PULSES Newsletter

Indian Institute of Pulses Research, Kanpur

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Institute Celebrated Foundation Day

The 16th Foundation Day of Indian Institute of Pulses Research was celebrated on September 5, 2008 with great fervour and gaiety. Dr. G.B. Singh, former Director General of U.P. Council of Agricultural Research was the Chief Guest and Sh. Subhash Bapu Rao Patil, Member of Institute Management Committee and a progressive farmer of Maharashtra was the Guest of Honour. While inaugurating the function, the Chief Guest expressed his concern over malnutrition and gradually declining per capita availability of pulses, which is adversely affecting the protein requirements, particularly of the vegetarian population. He informed that there is 30 per cent yield gap between demonstration plots and farmers' fields. This gap can be reduced by timely availability of quality seeds of improved varieties and matching crop production technologies.

In his address, Sh. Patil called for developing programmes with farmers' participation so that the research results are visible at farmers' fields. He appreciated the programme taken by the Institute in Fatehpur and Kanpur districts. Dr. Masood Ali, Director of the Institute presented a detailed resume of research programmes, activities and achievements made during 2007-08. He stressed upon the need for in-depth basic and strategic research. He commended the progress made in hybrid programme, transgenic research and developing multiple resistance against major diseases. He informed the house that short

and medium duration pigeonpea hybrids and extra large seeded *kabuli* chickpea varieties with 55 g/100 seed weight will be commercialized soon. Govt. of India has allocated Rs. 10 crore for establishing training centre, HRD and breeder seed production under National Food Security Mission. This will create high profile infrastructure for training and seed production.

On this occasion, over 200 farmers from Kanpur and neighbouring districts participated in the Scientists-Farmers Interaction programme and skill oriented on-hand training on different aspects of crop production, crop protection and post-harvest technology. Two Institute publications namely Allelochemicals and their Role in Agriculture and Catalogue on Pigeonpea Germplasm were released.

On this occasion, Dr. Shiv Kumar, Head, Division of Crop Improvement was given the "Best Scientist Award 2007". Mr. Diwakar Upadhyaya and Mr. D.N. Awasthi in technical category and Smt. A. Abraham in administrative category were conferred with "Best Worker Award".

Institute Management Committee Meeting

The 28th meeting of the Institute Management Committee was held on September 5, 2008 under the chairmanship of Dr. Masood Ali, Director. The meeting was attended by Dr. R.P. Katiyar, Director (Research), CSAUA&T, Kanpur; Dr. R.P. Dua, Project Coordinator, AICRP on Under Utilized Crops, NBPGR, New Delhi; Dr. S.N. Sinha, Head, IARI Regional Station, Karnal; Dr. D.L.N. Rao, Project Coordinator, Indian Institute of Soil Science, Bhopal and Sh. S.B. Patil along with different Project Coordinators and Heads of the Divisions and Incharge of the Sections, Administrative Officer and Finance & Accounts Officer. The Committee reviewed the progress of the Institute and applauded the achievements in R&D.

IIPR participated in ICAR Sports Meet

A contingent of 32 players of the Institute participated in Inter Institutional Staff Sports Meet (North Zone) of ICAR held at NDRI, Karnal during 23–26 September 2008. Dr. A. Bhattacharya, Principal Scientist was the *Chief-de-mission* and Dr. M.P. Singh, Technical Officer was the team manager. The players participated in 13 events and Shri Yashwant Singh, SSG I was adjudged Zonal Champion in Shot-Put event.

Rabi Pulses Group Meet Held

The Annual Group Meet of *Rabi* Pulses was held at MPUA&T, Udaipur on 7-9 September, 2008. About 250 delegates from cooperating centres, ICAR, SAU's and State Departments of Agriculture participated in this Group Meet. While inaugurating the meet, Dr. S.L. Mehta, Vice – Chancellor of MPUA&T, Udaipur

emphasized the importance of pulses and pioneered various issues so that required progress in desired direction can be made. He specially mentioned about problem of frost in North India and pod borer and wilt throughout chickpea growing areas. He suggested that focused programmes on specific problems of pulses need to be initiated as long term strategies. He also mentioned that there is urgent need to train breeders in molecular marker technology so that efficiency of selection may enhance.

Dr. Masood Ali, Director, IIPR said that for the first time we have crossed the mark of 15 million tonnes of pulses production. He informed about the priorities set by ICAR for pulses research such as marker assisted breeding, wide hybridization, development of CMS based hybrids and input use efficiency during XI Plan. Dr. Ali apprised about ISOPOM, NFSM and NAIP programmes undertaken during last year and some of the significant achievements.

The Chief Guest, Dr. V.D. Patil, ADG (O&P), ICAR expressed his concern about increasing import bill on pulses and oilseeds. Dr. Patil suggested that efforts are needed to solve the problem of poor productivity and shortage of pulses. He emphasized upon the importance of genetic resources and its utilization. Dr. Patil called upon the scientists to develop location and condition specific varieties/technologies. He invited the attention on varietal mismatch in breeder seed production.

Dr. N.P. Singh, Project Coordinator (Chickpea) and Dr. B.B. Singh, Project Coordinator (MULLaRP) presented the salient research achievements made during 2007-08. The progress in research programmes was reviewed and technical programmes for the year 2008-09 were finalized. Two varieties *viz.,* Shubhra (IPCK 2002-29) of chickpea and WBL 77 of lentil were identified during the workshop in the Varietal Identification Committee meeting.

On the occasion, the significant contributions made in pulses research by Crop Improvement Division of IIPR, Kanpur and Agricultural Research Station, Durgapura were acknowledged and applauded by presenting mementos.

Annual Review and Planning Meeting of ISOPOM - *Kabuli* Chickpea

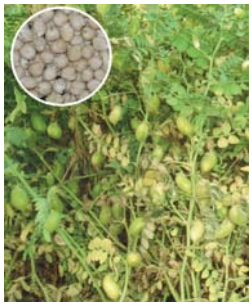
The Annual Review and Planning Meeting of ISOPOM funded project "Development of extra large seeded *kabuli* chickpea varieties for crop diversification" was held on August 12, 2008 under chairmanship of Dr. Masood Ali, Director, IIPR. Collaborators from different centres, besides Dr. P.M. Gaur, Principal Chickpea Breeder from ICRISAT and Dr. N.P. Singh, Project Coordinator (Chickpea) attended the meeting. Dr. S.K.Chaturvedi, Principal Investigator of the project extended a warm welcome to the participants and highlighted the objectives of the meeting. Dr. Ali emphasized the need for development of extra large seeded *kabuli* chickpea varieties and appreciated the efforts made by the collaborators in achieving the targets of the project. Dr. Chaturvedi presented the overall report of the project. On the basis of two years data, two extra large seeded genotypes (IPCK 02 and Phule G 0517: >55g/100 seed weight) and one advance breeding line (Phule G 95333: 40g/100 seed weight) have been adjudged as potential ones for their possible release. Dr. N.P. Singh emphasized upon the need for development of agronomy for extra large seeded *kabuli* chickpea genotypes so that along with the variety, recommendation on agronomical aspects can also be made. The centre wise progress of work done during 2007-08 was reviewed and the technical programme was finalized for 2008-09.

Research Highlights

New Varieties Identified

During the *Rabi* Pulses Group Meet held on 7-9 September, 2008 at MPUA&T, Udaipur, following varieties of pulses were identified:

Shubhra (IPCK 2002-29): This *kabuli* chickpea variety has been developed by IIPR through hybridization (L 144 x H 82-2) followed by selection. The variety is identified for Madhya Pradesh, South Rajasthan, Maharashtra, Gujarat, Chhatisgarh and Bundelkhand tracts of Uttar Pradesh. This variety has given more than 20% higher yield over the checks JGK 1 and 24% over KAK 2 and has large seeds (34g/100 seed wt.) and is moderately resistant to fusarium wilt.



WBL 77 : This small seeded lentil variety, developed by PORS, Berhampore (W.B.) from the cross ILL 7723 x BLX 84176 has yielded 1588 kg/ha. It has yielded 22% more than the check variety PL 406 and possesses resistance to rust. It has been identified for cultivation in eastern U.P., Bihar, Jharkhand, West Bengal and Assam.

Host Suitability for Multiplication of *Bracon (Habrobracon) hebetor* Say

Bracon (*Habrobracon*) *hebetor* Say is one of the potential larvae parasites of *Helicoverpa armigera*. It is reported for the first time from the larvae of *H. armigera* in chickpea eco-system at New Research Farm of IIPR, Kanpur during April 2008. Since then it is multiplied in the laboratory on the larvae of *H. armigera*, *Corcyra cepholinica* and *Galleria* sp. Twenty five generations have been completed successfully.

For laboratory multiplication of the parasite, different lepidepteran larvae were tried. The parasite accepted the larvae of *Corcyra cepholinica*, *Galleria* sp. and *Maruca* sp. The parasitization was 100 per cent in all the cases. But in case of *Maruca* sp., all the larvae were paralysed and dried. Only 2 cocoons of the parasite were formed per larva in 25 cases. It may be due to very small in size, sufficient amount of food is not available for development of the parasite or any biochemical reaction.

The parasite completes its life-cycle in 5-8 days in *C. cepholinica,* and in 7-10 days in *Galleria* sp. Maximum no. of cocoons were formed in case of *Galleria* sp. (16-38), followed by *Corcyra* sp. (10-26). The findings indicate suitability of *C. cepholinica* for laboratory rearing of *Bracon* (*Habrobracon*) *hebetor* Say.

Hem Saxena and P. Duraimurugan

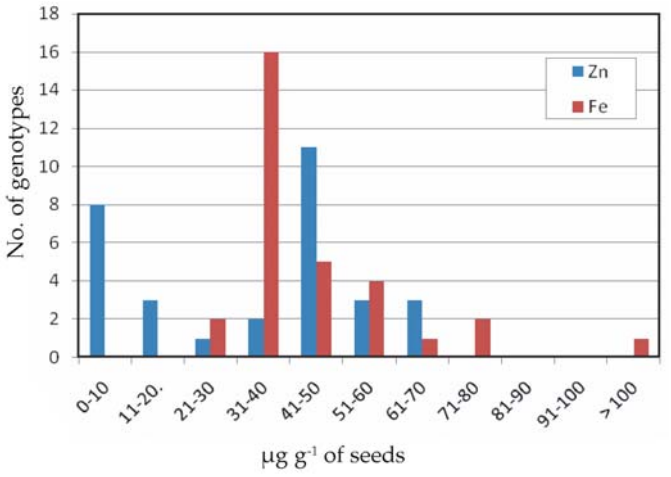
Enhanced Phosphorus Use Efficiency through Integrated Nutrient Management

Under normal field conditions, use efficiency of applied phosphorus generally varies between 10-30 per cent. To evaluate the effect of integrated phosphorus management on yield and recovery efficiency of applied phosphorus, a field experiment was conducted in maize - chickpea sequence on an *Inceptisol (Typic ustochrept)* at IIPR farm. Maize grain yield was at par with application of 30 and 60 kg P_2O_5/ha along with 5 t FYM/ha. Apparent recovery efficiency of P by maize increased from 23 to 27 and 14 to 17 per cent due to FYM application at 30 and 60 kg P_2O_5/ha, respectively. The yield of chickpea also significantly increased due to FYM application to maize. Highest chickpea equivalent yield (5372 kg/ha) was recorded with 60 kg P_2O_5/ha + 5t FYM /ha to maize and 40 kg P_2O_5/ha with inoculation of *Bacillus polymyxa* (PSB) to chickpea. Significant improvement in nodule no., nodule dry wt., root length and root biomass of chickpea was also recorded due to FYM application to maize. Apparent recovery efficiency of P by chickpea increased from 19.5 per cent in control to 35 per cent in FYM treated plots. Integration of inorganic P fertilizer and organic manure was found beneficial for enhancing P use efficiency and productivity in maize-chickpea crop sequence.

M.S. Venkatesh, S.C. Pramanik and N.B. Singh

Genetic Variation for Fe and Zn Contents in Lentil

A set of 31 lentil genotypes comprising of 20 exotic lines (Source: ICARDA) and 11 indigenous genotypes were evaluated for iron and zinc content in their seeds during winter season of 2007-08. After harvesting the seeds, three samples from each genotype were analyzed for Fe and Zn contents using atomic absorption spectrophotometer. The results revealed significant variation among the genotypes for both the micro-nutrients. For Zn content, the values ranged between 3.79 (IPL 312) and 65.91 (FLIP 2003-25L) µg/g of seed with overall mean of 34.49 µg/g. The mean Zn content was higher in exotic lines (mean: 46.53 µg/g; range: 27.34-65.91 µg/g) than in the indigenous genotypes (mean: 8.37 µg/g; range: 3.79-15.60 µg/g). Genotypes with high Zn content (>50 µg/g) were FLIP 2003-25L, FLIP 84-55L, Acc. 2313, FLIP 2002 56L, NEL 857 and Lenka. The estimates of Fe content among the genotypes showed a range of 22.47 - 109.37 µg/g with mean of 46.12 µg/g. Most promising genotypes for high Fe content (>50 µg/g) were NEL 857, Pant L5, 81S15, FLIP 2002-7L, FLIP 2003-25L, FLIP 86-38L, Acc. 2313 and FLIP 95-55L. Some of the genotypes *viz.*, NEL 857, Acc. 2313 and FLIP 2003-25L with high contents of both the micro-nutrients, Zn and Fe can be used in breeding programmes for bio-fortification of lentil varieties.



Shiv Kumar, M.S. Venkatesh, R.K. Solanki, Ashutosh Sarker and Masood Ali

Transfer of Technology

Rural Youths Trained on Processing of Pulses

One-day skill development programme was conducted on July 1, 2008 for rural youths under ISOPOM funded project on "Development and Popularization of Model Seed System(s) for Quality Seed Production of Major Legumes to Ensure Seed Sufficiency at the Village Level" being implemented in Fatehpur and Kanpur Dehat Districts. Total 31 rural youths from both the districts were trained on operation and maintenance of mobile processing machine procured under the project. The training was imparted in collaboration with the trainers from the manufacturing unit of the processing machine.

Training on Improved Production Technology

- A national training programme on Improved Production Technology on *Rabi* Pulses was organized at the Institute on 16-18 September, 2008, under National Food Security Mission - Pulse component.

Total 42 extension officers from twelve states identified under NFSM-P participated in the training. The methodology adopted for the training was interactive sessions of trainees with the resource persons, followed by hands-on demonstration of the technology with a purpose of greater understanding and skill development. Supporting literature in form of training manual and other relevant literature were provided to each participant.

- A two-day state level training was organized on 24-25 September, 2008 on improved production technology for *rabi* pulses under National Food Security Mission- Pulse component (NFSM-P). The training was attended by 48 consultants (district, regional and state level) and senior level officers of State department of Agriculture, Uttar Pradesh. The training course was sponsored by Directorate of Agriculture, Government of Uttar Pradesh. The participants were from 19 districts identified under NFSM-P in the state of Uttar Pradesh.

Farmers Training on Pulse Production Technology

A group of 23 farmers from two blocks of Jhansi district were trained on improved production techniques of *rabi* as well as *kharif* pulses at the Institute on 28-30 September 2008. The training programme was facilitated by ASHA Gramotthan Sansthan (NGO) and was sponsored by Agriculture Technology Management Agency (ATMA), Jhansi district.

HRD

Dr. S. Datta, Scientist (Biotechnology) was deputed to the University of California, Davis, USA, to work on legume genomics under the BOYSCAST fellowship of Department of Science and Technology from May 6 to August 5, 2008.

Grow more pulses for human and soil health

हिन्दी दिवस समारोह

संस्थान में हिन्दी दिवस 29 सितम्बर, 2008 को समारोहपूर्वक मनाया गया। कार्यक्रम की अध्यक्षता संस्थान के निदेशक डा. मसऊद अली ने की। डा. अली ने अपने उद्‌बोधन में कहा कि अलग-अलग संस्कृति, धर्म, पहनावा और बोलियों से सजे हमारे विशाल देश को हिन्दी एक सूत्र में बांधती है। उन्होंने कहा कि आज़ादी की लड़ाई में भी विभिन्न भाषा-भाषी हिन्दी के माध्यम से ही जुड़े थे। डा. अली ने कहा कि जो स्थान पिछली सदी में अंग्रेजी का था, वर्तमान सदी में यही शीर्ष स्थान हिन्दी का होगा। आज पूरी दुनिया में हिन्दी पढ़ी, समझी और बोली जा रही है। अपने देश में भी हम सरकारी, सामाजिक और आर्थिक गतिविधियों के केन्द्र में हिन्दी को ही पाते हैं। क्योंकि हिन्दी का सम्प्रेषण अंग्रेजी या अन्य भाषाओं की तुलना में अधिक प्रभावी और कारगर है। वैज्ञानिक एवं तकनीकविदों का आह्‌वान करते हुए उन्होंने कहा कि वे अपने शोध परिणामों को इनके अंतिम उपयोगकर्ता किसानों हेतु उनकी ही भाषा हिन्दी में प्रस्तुत करें ताकि दलहन उत्पादन की नई प्रौद्योगिकी को अपनाकर कृषक देश में दलहन उत्पादन बढ़ाने में सहायक हो सके। डा. अली ने सभी का आह्‌वान किया कि सब संकल्प करें कि हम सभी अपने दैनिक कामकाज और व्यवहार हिन्दी में ही करेंगे। इस अवसर पर उन्होंने हिन्दी में एक नई शोध पत्रिका के प्रकाशन की घोषणा की जिसमें देश भर के दलहन वैज्ञानिकों के शोध पत्र हिन्दी में प्रकाशित किए जायेंगे। इस अवसर पर संस्थान की राजभाषा पत्रिका "दलहन-आलोक" का विमोचन भी किया गया।

संस्थान में हिन्दी की प्रगति समीक्षा प्रस्तुत करते हुए श्री दिवाकर उपाध्याय ने कहा कि संस्थान में अधिकांश कार्यालयीन काम-काज हिन्दी में हो रहा है। विभिन्न बाहरी संस्थानों से हिन्दी में पत्राचार का प्रतिशत बढ़ा है। कृषकों हेतु कई उपयोगी पुस्तकें और बुलेटिन हिन्दी में प्रकाशित किये गये हैं। जिनमें दलहन उत्पादन तकनीक नामक प्रकाशन अत्यन्त लोकप्रिय हो रहा है। कार्यक्रम का संचालन डा. संजीव गुप्ता, प्रधान वैज्ञानिक, स्वागत डा. नरेन्द्र बहादुर सिंह, विभागाध्यक्ष (फसल उत्पादन) तथा धन्यवाद प्रस्ताव डा. नरेन्द्र प्रताप सिंह, परियोजना समन्वयक (चना) ने किया।

हिन्दी में अधिकाधिक कार्यालयीन कामकाज करने तथा हिन्दी पखवाड़े में आयोजित निबंध लेखन, दलहन प्रश्नोत्तरी तथा वाद-विवाद प्रतियोगिताओं हेतु श्री दिवाकर उपाध्याय, डा. (श्रीमती) हेम सक्सेना, डा. रज़ी अहमद, श्री ब्रह्म प्रकाश, श्री दिनेश कुमार शर्मा व श्रीमती मीनाक्षी वार्ष्णेय सहित अन्य विजेताओं को इस अवसर पर पुरस्कृत किया गया।

Personnel

Our New Colleagues

Dr. Narendra Kumar has joined the Institute on August 12, 2008 as Senior Scientist (Agronomy).

Dr. Jitendra Kumar has joined the Institute on August 30, 2008 as Senior Scientist (Plant Breeding).

Dr. Aditya Pratap has joined the Institute on August 30, 2008 as Senior Scientist (Plant Breeding).

Retirement

Sl.No.	Name	Post held	Date of retirement
1.	Dr. S.S. Ali	Principal Scientist (Crop Protection)	31.7.2008
2.	Dr. I.P.S. Yadav	Principal Scientist (Agril. Economics)	31.7.2008
3.	Smt. Bachchi Devi	SSG I	31.7.2008

Director's Desk

Dear Readers,

The increasing demand of food for burgeoning population in the country on one hand and rapidly shrinking of the agricultural land due to urbanization and industrialization on the other hand, has put a challenge for the agricultural scientists and planners, as how to meet the food requirements of our people. It is more articulate in relation to pulses, where we have to bank upon large quantities of import to meet the domestic demands. Human resources development can play a key role to mitigate the problem. The ICAR has given due emphasis to develop the trained manpower to cater the research needs, looking into the climatic changes affecting the crop productivity. Advances in agricultural science are taking place rapidly and globally. The advent of molecular markers has revolutionized the entire scenario of crop improvement. DNA based molecular marker assisted selection (MAS) of improved breeding lines, elucidating the extent of variability present in a particular crop species is now a reality. Likewise, other new advances such as development of transgenics, remote sensing, neno-technology, *etc.,* in research and technological development are coming up. Updating our scientists in these new frontiers of research and exposures to international labs and institutes will help in better understanding and minimizing the duplication in research efforts and thereby save the fiscal resources. In view of this, our scientists are deputed for training and exposure visits to international institutes like ICRISAT and ICARDA, besides other advanced laboratories.

It is also a reality that we have developed technologies which are capable to make significant improvement in production and productivity of pulse crops. But those responsible to carry these technologies to farmers' fields have not done it up to the desired level. That is the main reason that these technology developments could not be translated in increased yields. It has been realized also at the top level of planners. So keeping this in view, the Govt. of India has envisaged a component of HRD in National Food Security Mission (NFSM). It encompasses training to trainers and extension personnel, besides training to farmers at village level.

In this endeavour of human resource development, besides deputing the scientists and technical persons for trainings and exposure visits to different institutes, the IIPR is imparting trainings to trainers and farmers as well. In recent months, five trainings have been organized for resource personnel and state level development officials of Deptt. of Agriculture from all the 14 states identified under NFSM-P. Similarly, sixteen training programmes were organized for farmers of different districts, out of which seven programmes were held at the Institute and nine at village level. The main focus of these programmes was on the participatory seed production, besides crop production, protection and post-harvest technology.

I am sure that result of these efforts will be visible soon both at Institute level in terms of quality and output oriented research, and at farmers level in terms of increased productivity and production of pulses.

(Masood Ali)

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