



# PULSES Newsletter



Indian Institute of Pulses Research, Kanpur

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## EDITORIAL COMMITTEE

Dr. N. Nadarajan	Chairman
Dr. C. Chattopadhyay	Member
Dr. P.S. Basu	Member
Dr. M.S. Venkatesh	Member
Dr. Jitendra Kumar	Member
Mr. D. Upadhyaya	Member Secretary

## RAC Applauded Institute's Achievements

The 18<sup>th</sup> meeting of RAC was held on February 28-29, 2012 under the chairmanship of Dr. S.A. Patil, Former Director, IARI, New Delhi. The meeting was attended by Dr. D.P. Singh, Former Director Research, GBPUA&T; Dr. S.V. Sarode, Director Research, PDKV, Akola; Dr. Karabi Datta, Coordinator, Biotechnology Support Programme (DBT), Calcutta University, Kolkata; Dr. B.B. Singh, ADG (O&P), ICAR; Dr. N. Nadarajan, Director, IIPR and Dr. Mohan Singh, Member Secretary. All Project Coordinators, Heads of the Divisions and Sectional Incharges took part in the meeting.

Dr. N. Nadarajan, Director, apprised the house about the recent progress made at IIPR, Kanpur including opening an off-season nursery at Dharwad in Karnataka and efforts made for a regional station at Bhopal in M.P. to expedite the development and testing of breeding materials and location specific technologies. Major achievements during the period were release of one MYMV and leaf crinkle resistant variety of mungbean (IPM 02-14) for South zone, identification of one lentil variety (IPL 316) for central zone and submission of one promising line of pigeonpea variety IPA 203 for its identification for North-West plains. Institute played a key role in decoding

genome sequence of pigeonpea. Recently, Institute has initiated a research project on development of technology for rice-fallow areas under National Fund Programme of ICAR. The Chairman appreciated the research programmes of IIPR and congratulated the whole scientific community of IIPR for demonstrating the positive impact of technologies on farmer's fields. He also appreciated the breeder seed production programme of the Institute.



RAC made certain important recommendations for future research programmes such as development of hybrid pigeonpea in 'mission mode', development of transgenics in chickpea and pigeonpea and molecular marker assisted breeding programme for *Fusarium* wilt resistance in pigeonpea and chickpea. Screening of chickpea and lentil germplasm has led to identification of heat tolerant lines, now efforts should be made to use these lines for developing heat tolerant varieties. It is quite evident that climate change has made an impact on crop productivity including change in diseases and pest



impact of these technologies should be assessed by KVKs and SAUs at national level. Institute has played a major role in breeder seed production and 521 q breeder seed of different pulses was produced in 2010-11. However, it should be strengthened with the participation of farmers and other agencies. Seeds of newly released varieties should

be provided along with back-up information containing information about the cultivation package of practices in seed packets. Progress of long-term experiment in terms of nutrient dynamics, pest dynamics and C-sequestration is encouraging, however economics for each cropping system needs to be calculated.

scenario. Therefore more efforts are needed to evolve an efficient forecasting systems. It is also urgently required to give emphasis on research for reducing post-harvest losses.

Pulse production technologies developed by IIPR need to be demonstrated in a cluster mode to farmers of pulse growing areas and

be provided along with back-up information containing information about the cultivation package of practices in seed packets. Progress of long-term experiment in terms of nutrient dynamics, pest dynamics and C-sequestration is encouraging, however economics for each cropping system needs to be calculated.

### IMC Meeting Held

The XXXII meeting of the Institute Management Committee was held on February 27, 2012 under the chairmanship of Dr. N. Nadarajan, Director, IIPR. Dr. C.S. Rao, Principal Scientist, CRIDA, Hyderabad and Dr. O.P. Sharma, Principal Scientist, NRC on IPM, New Delhi, Mr. K.N. Gupta, F&AO, IIPR and Mr. Rajendra Singh, Administrative Officer, IIPR and Member Secretary attended



the meeting. Institute activities were reviewed and important decisions were taken in the meeting.

### Prof. M. Mahadevappa Visited IIPR

Prof. M. Mahadevappa, Former Chairman, ASRB, Member, Governing Council of ICAR and Director JSS Rural Development Foundation, Mysore visited the Institute on February 3, 2012. He suggested for enhancing



availability of quality seeds of pulses and development of high yielding varieties especially pigeonpea hybrids. He appreciated the maintenance of seed production plots and field experiments. Prof. Mahadevappa showed keen interest in variability maintained in chickpea breeding plots and asked to provide seeds of two chickpea lines for their demonstration at JSS Rural Development Foundation, Mysore. Dr. N. Nadarajan, Director of Institute and Dr. S.K. Chaturvedi, Head, Division of Crop Improvement were present during the visit.

### Principal Secretary, Agriculture Research and Education, Govt. of UP Visited Institute

Shri J.N. Chamber, IAS, Principal Secretary (Agriculture, Agriculture Research and Education), Government of Uttar Pradesh visited IIPR, on February 3, 2012 to have first sight on activities related to pulses research. Dr. N. Nadarajan, Director apprised him about the research work being carried out in pulses. Shri Chamber appreciated potential of high yielding varieties of chickpea, fieldpea and



pigeonpea and suggested to ensure availability of quality seeds of these varieties for Uttar Pradesh. He asked his officials for preparing a seed rolling plan for 5 years involving recently released varieties and other necessary technology support of IIPR for enhancing pulses production in the state.

### ARS/NET Examination Conducted

Indian Institute of Pulses Research was entrusted the responsibility by ASRB to conduct ARS/NET examination, 2012 at Kanpur. Accordingly, the exam was conducted on February 19, 2012 smoothly with the cooperation of CSAUA&T and HBTI, Kanpur. Dr. N. Nadarajan, Director was the Coordinator and Dr. V.N. Sharda, Member, ASRB also monitored all arrangements during the examination.

## Rabi Pulses Scientists' Meet Organized

Rabi Pulses Scientists' Meet was organized at IIPR on February 16-17, 2012 to exchange scientific information, share breeding material and germplasm for the improvement of rabi pulses viz., chickpea, lentil, field pea, lathyrus and rajmash. Forty three scientists from AICRP centres, IARI, ICRI, ICARDA and IIPR participated in this Meet. Dr. N.P. Singh, Project Coordinator (Chickpea) in the inaugural session highlighted the achievements made in chickpea research during last 2 years and stressed the importance of shuttle breeding, sharing of genetic resources and national crossing programme in development of high yielding varieties. Dr. N. Nadarajan, Director appreciated the efforts of

scientists for highest production of pulses (18.09 m t) and congratulated chickpea scientists for 8.25 m t production of chickpea. He also emphasized on use of molecular marker technology for transferring targeted gene/QTLs. Dr. S.K. Chaturvedi, Head, Division of Crop Improvement and Convener of the meet emphasized upon the need of feedback and MTA for sharing the genetic resources and highlighted the progress made in transgenic, pre-breeding, heat tolerance and herbicide tolerance research at IIPR. Scientists visited the experimental fields and showed keen interest in molecular breeding, transgenic and wide hybridization activities of IIPR.

## Training on DUS Test – Chickpea

AICRP on Chickpea organized a "Training on DUS Test" at IIPR, Kanpur on February 17-18, 2012 to create awareness among breeders about Plant Variety Protection Rights, DUS Test and Registration of Varieties. The training was attended by 40 participants from different cooperating centres of AICRP on



Chickpea. Chairing the inaugural session Dr. N. Nadarajan, Director made a mention that in the era of IPR, it is very important to register the precious germplasm material and released varieties. Dr. N.P. Singh, Project Coordinator (Chickpea) emphasized on the importance of Plant Variety Protection Right and Registration of Varieties. Dr. P.M. Gaur

and Dr. Rajiv Varshney from ICRI and Dr. P.K. Singh, Former Registrar, PPV&FRA delivered lectures on

various aspects of DUS Test. Different topics discussed during training were DUS guidelines for chickpea and DNA marker technology for characterization of various crops. DUS Test for registration of plant varieties with special reference to chickpea was discussed in detail. Visit was also organized to DUS chickpea plots where reference and example varieties are grown.

## Joint Field Visit of IRC

To review the on-going field experiments at the Institute main farm and new research farm, a joint field visit of Institute Research Council under the chairmanship of Dr. N. Nadarajan, Director, was held on 21-22 February, 2012. All the scientists participated in the field visit and explained their experimentations.

## Group Meet on Mungbean and Urdbean

Annual Group Meet on Mungbean and Urdbean for spring/summer and rice fallow cultivation under AICRP on MULLaRP was held on January 23-24, 2012 at IIPR, Kanpur. Dr. Sanjeev Gupta, PC, MULLaRP informed the house about the promising entries tested in trials and emphasized the importance of bringing rice fallow area under mungbean and urdbean cultivation. He apprised the house about the newly registered donors and emphasized the importance of conservation tillage, resource saving, host plant resistance, disease management including MYMV and to enhance breeder seed production during spring/summer season. Dr. N.P. Singh, chairing the inaugural session, gave an overview of the pulse scenario of the country and emphasized for increasing the area under rice fallows and mechanization. He stressed upon generating good breeding material with photo- and thermo insensitive and synchronous maturity.

## Awareness programme on PPV and FR Act

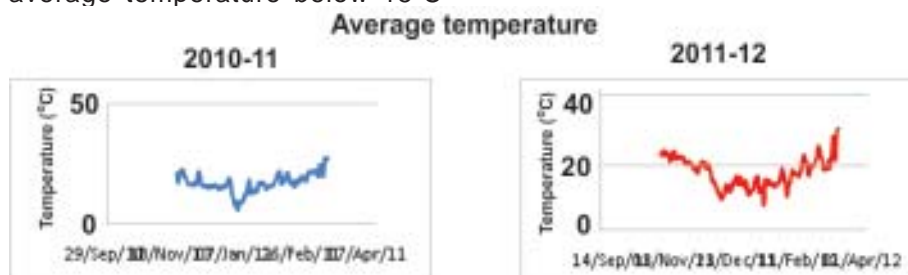
A two-day awareness programme on Protection of Plant Varieties and Farmer's Right Act was held at IIPR on March 13-14, 2012 under the chairmanship of Dr. N. Nadarajan, Director. The training aimed at facilitating the practical implementation of the legal frame-work for the protection of plant varieties under IPR system. In this programme, participants were trained for their abilities to function in variety registration system. Eighteen trainees from various centres participated in the programme. Lectures on PPV and Farmer's Right, IPR issues, DNA fingerprinting of crop varieties, procedures for filing application for registration, national seed policy, new seed bills and grouping of varieties for distinctness, uniformity and stability were also organized. Dr. Sanjeev Gupta, Project Coordinator (MULLaRP) highlighted importance of PPV&FR and registration of crop varieties and valuable genetic resources.

## Research Highlights

## Rapid Temperature Fluctuations and its Impact on Chickpea Yield

Average temperature within 15-20°C during reproductive phase favours profuse flowering and pod setting in pulses. Pulses in general are highly sensitive to frequent changes in temperature towards both extremes of low and high. Frequent temperature fluctuations during November, 2011 to March, 2012 resulted in lowering of average temperature below 15°C

Interestingly, the grain yield of chickpea during 2011-12 is less likely to be affected by temperature fluctuations, because extended crop duration has compensated the profuse flowering upon normalization of average temperature after mid-February. Even in the March end, the temperature deviation towards cooler side is highly favourable for anthesis and grain development in chickpea. The



throughout most of the reproductive phase. The frequent lowering of temperature below 5°C as observed during 2011-12 caused shedding of flowers 2 to 3 times and impaired largely the grain filling process in chickpea during the cold phase.

observation signifies the remarkable capacity of chickpea to adjust with climate adversities.

*P.S. Basu, S.K. Chaturvedi, Jagdish Singh, Alagu palamuthirsolai and Pankaj Singh*

## Powdery Mildew on Chickpea Caused by *L. taurica*: A New Report from South India

During second and last week of January, 2012, powdery mildew was observed in chickpea with 30-40% incidence in the fields of ARS, Bijapur and with 25-30% incidence in farmers' fields at Hiriyyur (Karnataka), respectively. At Zonal Agricultural Research Station, Hiriyyur the disease incidence was 20-30% in experimental plots (sown in October) and 80-90% in crop var. JG 11 (sown late in November).



Symptoms of powdery mildew disease

Typical powdery mildew symptoms and signs such as dense white powdery patches were observed on petioles and adaxial leaf surfaces of plants. Areas beneath the fungal growth initially turned chlorotic, then necrotic, followed by defoliation of leaves which led to dried up the plants permanently. Appearance of powdery mildew on chickpea may be due to varied climatic conditions. Therefore, in future there may be possibilities of spreading this disease to major chickpea growing areas and could be a threat to the chickpea production in the country.

*Muhammad Saifulla<sup>1</sup>, Viswanatha, K.P<sup>1</sup>, Chandrasekhara, K<sup>1</sup>., Mudalagiriappa<sup>1</sup>, Nehru, S.D<sup>1</sup>., Nagaraj, K<sup>1</sup> and Biradar, B.D<sup>2</sup>*  
<sup>1</sup>AICRP on Chickpea, UAS, GVKV Bangalore  
<sup>2</sup>ARS, Bijapur

## Pulses in Rice-Fallow with Appropriate Resource Conservation Practices

Six-monthly review meeting of the project "Mitigating abiotic stress and enhancing resource-use efficiency in pulses in rice-fallow through innovative resource conservation practices" under NFBSFARA (ICAR) was held at the ICAR Research Complex for NEH, Umiam, Meghalaya, on March 3, 2012 under the chairmanship of Dr. C.L. Acharya. Progress made in the project was discussed and based on one year data, it was observed that lentil and chickpea performed well in rice fallows under mulching over no-mulch for plant growth, nodulation and soil moisture status. Similarly, improved practices



Lentil under mulch

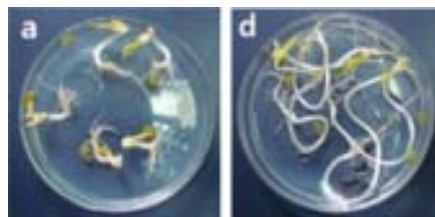
Lentil under no-mulch

(balanced nutrition, paired row, rhizobium culture, 2% urea/DAP spray) showed better crop and maintained higher soil moisture throughout crop growth stages.

*P.K. Ghosh, Narendra Kumar, K.K. Hazra, M.S. Venkatesh, C.S. Praharaj, M.K. Singh, P.S. Basu and Senthil Kumar*

## Moisture Stress Mitigation in Chickpea through ACC Deaminase Producing Bacteria

Accumulation of ethylene under limited moisture condition leads to reduced biomass development and yield in chickpea. Certain rhizobacteria can use amino cyclo propane carboxylate (ACC), the immediate precursor of ethylene biosynthesis as nitrogen source and prevent the accumulation of ethylene to protect the plants from moisture stress. Ninety three ACC deaminase producing bacterial isolates taken from chickpea rhizosphere soils of IIPR farm, were characterized on the basis of colony morphology and representative biochemicals. Five best isolates (isolate number-13,14a,21b,30c and 39) used ACC as nitrogen source in growth medium. Based on gnotobiotic root elongation assay, two isolate (No. 13 and 14a) showed the potential to relieve the stress under ethylene.



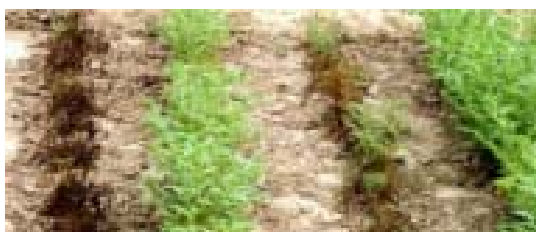
**Control** **Treated**  
Effect of inoculation of ACC deaminase producing bacterium on chickpea root elongation

Inoculation of ACC deaminase producing bacterial isolate (No.14a) to the seeds treated with 3 mm ACC reduced the concentration of ACC on seed surface and prevented the accumulation of stress ethylene leading to restore root length and biomass as compared to control (non-inoculated seeds).

*Senthilkumar M., Swarnalakshmi K.,  
Mohan Singh and Jagdish Singh*

## Variations for Herbicide Tolerance in Chickpea

Five hundred nine chickpea accessions were screened against popular post-emergence herbicide Imazethapyr @ 50g/ha in order to identify the genetic variability for herbicides tolerance. Out of these 31 most tolerant and 9 most sensitive ones were selected on the basis of visual scoring. Over two evaluations, genotypes viz., ICC 1164, IPC 2010-81 and IPC 2008-59 were found most tolerant because these lines were not affected and only showed reduced growth at initial stage. While, ICC 8522, ICC 6874 and ICC 5484 were found highly sensitive because these lines



showed leaf burning within 7 days of herbicide application. Above tolerant donors can be used in breeding programme and in mapping of genes for herbicide tolerance.

*S.K. Chaturvedi, Muraleedhar Aski,  
N. Mishra and N. Nadarajan*

## Pigeonpea Transplanting: Exploring Feasibility and Economic Viability

Potential of transplanted pigeonpea crop for compensating the yield loss due to low plant population was studied at IIPR. Despite high seedling mortality due to *Phytophthora* blight, adequate number of healthy plant population was maintained through

transplanting of polyethylene raised seedlings. Three to four weeks old seedlings raised in polythene bags packed with soil and FYM mixture (1:2) were transplanted in ridges in a wet/moist field in the month of August. The plants grew vigorously under simulated

## Screening for Water Logging Tolerance in Pigeonpea

During *kharif* season, continuous rainfall results in water logging (WL), which leads to high mortality of pigeonpea due to *Phytophthora* blight infections, physiological wilting (due to anoxia or hypoxia), and *Fusarium* root



2 weeks after drainage of water-logging

rot. Thus heavy yield losses are reported due to reduced plant density. Under NFSM funded project, 32 pigeonpea genotypes were evaluated for water logging tolerance under field condition. Artificial water logging treatment was applied on September 20, 2011 for five days, after that field was drained out. Based on survival per cent, Chlorophyll-I and II content, days to 50% flowering and senescence score, genotypes IPAPB 7-2-1-7 and IPAPB 7-2-1 were rated as tolerant to water logging at IIPR and other locations viz., BHU (Varanasi), JNKVV (Jabalpur) and IARI (New Delhi).

*A.K. Choudhary, Shweta Pal,  
P.S. Basu, S.K. Chaturvedi and  
N. Nadarajan*

upland condition (ridges) thereby escaping from both water stagnation and seedling blight.

*C.S. Praharaj, P.K. Ghosh and  
Narendra Kumar*

## Infestation of Yellow Mite in Mungbean in West Bengal: A Survey

Severe infestation of yellow mite or broad mite, *Polyphagotarsonemus latus* (Banks) was observed during a survey of mungbean grown areas of Nadia and Murshidabad districts of



Yellow mite infested plants & leaves

West Bengal (pre-kharif season, 2011). It has a wide host range and maintained its population in different crops, weeds and other roadside perennial plants (*Jatropha* spp.) throughout the year. Dissemination of the mite to the adjacent host plants was observed by wind, irrigation water and sometimes by walking. A characteristic foraging by the whiteflies was noticed during the survey. At experimental plot of AINP Acarology, the peak population of the mite was recorded at budding to fruiting stage leading to 10-12% yield losses during pre-kharif season in mungbean.

Varieties viz., TM 99-50, TM 99-37 and HUM 12 performed well to manage this pest. It can be controlled by foliar application of dicofol 18.5 EC @ 2.5ml/l or diafenthiuron 50 WP @ 0.5gm/l. *Agistemus fleschneri* was found as predator mite on the above yellow mite in mungbean and one adult female *A. fleschneri* can consume around 60 eggs of this mite/day.

Pranab Debnath<sup>1</sup>, Krishna Karmakar<sup>1</sup>, Amalendu Ghosh, C. Chattopadhyay

<sup>1</sup> AINP Acarology, Kalyani, West Bengal

## Heavy Infestation of *H. armigera* in *C. arvensis* in Jalaun District of U.P.

Heavy infestation of *H. armigera* larvae (1-3 instars) was observed on the flowers of *Convolvulus arvensis* weed dominant in the farmers' fields of Keeratpur village of Jalaun district at physiological maturity of chickpea crop. About 30-40% flowers were infested with the larvae of *H. armigera*. Similar situation infestation was observed in chickpea fields. It appeared that above weeds possibly act as an alternate host for *H. armigera* in this region.



Hem Saxena, Narendra Kumar and Uma Sah

## Aphid Infestation in Rabi Pulses

During the rabi season 2011-12, severe infestation of black aphid was recorded on lentil and least on chickpea and fieldpea. Infestation of green aphid was more on fieldpea than lentil. The adults and nymphs suck sap from the undersurface of tender leaves, growing tips, flower stalks and developing pods. In severe infestation, the plant parts withered and blighted. Four coccinellid predators have been recorded as natural enemies on *Aphis craccivora* and *Acrythosiphon pisum*.



P. Duraimurugan

## तकनीकी हस्तांतरण

### मॉडल प्रशिक्षण कार्यक्रम आयोजित

संस्थान में "समेकित कीट प्रबन्धन" विषय पर आठ दिवसीय मॉडल प्रशिक्षण कार्यक्रम का आयोजन दिनांक 8-15 फरवरी, 2012 को किया गया। उक्त प्रशिक्षण का आयोजन भारत सरकार के कृषि एवं सहकारिता विभाग के तत्वाधान में हुआ और इसका उद्देश्य सैद्धान्तिक एवं व्यावहारिक स्थिति के बीच के अन्तर को कम करना एवं प्रसार कार्यकर्ताओं को नई जानकारी देना था, ताकि वे उसका प्रसार विभिन्न सस्य-पारिस्थितिकी में कर सकें। उक्त कार्यक्रम में क्षेत्र विशेष की आवश्यकता

पर आधारित एवं प्रतिभागियों की पसंदीदा प्रौद्योगिकी पर महत्वपूर्ण जानकारी प्रदान की गई। साथ ही वार्ता पर आधारित व्याख्यान दिए गए एवं रमाबाई नगर के बाढ़पुर एवं कुइतखेड़ा गाँवों का भ्रमण भी कराया गया। बीज उत्पादक संगठनों ने दलहनी फसलों के गुणवत्तायुक्त बीज के उत्पादन के सम्बन्ध में अपनी सहभागिता का विवरण प्रस्तुत किया। उक्त कार्यक्रम में तमिलनाडु, आंध्रप्रदेश, मणिपुर, नागालैण्ड, राजस्थान, मध्य प्रदेश, छत्तीसगढ़, झारखण्ड, बिहार, उत्तराखण्ड एवं उत्तर प्रदेश से आए प्रतिभागियों ने भाग लिया। प्रशिक्षण के अंतिम सत्र में निदेशक डा. ना. नडराजन ने इस बात पर बल दिया कि विभिन्न राज्यों के लिए संस्तुत प्रौद्योगिकी पैकेज को जल्द से जल्द अपनाया जाए ताकि उत्पादन एवं उत्पादकता के मध्य के अन्तर को पूर्ण किया जा सके। डा. राजेश कुमार, प्रधान वैज्ञानिक उक्त कार्यक्रम के निदेशक थे।



## जनजातीय कृषकों का संस्थान भ्रमण

संस्थान द्वारा अगस्त 2011 से, ग्यारह (मध्य प्रदेश के 6, छत्तीसगढ़ के 4 और उत्तर प्रदेश के एक) जिलों में एक विशेष परियोजना “प्रदर्शन एवं प्रशिक्षण के माध्यम से जनजातीय समुदायों के लिए भोजन, पोषण सुरक्षा एवं जीविका हेतु दलहन उत्पादन को बढ़ाना” परिचालित की जा रही है।

रबी 2011-12 में उत्तर प्रदेश के लखीमपुर जिले के थारू जनजातीय समुदाय के चार चयनित गाँवों में चना के 25, मसूर के 100 और मटर के 30 प्रदर्शन लगाए गए हैं। संस्थान में दिनांक 23 मार्च, 2012 को “कृषक दिवस” का आयोजन किया गया, और दलहनी फसलों से सम्बन्धित महत्वपूर्ण जानकारियाँ कृषकों को उपलब्ध



करायी गई। इस अवसर पर संस्थान के निदेशक डा. ना. नडराजन ने जनजातीय समुदायों के लिए दलहन के महत्व पर जोर दिया और सुझाव दिया कि वे विभिन्न फसल प्रणालियों में दलहनी फसलों को भी शामिल करें। उक्त कार्यक्रम में जनजातीय समुदाय के कुल 200 कृषकों ने जिनमें 39 महिलाएं भी थीं, सक्रिय सहभागिता की।

## उन्नत दलहन उत्पादन प्रौद्योगिकी का प्रसार

उत्तर प्रदेश के जालौन जिले में उन्नत दलहन उत्पादन प्रौद्योगिकी जिसमें गुणवत्तायुक्त बीज भी शामिल है का प्रसार किसान से किसान के माध्यम से किया जा रहा है। इस परियोजना के अंतर्गत, रबी 2010-11 में 15 चयनित कृषकों को चना की उन्नत प्रजातियाँ (जे जी 16 और डी सी पी 92-3) उपलब्ध करायी गई। इन कृषकों को बीज के उत्पाद को नियोजित एवं अनियोजित तरीके से अन्य को प्रसारित/वितरित करने के लिए प्रोत्साहित किया गया था। इस योजना के तहत, एक किसान को चार नए किसानों को अगले मौसम के लिए बीज उपलब्ध कराना था। इस प्रकार किसानों ने चना की उन्नत प्रजातियों की 6.55 कुन्तल बीज, 44 अन्य सह कृषकों को उपलब्ध कराया जो कि रबी 2011-12 में 22 एकड़ क्षेत्र में बोया गया। गैर नियोजित प्रसार के अंतर्गत, किसानों ने 2010-11 के रबी मौसम हेतु, 15 कुन्तल बीज वितरित किया/बेचा जिसको समीप के गाँवों में 40 एकड़ क्षेत्र में बोया गया।

वर्ष 2011-12 के रबी मौसम हेतु, उक्त परियोजना के तहत वर्तमान में, 25 एकड़ क्षेत्र में चना की उन्नत प्रजातियाँ (जे.जी. 16



और डी.सी.पी. 92-3), 10 एकड़ में मसूर की उन्नत प्रजाति (डी.पी.एल. 62) तथा 12.5 एकड़ क्षेत्र में मटर की उन्नत प्रजाति (प्रकाश, आदर्श) 85 चिन्हित कृषकों के खेतों में प्रदर्शित हो रही हैं। इन प्रमुख कृषकों को आधे एकड़ खेत हेतु पर्याप्त, चना, मटर एवं मसूर की संस्तुत प्रजातियों के उन्नत बीज उपलब्ध कराए गए, साथ ही उन्हें दलहन उत्पादन सम्बन्धी तकनीकी जानकारी भी उपलब्ध करायी गई। वर्ष 2012-13 में बुवाई हेतु, प्रत्येक चिन्हित किसान, उन्नत प्रजाति के बीज कटाई के बाद चार नए किसानों को उपलब्ध कराएगा।

## फली भेदक प्रबन्धन के लिए जैव नियंत्रकों के प्रयोग पर प्रशिक्षण

दिनांक 25 फरवरी, 2012 को संस्थान में “जैव नियंत्रकों के द्वारा फली भेदक का प्रबन्धन” विषय पर एक दिवसीय कैम्पस प्रशिक्षण का आयोजन किया गया। उक्त कार्यक्रम जैव प्रौद्योगिकी विभाग द्वारा वित्त पोषित परियोजना “उत्तर प्रदेश के बुन्देलखण्ड क्षेत्र के जालौन जिले में चना की उत्पादकता को बढ़ाने के लिए एच. आर्मीजेरा के प्रबन्धन हेतु जैव नियंत्रकों को लोकप्रिय बनाना” के तहत आयोजित किया गया। उक्त प्रशिक्षण में बराई, कीरतपुर, माँगरौल, नेवाड़, कहसीरामपुर और जयरामपुर गाँवों के 70 कृषकों ने भाग लिया। उक्त प्रशिक्षण में कृषकों को फलीभेदक के प्रबन्धन हेतु कृषकों को *हेलिकोवर्पा लावा* को पालने और *हेलिकोवर्पा न्यूक्लियर पालिहाइड्रोसिस* विषाणु (एच.एन.पी.वी.) के निर्माण एवं प्रयोग सम्बन्धी हस्त प्रशिक्षण प्रदान किया गया। उक्त कार्यक्रम का समन्वयन डा. (श्रीमती) उमा साह, हेम सक्सेना एवं पी. दुरईमुरुगन द्वारा किया गया।

## बिहार के कृषकों की प्रशिक्षण में सहभागिता

दिनांक 15-16 मार्च, 2012 को संस्थान में कृषि प्रौद्योगिकी प्रबन्धन अभिकरण, समस्तीपुर, बिहार द्वारा प्रायोजित दो दिवसीय कृषक प्रशिक्षण का आयोजन किया गया। प्रतिभागियों को सम्बोधित करते हुए निदेशक डा. ना. नडराजन ने सुझाव दिया कि वांछित उत्पादन एवं पोषण सुरक्षा के लक्ष्य को प्राप्त करने के लिये वे विभिन्न परिस्थितियों में दलहन के लिए संस्तुत प्रौद्योगिकी को चरणबद्ध तरीके से अपनाएं। प्रशिक्षण के दौरान, वार्ता पर आधारित कुल आठ व्याख्यान दिए गए साथ ही प्रक्षेत्रों का भ्रमण भी किया गया। कुल 30 कृषकों एवं प्रसार कार्यकर्ताओं ने उक्त प्रशिक्षण में भाग लिया।

## Personnel

### Award/Honour

- Dr. C. Chattopadhyay, Head (Crop Protection) was conferred Bioved Fellowship by the Bioved Research Institute of Agriculture & Technology.

- Dr. P.K. Ghosh, Head (Crop Production) has been elected as Sectional President (Agricultural and Forestry Sciences),



Indian Science Congress Association for the year 2013 (Centenary year).

### Promotions

- Mr. S.K. Dwivedi has been promoted to T-5 w.e.f. 3.2.2010.

## Director's Desk

Dear Readers,

In India, a considerable amount of agricultural land remains fallow after rice harvest which could be potentially explored for expansion of pulse area. Future expansion of pulses may take place in rice fallows, where there is no other crop to compete, however there are limitations on the successful propagation of these crops in this system. A considerable area remains fallow after rice harvest in North, eastern states and peninsular India, where rice is grown as the principal crop. Major proportion of fallow lies in the states like Assam, Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Orissa and West Bengal and remaining area in the states like Tamil Nadu, Karnataka and Andhra Pradesh. Lentil, chickpea and lathyrus are the candidate crops that can occupy the area under rice fallow of northern India. Similarly, urdbean and mungbean are successful in rice fallow of peninsular region. For example, in Krishna district of Andhra Pradesh, urdbean as relay crop is practiced in large areas of deep black soil with excess soil moisture at sowing and the crop continue to grow in residual soil moisture thereafter. Farmers have adopted urdbean variety LBG 752 successfully in rice fallow of these areas applying excess amount of seed, insecticide and liquid fertilizer that often lead to over plant population and increased cost of production. In West Godavari district the similar situation exists. A strong research advisory programme is needed to educate farmers to avoid use of excess inputs. At the same time planting techniques for maintaining optimum plant population need to be standardised.

In Aduthurai, Tamil Nadu about 3 lakh ha area is covered with urdbean

as relay crop with rice in black soil. There is a possibility to bring about additional 4 lakh ha area of urdbean in rice fallow situation in the state. Farmers traditionally broadcast urdbean seed in the standing rice field about one week before rice harvest in waxy soil moisture situation. During rice harvest, there is chance of damage of germinating seeds of urdbean which



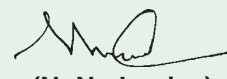
leads to substantial loss of standing urdbean seedlings and eventually affects the plant population. Because of differences in soil type and sub-optimal use of seed rate and other inputs, the urdbean performance is usually not as good as crops grown in Andhra Pradesh. The terminal drought and low plant population of urdbean are common phenomena in these areas. This needs critical intervention of implements either for line sowing separately immediately after harvest of rice or simultaneous harvesting and sowing of urdbean in waxy soil moisture situation.

To achieve simultaneous sowing of pulses and harvesting of rice in single operation, suitable attachment to existing rice harvester should be developed. Both line-sowing of pulses combined with harvesting of rice in

these areas need to be done using modified combined-harvester allowing better crop establishment and uniform spreading of residue by mounting a device at the rear end of the harvester. Mobile sprinkler in combination with residue management is one of the options to mitigate terminal drought.

In non-traditional pulse areas of North-eastern states particularly Meghalaya, Manipur and Nagaland, the potentiality of promoting pulses like lentil and fieldpea in rice fallow is tremendous both in upland and lowland situations. The pulse crops face moisture stress at flowering in upland situation, while excess soil moisture prevails in lowland situation even one month after harvest of rice. Under ICAR funded national network project, a simple soil moisture conservation practice was adopted using crop residue in upland situation and making trench in and around the field to drain out excess moisture in lowland situation. This practice could harvest a good crop of lentil and fieldpea in Meghalaya. Lentil var. DPL 62 and fieldpea var. Prakash developed by IIPR performed well in this region. To reduce the drudgery and for timely sowing, the manually operated no-till drill designed by IIPR as well as by ICAR research complex for rice fallow hold promise and have been found useful.

I am sure that the synergies of research and development programmes along with appropriate policy support and adoption of newer technologies of pulses production by farmers will help in expansion of pulse area in these new niches and help attaining self sufficiency in pulses in the country.



(N. Nadarajan)

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