maximum betacyanin content in bracts was found in Spring Festival (2.373 mg/g) followed by Stanza (2.217 mg/g), Dr. R R Pal (2.085 mg/g) and Summer Time (1.950 mg/g). Betaxanthin content in bracts was found maximum in Spring Festival (1.297 mg/g) followed by Dr. RR Pal (1.150 mg/g), Stanza (1.012 mg/g) and Dr. Bhabha (1.055 mg/g). Maximum betacyanin content in leaves was found in Marry Palmer Special (3.584 mg/g) followed by Chitra (3.477 mg/g), Mahatma Gandhi (2.936 mg/g) and Sweet Heart (2.904 mg/g). However, maximum betaxanthin content in leaves was found in Chitra (4.612 mg/g) followed by Rose Ville Delite (3.871 mg/g), Marry Palmer Special (3.568 mg/g) and Shubra (3.554 mg/g).

National Symposium

A national symposium on "Agrochemicals Research and Education in India: Appraisal and Roadmap for Future" was organized jointly by Society of Pesticide Science, India and the Division of Agricultural Chemicals, ICAR-IARI, from November 15 to 17, 2016 to mark the Golden Jubilee Year of the Division of Agricultural Chemicals, which was established on November 14, 1966. The symposium was inaugurated on



Spring Festival: Betacyanin (2.373 mg/g) and Betaxanthin (1.297 mg/g)



Hon'ble Union Minister of Chemicals & Fertilizers, Shri Ananth Kumar, and Union Minister of Agriculture and Farmers Welfare, Shri Radha Mohan Singh (third and fourth from left in front row) inaugurating the national symposium on "Agrochemicals Research and Education in India: Appraisal and Roadmap for Future"

November 15 by Hon'ble Union Minister of Chemicals & Fertilizers Shri Ananth Kumar, and Hon'ble Union Minister of Agriculture and Farmers Welfare, Shri Radha Mohan Singh. Shri Ananth Kumar appealed to the scientists to come out with eco-friendly pesticidal molecules and biopesticides. The two Ministers felicitated Dr. C. Devakumar, Dr. B. S. Parmar and Prof. R. B. Singh for their contributions in the development and promotion of the neem-oil coated urea. Shri Radha Mohan Singh emphasized upon the need to strengthen research efforts in the direction of environment friendly crop protection products. The three day event witnessed dignitaries from industry as well as academia during its seven technical sessions.

IARI-Technology Based First Eco-friendly Waste Water Treatment Plant at Mathura

The Foundation Stone of the first eco-friendly Waste Water

Treatment Plant based on IARI technology was laid by the Minister of Agriculture and Farmers' Welfare, Shri Radha Mohan Singh on September 26, 2016 to commemorate the birth centenary of Pandit Deen Dayal Upadhyaya. The *Bhoomi Poojan* was done on December 14, 2016 at Deen Dayal Dham, Mathura, Uttar Pradesh. On the occasion, Dr. Ravinder Kaur,



Bhoomi Poojan of Eco-friendly Waste Water Treatment Plant at Deen Dayal Dham, Mathura, Uttar Pradesh

Director (Acting), ICAR-IARI, who was the Chief Guest, said, "The Plant will help to treat 0.75 MLD of waste water through reduction of its organic and inorganic pollutants by 85-95% and thereby make it fit for irrigation. In addition, horticultural and fisheries industries can also be operated through this treated water". This Plant will need no electricity in its operation.

ICAR-IARI, Regional Station, Indore Celebrated its 65th Foundation Day

ICAR-IARI, Regional Station, Indore celebrated its 65th Foundation Day on October 3, 2016. The program was presided over by Dr. J.P. Sharma, Joint Director (Extension), ICAR-IARI New Delhi. Dr. R.R. Hanchinal, Chairman, PPV&FRA, New Delhi, Dr. V. S. Bhatia, Director, ICAR-Indian Institute of Soybean Research, Indore, Dr. (Mrs.) M. Billore, Dean, College of Agriculture, RVSKVV, Indore and

Dr. Vinod Tiwari, Principal Investigator, Crop Improvement, AICRP on Wheat, ICAR-IIWBR, Karnal were the special guests of the function. After welcome address proposed by Dr. K.C. Sharma, Principal Scientist, ICAR-IARI, Regional Station, Indore, Dr. S. V. Sai Prasad, Head, ICAR-IARI, Regional Station, Indore presented the significant achievements of the station in brief related to wheat varieties released by station so far and new technologies developed for higher production and productivity of wheat. On this auspicious occasion, Dr. Hanchinal delivered 'Dr. M. V. Rao Lecture' on the topic "Indian seed Industry and Protection of Plant Varieties and Farmers Act". A panel discussion, chaired by Dr. J.P. Sharma, was also organized on the topic "Prospects of Durum Wheat: Research, Development and Marketing in Central India" on this occasion.

Seminar on Creating Wealth from Waste

The Krishi Vigyan Kendra (KVK), Gurgaon organized a Seminar on "Creating Wealth from Waste: Key ICAR Technologies" on October 27, 2016. The function inaugurated by Hon'ble Minister of State for Agriculture and Farmers Welfare, Shri Sudarshan Bhagat. In this event Additional Secretary & FA (DARE/ICAR), Additional Secretary DARE & Secretary ICAR, DDG (Crop Science), ICAR, ADG (Coordination), ICAR, Director, IARI, Joint Director (Extension), IARI and Head, KVK were present and 275 farmers participated in this seminar. During this seminar the



Hon'ble Minister of State for Agriculture and Farmers Welfare, Shri Sudarshan Bhagat addressing the farmers during the seminar on "Creating Wealth from Waste: Key ICAR Technologies" on October 27, 2016

technology of the council were explained by the scientists to create wealth from crop residue. During the occasion, the technologies developed by different ICAR institutes like IVRI, IARI and other KVKs of ICAR were displayed.

EXTENSION

Participation in Exhibition

The Centre for Agricultural Technology Assessment and Transfer (CATAT) participated and put up an IARI stall to display its products and technologies during the following exhibitions:

- ❖ Exhibition organized by IAS Officers Wife Association from October 15 to 16, 2016 at Pandara Park, New Delhi.
- ❖ "Purvanchal Krishi Pradarshani evam Kisan Sangosthi" at Mahant Digvijaynath Inter College, Chowkimafi, Gorakhpur, UP from October 23 to 24, 2016.
- ❖ Exhibition during Seminar on "Creating Wealth from Waste: Key ICAR Technologies" at KVK, Shikohpur on October 27, 2016.

- ❖ *Kisan Mela* organized at Mau, UP on November 3, 2016.
- ❖ International Trade Fair 2016 at Pragati Maidan from November 14 to 27, 2016.
- ❖ Regional agriculture fair "Krishi Kumbh-2016" organized by ICAR-Indian Institute of Farming Systems Research, Modipuram, Meerut from November 28 to 30, 2016 at Muzaffarnagar, UP.
- ❖ "India International Science Festival" from December 7 to 11, 2016 at National Physical Laboratory, New Delhi.

Awareness Campaign

An awareness Campaign was jointly organized in collaboration with Department of Agriculture and Farmers' Welfare, Palwal on "Burning of Paddy Stubbles" at CATAT adopted village Khajurka, Palwal on October 18, 2016. The farmers were educated about adverse impact of burning of stubbles and alternate management techniques of farm residues.

Field Day

A Field day on *bajra* varieties, namely, Pusa Composite 443 and Pusa Composite 701 was organized at *Krishi Vigyan Kendra*, Sonapat, Haryana on October 7, 2016. The farmers were explained about various characteristics of Pusa composite 443 and Pusa composite 701 and were also informed about nutria rich *bajra* products like *bajra* biscuits, *bajra* puffs, popped *bajra*, etc.

Kisan Divas

ICAR-IARI, Regional Station, Pune organized a *Kisan Divas* on

October 15, 2016. Dr. T. A. More, former Vice Chancellor, MPKV, Rahuri was the chief guest and the programme was chaired by Dr. Ravinder Kaur, Director (Acting), IARI. Dr J. P. Sharma, Joint Director (Extension), IARI, Directors, DOGR, Rajguru nagar (Pune); DFR, Pune; NRCG, Pune and Associate Dean, Agriculture college, Karad (Pune) were the guests of honour at the function. These experts gave the technical information of their specialized fields to the farmers. On this occasion, technologies were exhibited. Three technical bulletins (A Profile of Plant Virus Research Centre of India; Integrated Management Strategies for *Papaya Ringspot Virus* in Papaya; and Integrated Viral Disease Management in Vegetable Crops), and five leaflets in Marathi on papaya, watermelon, tomato, okra and capsicum were also released on the occasion. Five progressive farmers one each from the villages adopted under MGMG were felicitated. In the afternoon session, queries of the farmers were addressed by the scientists of the research station.

Celebration of "Jai Kisan Jai Vigyan" Week

The CATAT, celebrated "Jai Kisan Jai Vigyan" week by organizing Farmers-Scientists Interaction under the project "Outscaling Agricultural Innovations for Enhancing Farm Income and Employment" at project adopted villages, namely, Kutbi (Mujaffarnagar) and Rajpur (Aligarh) in Uttar Pradesh on December 27 and 28, 2016, respectively. Dr. J.P. Sharma, Joint

Director (Extension), IARI emphasized the importance of new technologies for climate adaptation, value addition and marketing strategies through group mobilization to make agriculture more profitable.

World Soil Day

Krishi Vigyan Kendra, Shikohpur celebrated World Soil Day on December 5, 2016 in Jataula village. On this occasion, Dr. Ravinder Kaur, Director (Acting) called upon the farmers to test their soil and water, and take soil health card from the KVK. Sh. Sanjeev Kumar, Vice-Chairman, Jila Parisad, Gurgaon, who was the Chief Guest, distributed 250 soil health cards to the farmers in this programme. An agricultural exhibition was also placed at the site. Three hundred farmers from Jataula, Khandewla, Daboda, Janiawas and nearby villages participated in the function.

CAPACITY BUILDING

Trainings

The *Krishi Vigyan Kendra* (KVK), Shikohpur organized three vocational trainings on: i) "Dress Designing and Tailoring" from October 17 to December 16, 2016 in Shikohpur village (25 farm women actively participated); ii) "Production Technology of Vermi Compost" from December 2 to 12, 2016 (16 rural youth participated); and iii) "Dairy Farming" from December 18 to 28, 2016 (28 rural youth from Gurgaon districts participated). The KVK also organized two in-service trainings



Vocational trainings on "Dress Designing and Tailoring"

for extension personnel on: i) "Integrated Plant Nutrient Management" on November 4, 2016 (20 Agriculture Development Officers of Haryana Agriculture Department, Gurgaon participated); and ii) "Livestock Production & Management" on November 10, 2016 (14 Veterinary & Livestock Development Assistants from department of Animal Husbandry, Gurgaon participated).

The Division of Agricultural Extension organized three training programmes on: i) "Enhancing Training and Teaching-Learning Competencies through Innovative Educational Methodologies and Instructional Technologies" under the Centre for Advanced Faculty Training (CAFT) from November 30 to December 20, 2016 (18 Assistant Professors from SAUs, 2 Scientists from ICAR institutes and 2 SMSs from KVKs participated); ii) "Soy milk Production and its Utilization" on September 28, 2016 at Lehchoura village, Baghpat, Uttar Pradesh (50 farm women were explained about the different uses of soymilk and its health benefits); and iii) "Value addition of Fruits and Vegetables for Nutritional Security" on December 6, 2016 at Lehchoura village,

Baghpat (Uttar Pradesh) (50 farm women was trained to prepare mixed vegetable pickle, ginger-lemon squash and *amla* candy technically).

CATAT organized 4 On-campus training programmes on: i) Pre-seasonal training on “Rabi Crops” from October 4 to 5, 2016 (20 Officers of Delhi Government participated); ii) “Integrated Nutrient, Pest and Disease Management and Judicious Use of Pesticide in Cropping System on October 19, 2016 (20 officers and farmers selected by Delhi government participated); iii) “Use and Benefit of Sprinkler & Drip irrigation and Use of Net and Green House in Agri-horticulture” on October 27, 2016 (Extension staff and progressive farmers of Delhi participated); and iv) “Improved Agricultural Practices for Higher Productivity & Income” from November 28 to December 2 (30 farmers participated).

The Division of Food Science and Postharvest Technology organized a two-day training on “Development of Healthier Snack Food Products” on November 25 and 26, 2016 for fifty farm women in adopted villages (Hajiapur, Baluapur, Karanpur, Kalyanpur, Nagar) of Aligarh District under DBT Project Biotechnology led Socioeconomic Empowerment of Farm Women.

MISCELLANEOUS

External Funded Projects Sanctioned

- ❖ “Participatory technology application and multi-stakeholder convergence for

market led agripreneurship and sustainable rural livelihood” funded by ICAR. Amount: ₹ 92.4 lakhs for one year. Principal Investigator: Dr. R.R. Burman, Principal Scientist, Division of Agricultural Extension.

- ❖ “Creating awareness for efficient use of ICT and MOOCs in agriculture education” funded by ICAR. Amount: ₹ 5.74 lakhs for one year. Principal Investigator: Dr. K. Annapurna, Head, Division of Microbiology.
- ❖ “Identification & molecular tagging of gene(s) controlling resistance to chilli leaf curl virus infection in chilli (*Capsicum annum* L.)” funded by ICAR. Amount: ₹ 83.04 lakhs for three years. Principal Investigator: Dr. Pritam Kalia, Principal Scientist, Division of Vegetable Science.
- ❖ “Convergence & network analysis of extension organizations for enhancing their effectiveness pluralistic extension regime” funded by ICAR. Amount: ₹ 77.52 lakhs for three years. Principal Investigator: Dr. R.N. Padaria, Principal Scientist, Division of Agricultural Extension.
- ❖ “The symbiotic microflora of chewing folivorous lepidoptera and its interaction with entomopathogenic microorganisms” funded by DST. Amount: ₹ 33.97 lakhs for three years. Principal Investigator: Dr. Vinay Kalia, Principal Scientist, Division of Entomology.

- ❖ “Development of varieties and technology for *Cucumis melo* production under protected condition in north Indian plain and its dissemination among farmers” funded by NHB. Amount: ₹ 24.75 lakhs for 3 years. Principal Investigator: Dr. Harshwardhan Choudhary, Senior Scientist, Division of Vegetable Science.

Patent Granted

A process for preparation of Polymer Encapsulated Nano Sulfur Fungicide

Technologies Commercialized

Four (4) IARI technologies were licensed to six (6) industry partners and generated a revenue of ₹ 18.5 lakhs. The details are as follows:

- ❖ STFR Meter licensed to M/s Global Academy of Public Safety & Habitat Management, A-251, 3rd Floor, Defence Colony, New Delhi-110024; S.R. Engineering & Services, Sai Mandir Road, Near Nirmal Bakery, Wardha, Maharashtra-442001; and M/s Octopus Inc., FF-113, Earth the Landmarks, Sun Pharam Road, Vadodara-12
- ❖ HD 3086 licensed to GrowGrain Agro Pvt. Ltd., 17/91, Geeta Colony, New Delhi-110031
- ❖ VAM Technology licensed to M/s Dayal Fertilizers (P) Ltd., 10 km, Delhi Road, Partapur, Meeruth, UP-250103
- ❖ BGA Bio Fertilizer licensed to M/s Eco Fert AG, Balori Village, Samba, J&K-184121.

Corporate Membership

In this quarter, 26 new members were registered and 31 corporate memberships were renewed, generating a revenue of ₹2,86,500/-

Launch of IP Spectra

IP Spectra an Intellectual Property Facilitation Centre (IPFC) for agro-based Micro, Small & Medium Enterprises (MSMEs) was established for providing IP facilitation to agro-based MSMEs. The mission of IP Spectra is to create IPR awareness by conducting awareness camps and training programmes in parallel with providing IP services like drafting and filing applications for Patent, Copyright, Trademark, Industrial Design, PPVFR; Pre-grant and Post-grant Services, hand-holding support towards Technology Commercialization, Advisory Services to agro start up & MSMEs. The IP Spectra website named www.ipspectra.ztmbpd.iari.res.in was launched by the Zonal Technology Management & Business Planning and Development (ZTM & BPD) Unit of ICAR-IARI on December 17, 2016 in the presence of Shri R.K. Panigrahi, Director, MSME-Development Institute. The website provides the one-stop solution towards IP related support for Agro based MSMEs. It essentially provides features like IP services; information on IP policies, IP acts; rules; Lecture series; downloadable forms for IP Services. These services can be availed by submitting online/offline form available on the website.

Swachhta Pakhwara

IARI organized 'Swachhta Pakhwara' from October 16 to 31, 2016. On this occasion, all the officers/employees of the Institute were administered 'Oath of Cleanliness'. During this period, a 'Nukkad Natak' was organized in Water Technology Centre and Krishi Kunj of the Institute. A National Conference on "Wealth out of Waste" was also organized by ICAR and IARI at *Krishi Vigyan Kendra*, Shikohpur, Gurgaon on October 27, 2016. Hon'ble Minister of State for Agriculture and Farmers Welfare, Shri Sudarshan Bhagat was the Chief Guest at the occasion. A speech on 'The Importance of Cleanliness' was also delivered during this programme,

Awards and Honours

❖ Dr. V.R. Sagar, Head, Division of Food Science and Postharvest Technology received S.K. Mitra Memorial Award and Gold Medal 2016 from All India Food Processors Association.

- ❖ Dr. Pragati Pramanik, Scientist, Division of Agricultural Physics received Young Scientist Award during National Conference on Innovative and Current Advances in Agriculture and Allied Sciences organized by Society for Scientific Development in Agriculture and Technology (SSDAT) and Astha Foundation at Prof. Jayashankar Telangana State Agricultural University, Rajendranager, Hyderabad (Telangana).
- ❖ Dr. R.R. Sharma, Principal Scientist, Division of Food Science and Postharvest Technology was selected for Fellowship of NAAS.
- ❖ Mr. Koushik Banerjee and Dr. P. Krishnan, Division of Agricultural Physics awarded the best Poster Presentation Award -II in the 4th International Agronomy Congress held at New Delhi.
- ❖ Mr. Rajkumar Dhakar, Ph.D. Scholar, Division of Agricultural



'Swachhta Pakhwara' at *Krishi Vigyan Kendra*, Shikohpur, Gurgaon

Physics got the best Oral Presentation Award in the National Symposium of the Indian Society of Remote Sensing held at Dehradun.

- ❖ Dr. K.K. Mondal, Principal Scientist received Prof. J.P. Verma Memorial Award 2016 from Indian Phytopathological Society, India.

Annual Hindi Prize Distribution Function

The Institute celebrated its annual Hindi prize distribution function on November 21, 2016 at Dr. B.P. Pal Auditorium. Dr. Gurbachan Singh, Chairman, ASRB and *Nagar Rajbhasha Karyanvayan Samiti* (NARAKAS), North Delhi, was the Chief Guest. Dr. Ravinder Kaur, Director (Acting), IARI presided over the function. Dr. K.V. Prabhu, Joint Director (Research) and Chairman, Institute Official Language Committee gave the welcome address. Sh. Keshav Dev, Deputy Director (Official Language) presented the Institute's Official Language Progress Report. On this occasion, the prizes were given away to the winners of different competitions organized during the year i.e., *Hindi Vyavhaar Pratiyogita*, Cash Award Scheme of Official Language Department, Ministry of Home Affairs, Govt. of India., Article Competition published in various magazines

and papers, *Pusa Vishisht Hindi Pravakta* Award, Award for the best Rajbhasha Nodal Officer, awards of

power point presentations in Hindi and competitions organized during *Hindi Chetna Maas*.



Dr. Gurbachan Singh, Chairman, ASRB and *Nagar Rajbhasha Karyanvayan Samiti* (NARAKAS), North Delhi giving away certificate to one of the participant during Annual Hindi Prize Distribution Function

Visitors from Abroad

During the period October - December 2016, two delegations – one each from Nigeria and Sri Lanka visited the Institute.



Nigerian delegation interacting with IARI team

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