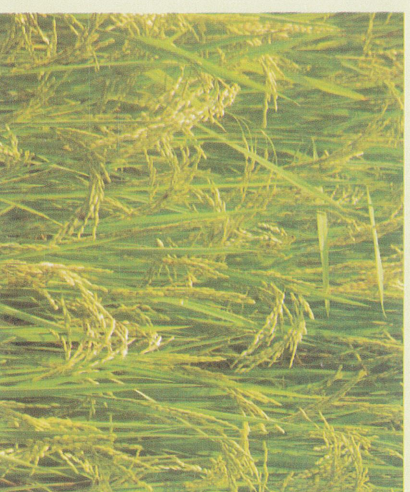




बीज अनुसंधान निदेशालय

DIRECTORATE OF SEED RESEARCH

DSR NEWSLETTER

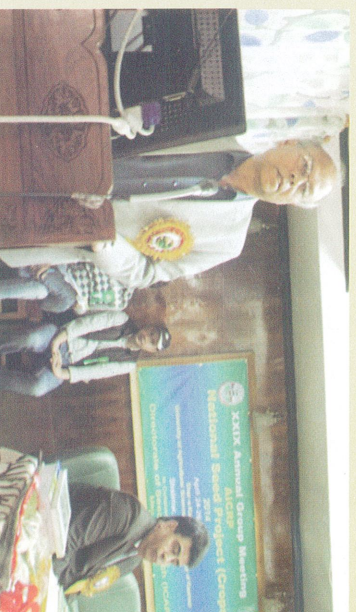


XXIX Annual Group Meeting of AICRP - National Seed Project (Crops)

XXIX Annual Group Meeting of AICRP-NSP (Crops) was organized during 24 - 26th April, 2014 at Sher-e-Kashmir, University of Agricultural Sciences & Technology of Kashmir, Shalimar, Srinagar. Dr. Teji Pratap, Hon'ble Vice Chancellor, SKUAS&T-Kashmir, Srinagar presided over the occasion. Prof. Swapan K. Datta, Hon'ble Deputy Director General (CS), ICAR, New Delhi was chief guest of the meet. Dr. J.S. Chauhan, Asst. Director General (Seeds), ICAR, New Delhi was special invitee of the meeting. Dr. S. Rajendra Prasad, Project Director, Directorate of Seed Research (ICAR), Mau, UP and Dr. Shafiq A. Wani, Director Research, SKUAS&T-Kashmir also graced the occasion. More than 180 participants from various NSP centres spread across the country attended this annual group meeting. Dr. Shafiq A. Wani, Director Research, SKUAS&T-Kashmir welcomed the guests and presented a brief account of research activities being carried out by the university.



Dr. S. Rajendra Prasad, Project Director, Directorate of Seed Research (ICAR) presented the highlights of achievements made under AICRP - NSP (Crops). Dr. Rajendra Prasad further elaborated upon the varietal scenario among major agricultural crops in the country and presented the research achievements made under Seed Technology Research (STR) component. Dr. J.S. Chauhan, ADG (Seeds) in his address emphasized on achieving seed security to ensure food and nutritional security of the country. He further discussed the growing seed industry in India *vis a vis* global trends. Prof. Swapan K. Datta, Hon'ble DDG (CS) in his deliberations set the momentum for discussions and emphasized the importance of photo-insensitive and early maturing varieties to mitigate the challenges put forth by climate change.



Dr. Teji Pratap in his presidential address lauded the efforts of seed scientists of AICRP- NSP (Crops). Dr. Pratap remarked that though the country has the scientific capabilities to meet the challenges posed by climate change, there is a need to address the future scenarios of climate change, increasing population and enhanced urbanization. To recognize and honour the long association

International Attachment Training Course on "Organizing and Implementing an effective National Seed Quality Control System"

In a bid to harness coherent synergies and expertise of Indian seed research and quality control with ASEAN countries, training programme entitled **"Organizing and Implementing an effective National Seed quality Control System"** is being conceptualized by ASEAN India Working Group on Agriculture and Forestry in May 2013. Subsequently Department of Agricultural Research & Education, Ministry of Agriculture, India entrusted the same upon Directorate of Seed Research to organize the training programme on National Seed Quality Control System. Referred training programme was organized from 27th Jan. to 8th Feb. 2014 in order to facilitate in institution of seed quality control system in ASEAN countries. Indian agriculture in general and seed sector in particular have varied resemblances with ASEAN countries (Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Thailand & Vietnam) viz., quality seed production, seed processing and quality enhancement, testing and quality assurance. Aforesaid training programme was conducted with an objective to enhance participants' knowledge and skills in instituting an effective national seed quality control system in respective seed domains. Special emphasis was given to acquaint participants with Indian seed certification system and seed legislations, as most of the ASEAN countries are in process of enacting seed laws to regulate seed quality. Lectures on diverse themes viz: global scenario of seed quality control; comprehensive outlook on seed legislations and regulations; essentials and new dimensions of seed certification system; basic principles of quality seed production & standard operating procedure (emphasis on Rice, Maize and Vegetable crops), plant variety protection, exposure on seed testing, and acceptable procedures in conformity with ISTA were organized. Visits to National Seeds Corporation, State seed certification agency (KSSCA), Central referral laboratory (NSRTC, Varanasi), seed health management unit, Mysore; Division of Seed Science and Technology, Indian Agricultural Research Institute, Syngenta pvt. Ltd. and Gubba ultramodern cold storage facility were structured as part of course curriculum in a bid to cover the whole gamut of seed quality control system. To impart firsthand knowledge of seed testing protocols on the lines of international standards of seed testing such as ISTA, AOSA and OECD, visits to ISTA accredited laboratories (Namdhari Seeds and Indo American Hybrid Seeds at Bengaluru) were organized

and contribution in field of seed technological research, a number of retiring scientists of NSP (Crops) were felicitated during the meeting. JNKVV, Jabalpur and UAS, Dharwad were adjudged as the best BSP Centres, while RARI, SK Agricultural University, Jaipur and TNAU, Coimbatore were awarded as the best STR centres.

under this training programme. In most of the ASEAN countries, vegetable seed production is largely depends upon seed imports from other countries and facing a serious challenge to ensure quality of these imported seeds. This training programme catered practical exposure on vegetable seed production and maintenance of field and seed standards for the same. Different aspects of seed technology viz., hybrid seed production, genetic purity testing using molecular tools, seed quality enhancement and seed health management were taken care of. Referred training programme was prearranged across length and breadth of the country in diverse locations viz. Bengaluru, Mysore, Hyderabad, New Delhi, Varanasi and Mau to enable practical exposition on seed quality control system of the country. This training programme facilitated in enabling interaction of participants with Dr. S. Ayyappan, Hon'ble Secretary DARE & DG, ICAR on 06th Feb. 2014 in order to forge linkages in diverse areas relevant to seed domain to promote knowledge exchange in sphere quality seed, which will augment the share of ASEAN - India seed sector in world front.



Interactive session with Dr. S. Ayyappan, Hon'ble Secretary, DARE & DG, ICAR on 06. Feb. 2014

"Trading towards Seed Security"

Directorate of Seed Research organized referred training programme in an effort to address challenges in seed quality control system of the region and to facilitate in institution of acceptable procedures of seed quality assurance (seed testing, seed standards & certification system) among ASEAN member countries. In future, thrust may be given upon long duration and specific skill and human resource development in seed quality control viz. standard operating procedures, acceptable procedures in tune to ISTA, policy regulations of seed quality assurance in conformity with global standards.

Network Projects

- 1. AICRP-National Seed Project (Crops)**
 - The cooperating centres have produced 94987.61 quintals of breeder seed of field crops against the indent of 98790.73 quintals. Out of the total breeder seed produced, the major share belongs to cereal crops 52707.4 q in which maximum breeder seed was produced for wheat (32660.32 q) followed by rice (18319.41q). For pulse crops a total of 11662.36 q breeder seed was produced out of which 7555.90 q was alone contributed by chickpea, it was followed by pigeonpea 1028.25 q, mung 848.00 q and urd 686.68 q. In Oilseeds, total breeder seed production was 29261.19 q against the indent of 41893.74 q, soybean and groundnut together have contributed 28344.65 q of total breeder seed production of oilseeds. Breeder seed produced in case of fibre crops was 93.96q as against the indent of 61.52 q in which cotton had a major share of 53.42 q. In case of forage crops, breeder seed production was 1262.86 q against the indent of 828.92 q.

2. ICAR Seed Project-Seed Production in Agricultural Crops

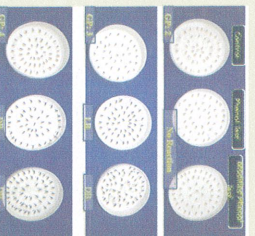
- Under ICAR Seed Project, an amount of Rs. 489.25 lakh was released to 56 cooperating centres during 2013-14, for continuation of seed production activities, technology dissemination and human resource development in seed domain at different cooperating centres.

Research Highlights

Seed Molecular Biology

QTL mapping for seed vigor in rice (*Oryza sativa* L.)

The present investigation has revealed that, variance due to genotype was significant for vigour traits. Out of 155 germplasm only two germplasm lines (Fig. 1) viz., Acc. No: 3118 (GP-100) and Acc. No: 2693 (GP-74) were identified for low to medium variance for vigour traits. These lines will be used for revalidation and crossing programme. Under Chemical test-



Chemical test-Phenol/
Modified phenol

Phenol / Modified phenol were carried out in varietal characterization of 155 rice germplasms (germplasm accessions were classified into five groups viz., light brown (LB), brown (BR), dark brown (DB), black (B) and no reaction on the basis of color).

Seed Quality Enhancement

- Seed priming of one year old pigeonpea seeds with tap water, KNO_3 (0.2%) and GA3 (100 ppm) for 12 h. significantly enhanced the seed quality parameters, plant height and yield attributes including no. of branches, no. of pods, test weight, biological yield and finally grain yield in both the varieties evaluated (Bahar and Malviya-13).
- Spraying of GA3@ 100ppm conc. at the time of anthesis in wheat, significantly increased the number of seed/spike, biological yield, 1000 seed weight and grain yield over control.

Agro-techniques for improved seed production

Evaluation of System of Rice Intensification (SRI) for Enhanced Seed Yield and Quality of Hybrid Paddy

System of Rice Intensification (SRI) with 12 days old seedling of KRH-4 performed better in reference to plant height (52.0, 97.5, 101.4 and 103.0 cm at 30, 60 90 DAT and at harvesting respectively) as compared to PRH-10. PRH-10 produced significantly more number of tillers/hill (13.8, 21.7, 19.2 and 19.0) and number of tillers/m² (220.6, 245.1, 249.1 and 240.6) at 30, 60 90 DAT and at harvesting as compared to KRH-4. Rice hybrid PRH-10 with System of Rice Intensification gave significantly higher panicle length, number of seeds/panicle, single plant yield and seed yield/plot as compared to KRH-4 with conventional method. No significant differences were observed on seed quality attributes among rice hybrids (KRH-4 & PRH-10) with reference to spacing (25x25 cm and 20x15 cm) under SRI.



Field view of hybrid rice (KRH-4 & PRH-10)
seed production at DSR, Mau

Impact of genotypes and conservation tillage on seed quality and productivity of wheat in the eastern-UP

Zero-tillage system is seen as an alternative to conventional system and in niches of water shortage. FIRB system is viewed as feasible option for sustained quality seed production in wheat. However, present study revealed that wheat crop did not perform well in FIRB system with respect to seed yield but secured better seed quality parameters.

Seed Pathology

Beneficial traits of 15 potential bacterial isolates isolated from rice and chickpea rhizosphere of DSR field, Mau (U.P.) and their molecular identification

- Nine bacterial isolates were identified as *Bacillus methylotrophicus* strain RRB-4, RRB-6, RRB-10, RRB-34; *Brevibacterium halotolerans* strain RRB-31, RRB-38, CRB-B; *Prolinoborus fasciiculus* strain RRB-7 and *Bacillus aerophilus* strain RRB-3 on the basis of 16s rRNA sequences.
- Gram -ve, rod shaped *Prolinoborus fasciiculus* strain RRB-7 is the novel strain having antifungal activities which is first time reported while *Bacillus aerophilus* strain RRB-3 having both P solubilization activities and antagonistic effect.

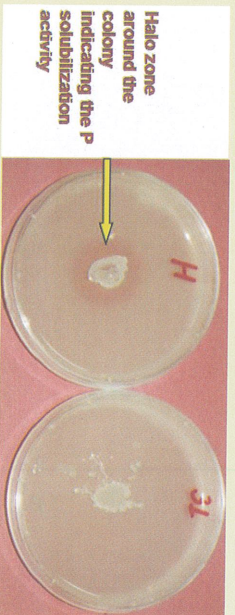
Calculation of percent growth inhibition of *Brevibacterium halotolerans* strain CRB-B against *Pyricularia oryzae* causing rice blast disease



$$I = \frac{C-T}{C} \times 100$$

I = Percent growth inhibition
 C = Colony diameter of pathogen in control
 T = Colony diameter/radial growth of pathogen in treatment
 IZ = Inhibition zone
 BC = Bacterial colony

Phosphate Solubilization Test



A loop full bacterial culture was inoculated on centre of Petri plate containing Pikovskaya's agar media and incubated at 28°C for 6 days and halo zone around the bacterial colony was recorded as P solubilization activity.

Seed Entomology

Synergistic property of plant extracts extorted in five different solvents

Various plant extracts extorted in acetone, methanol, ethanol, petroleum ether, chloroform were evaluated for their synergistic property with deltamethrin against *Stipophilus oryzae*. Comparison of LC 50 values for

deltamethrin with and without plant extracts were made to observe the synergistic effect. When plants were extracted in chloroform, seven out of 13 plants showed the synergistic property and toxicity of deltamethrin was increased in range of 1.09 to 13.9 fold. Similar to chloroform, Petroleum etheric extract of 07 plants showed synergistic effect. But the range of increase in toxicity of deltamethrin was only 1.2 to 3.4 fold. Four and five plants out of all tested showed synergism when extracted with ethanol and acetone, respectively. Minimum (03) plants were observed as synergist when extracted with methanol. Interestingly, in all solvents, H. R. Sinensis produced maximum increase in toxicity of deltamethrin ranging from 2.4 to 13.9 fold.

Biochemical characterization of insecticide resistance in major storage insect pests and their management

Insecticide bioassay was conducted with Deltamethrin to assess the resistance level in collected insect pests. All insects collected from different NSC godowns showing high level of resistance. Among all, NSC Secenderabad population of *Rhizopertha dominica* and *Tribolium castaneum* recorded more resistance i.e. LC50 of 0.057 and 0.165 respectively, and lowest resistance was recorded in *Rhizopertha dominica* (LC50 0.041) population from NSC, Bangalore and *Tribolium castaneum* (LC50 0.089) population from NSC, Coimbatore. The resistance ratios were cited below.

Resistance Ratio-*Rhizopertha dominica*

S.No.	NSC Centre	Resistance Ratio/ Factor
1	Coimbatore (TN)	2.330
2	Palakkad (Kerala)	2.190
3	Bangalore (Karnataka)	1.952
4	Bellary (Karnataka)	2.380
5	Secenderabad (AP)	2.712

Resistance Ratio- *Tribolium castaneum*

S.No.	NSC Centre	Resistance Ratio/ Factor
1	Coimbatore (TN)	2.781
2	Palakkad (Kerala)	3.125
3	Bangalore (Karnataka)	3.710
4	Bellary (Karnataka)	4.250
5	Secenderabad (AP)	5.156

Seed Economics:

Cost-economics of Groundnut seed production

Primary data has been collected from Chitradurga district of Karnataka during 2013-14. Tabular analysis was used to compare the different values of farm economy and other aspects of farm business. The ratio of fixed and variable cost in groundnut seed production observed was 23:77. Human labour was the major component of cost on inputs applied for seed production of groundnut. Its share in total costs was about 27 per cent. It was followed by bullock & machine labour accounting for about 26 per cent of the total cost of groundnut seed production. The share of seed cost to total input was about 11 per cent. Cost of manures and

fertilizers used for crop accounted for about 8 per cent. The total cost in certified seed production of groundnut was 33245 per hectare. The average yield of groundnut seed was 15.2 quintal and of by-product was 12 quintal. The gross and net returns were Rs. 63200 and Rs. 29955 per hectare respectively. The total cost of cultivation in groundnut seed production was around 18 per cent higher than grain production while, gross return was about 27 per cent higher in seed production (Rs. 63200 /ha) than grain production (Rs. 49600/ha). Consequently, net return from seed production of groundnut was 40 per cent (Rs. 29955/ha) higher than grain production (Rs. 21348/ha).

Meetings/Trainings

Organised

- Organized thirteen days International Attachment Training Course on "Organizing and Implementing an effective National Seed Quality Control System". A total of 17 delegates from ASEAN attended the training programme. Dr. S Rajendra Prasad, Dr. Udaya Bhaskar K. and Umesh R. Kamble coordinated this event.
- Organized six days training programme on "Researchers' training-XI: Data analysis using SAS" under consortia-based project entitled "Strengthening Statistical Computing for NARS" during 03-08th March, 2014, at DSR, Mau in collaboration with IIVR, Izatnagar (UP). Dr. Chandu Singh coordinated this event.

Attended

- Govind Pal, Sr. Scientist attended International Conference on Agriculture, Veterinary & Life Sciences - 2014 (ICAVLS) during January 24-25, 2014 at Vijayawada, A.P. and delivered oral presentation on 'An economic analysis of wheat seed production in Eastern Uttar Pradesh' and 'Effect of pre-sowing seed treatment using various plant growth substances on wheat (*Triticum aestivum* L.) seed'.
- Govind Pal, Sr. Scientist attended 16th Indian Agricultural Scientists and Farmers' Congress during 22nd - 23rd February, 2014 at Integral University, Lucknow.
- Govind Pal, Sr. Scientist attended International Conference on 'Indian Economy: Development Prospects and Perspectives' during June 21-22, 2014 at Haridwar, Uttarakhand and presented a paper entitled 'Economic efficiency in Groundnut seed production: A case study in Karnataka'.
- Chandu Singh, Scientist attended "one day sensitization workshop on migration from Internet Protocol Version 4 (IPv4) to Internet Protocol Version-6 (IPv6) organized by IASRI on 26th Feb., 2014 at NASC Complex, New Delhi
- Raghavendra D. attended XXIX Annual Group Meeting on AICRP Biological control during 27-28th June, 2014 at OUAT Bhubaneswar.

- Ramesh K. V. attended National Training on "Application of Nanotechnology in Agriculture" organised under World Bank funded NAIIP-ICAR Project during March 10-19, 2014 at CAZRI, Jodhpur.

Kisan Mela /Ghosi

Directorate of Seed Research organized Kisan Mela on 14th March, 2014. Kisan Mela was inaugurated by Dr. A.K. Sharma, Director, NBALM, Mau. Whereas, as special invitees Dr. Nepal Singh, Deputy Director, UPSSCA, Mau; Dr. P.S. Pathak, Ex-Director, IGFRI, Jhansi and Dr. R. K. Singh, Director, NEFORD graced the occasion.

Dr. S. Rajendra Prasad, Projector Director, DSR welcomed the special invitees, farmers and students and highlighted about major achievements of the institute. He emphasized that, technologies developed by the institute are performing very well in the eastern UP and explained about varied technologies popularized by the institute for quality seed production. In his address, chief guest Dr. A.K. Sharma, Director, NBALM highlighted the significant contribution made by DSR and highlighted about need for innovative technologies, seed and agriculturally important micro-organism in present era of agriculture and emphasized about Kisan Melas, as effective medium for spreading latest technologies among farmers. Dignitaries from ICAR Institutes, KVKS, State Govt. Departments, BHU, private firms (input and farm machinery), different banks viz., State Bank of India (SBI), Punjab National Bank (PNB), Bank of Baroda (BOB) and NGOs exhibited respective products/services in the Mela and actively participated in the deliberations. On this occasion, field visit was organized where farmers interacted with scientists and discussed diverse problems related to agriculture. Around 2000 farmers of various districts of Uttar Pradesh and students from different colleges were benefited through this Mela. Dr. Arvind Nath Singh, Sr. Scientist coordinated this event.



Kisan Mela organized by DSR on 14th March, 2014

Krishi Vasanti

DSR participated in Krishi Vasanti organized by Ministry of Agriculture and Confederation of Indian Industry (CII) during 09.02.2014 - 13.02.2014. Demonstration of seed testing methodologies was instituted and film on seed production technologies was also showed to the farmers during the programme.

Kisan Mela, BHU, Varanasi:

DSR participated in Kisan mela organized by Institute of Agricultural Sciences, BHU, Varanasi. DSR bagged Second prize for stall exhibition during the event.

Publications

Articles

- Hardev Ram, J.P. Singh, J.S. Bohra, Rajiv K. Singh and J.M. Sutaliya (2014). Effect of seedlings age and plant density on growth, yield, nutrient uptake and economics of rice (*Oryza sativa*) genotypes under system of rice intensification. *Indian Journal of Agronomy* 59 (2): 256-260.
- Govind Pal, Radhika C., R. K. Singh and Udaya Bhaskar K (2014). An economic analysis of wheat seed production in Eastern Uttar Pradesh. *Life Sciences International Research Journal* 1 (1): 139-142.
- Govind Pal (2014). A study on impact of the lac developmental programmes on lac economy in Chhattisgarh. *International Journal of Agricultural Sciences* 10 (1): 255-259.
- Govind Pal, Radhika C., R. K. Singh, Udaya Bhaskar K and S. Rajendra Prasad (2014). Economic efficiency in Groundnut seed production: A case study in Karnataka. In *Indian Economy - Development prospects and perspectives* Published by Bharati Publications, New Delhi: 87-91.
- T.N.Tiwari, Dipiti Kamal, Rajiv K. Singh and S. Rajendra Prasad (2014). Relative efficacy of seed priming with potassium nitrate and tap water in relation to germination, invigoration, growth, nitrate assimilation and yield of pigeonpea (*Calanus cajan* L.). *Ann. Agric. Res. New Series* Vol. 35(2):164-170.
- Singh, Arvind Nath, Rajan, Saumya, Raghvendra, D and Prasad, S. Rajendra. 2014. Repellent Activity of Ethanolic Extract of Argemone maxicana against three Major Storage Insect Pests. *Life Sciences International Research Journal*. 1(1)2347 to 8691.
- Manoj, Singh, Rajiv Kumar, Singh, A. N., Ram, Hardev and Prasad, S. Rajendra. 2014. Growth, yield attributes and quality of summer greengram (*Vigna radiata* L.) as influenced by nitrogen and irrigation levels. *Annals of Agril. Research*. 35 (1) 47-53.
- **Abstracts / Summary**
 - T.N. Tiwari, Dipiti Kamal, Dharmendra K. Gupta, Govind Pal and S. Rajendra Prasad (2014). Seed treatment with Ultra-Violet radiation in relation to Germination, Seedling Vigour, Growth and Nitrogen Assimilation activity in Pumpkin (*Cucurbita moschata*). *Proceeding of International Conference on Agriculture, Veterinary & Life Sciences*, 2014 (ICAVLS), Pp.22.
 - T.N. Tiwari, Prashant Yadav, Dipiti Kamal and S. Rajendra Prasad (2014). Influence of infrared radiation on germination efficiency, seedling growth, vigour index and biochemical constituents in summer mungbean. *Proceedings of international conference on emerging trends in science & technology: Impact on environment & society for inclusive growth* organized at AISECT University, Bhopal, 2014. Pp.28.
 - T. N. Tiwari, Dipiti Kamal, Nitin Yadav and S. Rajendra Prasad (2014). "Seed priming induced changes in seed quality parameters and enzyme activity in early and late sown varieties of wheat (*Triticum aestivum* L.). National Conference on Technological and Governance strategies for advancement of agricultural education, research and extension organised by UPPCAR at Lucknow.
 - Singh, Arvind Nath, Rajan, Saumya, Raghvendra, D and Prasad, S. Rajendra. 2014. Repellent Activity of Ethanolic Extract of Argemone maxicana against three Major Storage Insect Pests. In: *Proceeding of the International Conference on Agriculture, Veterinary & Life Sciences at Vijaywada, Andhra Pradesh, India from 24rd to 25th Jan., 2014*.
 - Singh Arvind Nath; Yadav, J. P and Prasad, S. Rajendra. 2014. Evaluation of Few Plants Extracted in Various Solvents for Insecticidal and Repellent Activity against Storage Insect Pests. In: *Souvenir of International Conference on Emerging Trends in Science & Technology: Impact on Environment & Society for Inclusive Growth* organized by AISECT University during 14-15 Feb 2014 at AISECT University, Bhopal. 113.
 - Singh, Rajeev K., Ram, Hardev, Pal, G., Tiwari, T.N., Singh, A.N and Prasad, S. Rajendra. 2014. Effect of Pre-sowing seed Treatment using Various Plant Growth Substances on wheat (*Triticum aestivum* L.) Seed Vigour and Tilling Capacity. In: *Proceeding of the International Conference on Agriculture, Veterinary & Life Sciences at Vijaywada, Andhra Pradesh, India from 24rd to 25th Jan., 2014*.
- **Popular Article**
 - Govind Pal, Rajiv K. Singh, Hardev Ram and Elayaraja, K. (2014). Vaisnavik Pripeskyaya Mei Bharatiya Beej Udyog. *IKSHU* 2 (2), IISR, Lucknow, 40-41.
 - Govind Pal, Rajiv K. Singh, Hardev Ram and A.N. Singh (2014). Gehu Ka Pramadhrit Beej Utpadan: Lagat Avam Labh. *Smarika (Kisan Mela 2014)*, DSR, Mau, 53-56.
- **Technical bulletins / Leaflets**
 - Tiwari T.N., Singh A.N., Kamble Umesh, and Prasad S.R. "Beej parivardhan, beej suraksha avam beej utpadan sambandhi takniki sanstutiyar". (*Kisan Mela 2014*) DSR, Mau.
 - Tiwari T.N., Sinha A.K., Singh A.N., Singh Rajiv K., Mandal A.K., Kumar Madan and Prasad Rajendra. "Beej utpadan karyakram". (*Kisan Mela 2014*) DSR, Mau.
 - Chandu Singh. "Uttar Pradesh ke liye sarsoon ki anukool praitiyan aur sankar kishme". (*Kisan Mela 2014*) DSR, Mau.

- Raghavendra, D., Singh, A. N., Bhaskar, U. K., Kamble, U.R., Mandal, A.K., Kumar, S., Chauhan, H.N and Prasad , S.R. "Dalhani phasalo ka mukhya akirit keet prabandhan". (Kisan Mela 2014) DSR, Mau.
- Mandal, A. K., Tiwari, T. N., Singh, R. K., Kumar, M., Hardev Ram, Raghavendra, D., Pandey N. and Prasad, S.R. "Sukhsmajeivi dwara beej ka jaivik upachar". (Kisan Mela 2014) DSR, Mau.
- Boraiah, K. M., Sinha, A. K., Vetriventham, M., Raghavendra, D., Chandu singh and Rajendra Prasad, S. "Uttar Pradesh ke live saraso ki anukool prajatiya aur sankar kisme" (Kisan Mela 2014) DSR, Mau.

Books and Compendiums

- **Rajendra Prasad S, Natarajan S, Udaya Bhaskar K, Boraiah K M, Agarwal D K, Singh AN, Dhandapani R, Umesh R Kamble, Raghavendra D. and Ramesh K V (2014). AICRP - NSP (Crops) Annual report: DSR, Mau. 602 pages.**
- **Rajendra Prasad S, Udaya Bhaskar K, Umesh R Kamble, Raghavendra D. and Bhojaraja Naik (2014). Organizing and Implementing an Effective National Seed Quality Control System: DSR, Mau. 169 pages.**

Lecture & Talks

- **Dhandapani R.,** Scientist delivered a lecture on "GM crop cultivation in India & their quality regulation" in regional workshop on "Seed Testing and Quality Regulation" on 21.02.14 at NSRTC, Varanasi.
- **Arvind N. Singh, Sr. scientist** delivered lecture on "Seed Storage" in training programme organised by KRBHCO at Ghazipur on 05.03.2014.
- **Rajiv K. Singh, Sr. scientist** delivered lecture on seed production technique in summer mungbean and urdbean at KRBHCO, Jangipur, Ghazipur on 5.03.2014.
- **Rajiv K. Singh, Sr. scientist** delivered lecture on seed production practices of Rabi Pulses & Oilseeds under farmers training programme at Jai Bharat Nursery, Azamgarh, on 17.01.2014.

Awards

- **Govind Pal, Sr. Scientist** received 'Bio-ved Young Scientist Associate Award 2014' in the field of Agricultural Economics by Bioved Research Institute of Agriculture and Technology, Allahabad.
- **Govind Pal, Sr. Scientist** received 'Award for Excellence in Research' by EET CRS, Noida, Uttar Pradesh under Science and Technology Award - 2014.

IPR Issues

Dr Arvind N. Singh, Senior Scientist organized one day poster exhibition programme on Intellectual Property Right under the project entitled "Intellectual Property

Management and transfer/commercialization of Agricultural Technology" on 28.02.2014. About 100 participants including scientists, RAs, SRFs and students visited the exhibition.

Quality Seed Production

Seed Production at DSR, Mau

About 100 quintals breeder seed of wheat varieties viz. HD 2733 and HI 1563; 87.45 and 6.65 quintals of quality seed of wheat and barley varieties viz. HD 2967, PBW 343, PBW 621, WH-711, K-307, PBW 373, HUW 234 and PBW 154 and Gitanjali; 13.20 quintals of quality seed of chickpea varieties (Pusa-362 & Subhra), fieldpea variety (KPMR 400), lentil varieties (HUL 57 & DPL-62) and 5.40 q of mustard varieties (Sweta & Pusa Tarak) and linseed (Azad Aisi-1) was produced at DSR farm during Rabi season 2013-14.



Seed Village Scheme

- Directorate of Seed Research (DSR), Mau has initiated a Project on Seed Village Scheme under "Assistance for development and strengthening of infrastructure facilities for production and distribution of quality seeds". Selected farmers (10550) of eastern UP hailing from Mau, Ballia, Ghazipur, Varanasi and Chandauli districts benefitted during Rabi season 2013-14. During Kharif season, seeds of paddy varieties NDR 97, NDR 359, Sarju-52, KN-3, HUR 105, Improved Pusa Basmati-1, Pusa Basmati-4, Pusa Basmati-6, Pusa Basmati-1509, Pusa Sugandh-5, Rajendra Sweta, MTU-7029, BPT-5204 and pigeon pea varieties Narendra Arhar-1, Narendra Arhar-2 and Bahar were distributed to the selected farmers and participatory seed production of selected varieties of paddy and pigeon pea was taken up.

Personnel

Staff	Scientific	Date of Joining
Dr. Dinesh Kumar Agarwal	Principal Scientist	01.02.2014
Sh. Sripathy K.V.	Scientist	21.04.2014

अखिल भारतीय समन्वित अनुसंधान परियोजना— राष्ट्रीय बीज परियोजना (फसल)

अखिल भारतीय समन्वित अनुसंधान परियोजना—राष्ट्रीय बीज परियोजना (फसल) की 29वीं वार्षिक बैठक का आयोजन दिनांक 24—26 अप्रैल, 2014 को शेर—ए—कश्मीर कृषि विज्ञान एवं प्रौद्योगिकी विश्वविद्यालय, श्रीनगर में किया गया। बैठक में डा. एस. राजेन्द्र प्रसाद, परियोजना निदेशक, बीज अनुसंधान निदेशालय ने अ.भा.स.अनु.परि.—रा.बी.प. (फसल) की उपलब्धियों पर प्रकाश डालते हुए देश में मुख्य फसलों के किस्मों के परिदृश्य को प्रस्तुत किया। विशिष्ट अतिथि के रूप में भारतीय कृषि अनुसंधान परिषद के सहायक महानिदेशक (बीज) डा. जे. एस. चौहान ने खाद्य व पोषण सुरक्षा चुनौतियाँ करने के लिए बीज सुरक्षा की आवश्यकता पर बल दिया। बैठक के मुख्य अतिथि भारतीय कृषि अनुसंधान परिषद के उप महानिदेशक (फसल विज्ञान) डा. एस. के. दत्ता ने जलवायु परिवर्तन की चुनौतियों का सामना करने के लिए प्रकाश असवेदनशील व जल्दी परिपक्व होने वाली किस्मों के महत्व पर प्रकाश डाला। बैठक की अध्यक्षता करते हुए शेर—ए—कश्मीर कृषि विज्ञान एवं प्रौद्योगिकी विश्वविद्यालय, श्रीनगर के कुलपति डा. तेज प्रताप ने बीज वैज्ञानिकों की प्रशंसा करते हुए कहा कि हमारे वैज्ञानिक जलवायु परिवर्तन की चुनौतियों का सामना करने में सक्षम है व आवश्यकता इस बात की है कि भविष्य की चुनौतियों पर चर्चा की जाय। बैठक में बीज अनुसंधान के क्षेत्र में योगदान के लिए सेवानिवृत्त वैज्ञानिकों को सम्मानित करने के साथ ही साथ परियोजना के सर्वश्रेष्ठ कर्तव्यों को पुरस्कृत किया गया।

प्रभावी राष्ट्रीय बीज गुणवत्ता नियंत्रण प्रणाली का आयोजन एवं कार्यान्वयन पर अन्तर्राष्ट्रीय प्रशिक्षण पाठ्यक्रम

भारतीय बीज अनुसंधान व गुणवत्ता नियंत्रण की विशेषज्ञता को आसियान देशों में प्रथम करने के लिए कृषि एवं वानिकी पर आसियान—भारत कार्यक्रम समूह ने मई 2013 में 'प्रभावी राष्ट्रीय बीज गुणवत्ता नियंत्रण प्रणाली का आयोजन एवं कार्यान्वयन पर अन्तर्राष्ट्रीय प्रशिक्षण पाठ्यक्रम की संकल्पना की। तत्पश्चात कृषि अनुसंधान एवं शिक्षा विभाग, कृषि मंत्रालय, भारत सरकार ने इस प्रशिक्षण कार्यक्रम को आयोजित करने की जिम्मेदारी बीज अनुसंधान निदेशालय, मऊ को दी। निदेशालय ने इस प्रशिक्षण कार्यक्रम को 27 जनवरी से 8 फरवरी, 2014 के दौरान आयोजित किया। आसियान देशों (ब्रुनेई, कम्बोडिया, इन्डोनेशिया, लाओ पी.डी.आर., मलेशिया, म्यांमार, फिलीपीन्स, थाइलैण्ड व वियतनाम) व भारत के मध्य व्यापक रूप में कृषि व विशिष्ट रूप में बीज क्षेत्र यथा—गुणवत्ता युक्त बीज उत्पादन, बीज प्रसंस्करण व गुणवत्ता वृद्धि, बीज परीक्षण व गुणवत्ता विश्वास आदि में विविध समनताएँ हैं। बीज क्षेत्र में प्रभावी राष्ट्रीय बीज गुणवत्ता नियंत्रण प्रणाली संस्थापना करने की जानकारी व कुशलता में वृद्धि करना इस प्रशिक्षण कार्यक्रम का मुख्य उद्देश्य था। प्रशिक्षण के दौरान बीज क्षेत्र के विविध पहलुओं यथा—बीज गुणवत्ता नियंत्रण का वैश्विक परिदृश्य, बीज कानून व विनियम का विस्तृत परिदृश्य, बीज प्रमाणीकरण प्रणाली की आवश्यकता व नये आयाम, गुणवत्तायुक्त बीज उत्पादन के मूल सिद्धान्त, पौध किस्म संरक्षण, संकर बीज उत्पादन, बीज गुणवत्ता वृद्धि, बीज स्वास्थ्य प्रबंधन, आनुवंशिक शुद्धता परीक्षण, बीज परीक्षण व अन्तर्राष्ट्रीय बीज परीक्षण संघ के अनुसार अंगीकृत प्रक्रिया आदि पर व्याख्यान दिया गया। प्रशिक्षण के दौरान राष्ट्रीय बीज निगम, राज्य बीज प्रमाणीकरण संस्था, बेंगलुरु, राष्ट्रीय बीज अनुसंधान और प्रशिक्षण केन्द्र, वाराणसी, बीज स्वास्थ्य प्रबंधन इकाई, भैसूर, बीज विज्ञान व प्रौद्योगिकी विभाग, भा.कृ.अनु.स., नाई दिल्ली, सिन्धोन्टा प्राइवेट लि., गुब्बा शीत भंडारण

लि., बीज अनुसंधान निदेशालय, मऊ आदि संगठनों के साथ अंतरराष्ट्रीय बीज परीक्षण संघ द्वारा अधिकृत बीज परीक्षण प्रयोगशालाओं का भ्रमण कराया गया। प्रशिक्षण के दौरान दिनांक 6 फरवरी, 2014 को डा. ए.एस. अयप्पन, माननीय सचिव, कृषि अनुसंधान व शिक्षा विभाग एवं महानिदेशक भा.कृ.अनु.प. ने नाई दिल्ली में प्रशिक्षण कार्यक्रम के प्रशिक्षणार्थियों के साथ चर्चा की। चर्चा के दौरान विश्व बीज बाजार में आसियान—भारत बीज क्षेत्र की हिस्सेदारी बढ़ाने के लिए बीज क्षेत्र से सम्बन्धित जानकारी व प्रौद्योगिकी के आसियान देशों के बीज आदान—प्रदान के लिए श्रृंखला विकसित करने पर बल दिया गया।

शोध उपलब्धियाँ

- धान के बीज ओज की क्यू.टी.एल. मैपिंग में यह पाया गया कि ओज लक्षणों में जीनोटाइप के कारण सार्थक भिन्नता थी। कुल 155 जर्मप्लाज्म में केवल दो जर्मप्लाज्म लाइन के ओज लक्षण निम्न से मध्यम भिन्नता के बीज पाये गये।
- अरहर के एक वर्ष पुराने बीजों को पानी, पोटेशियम नाइट्रेट (0.2:) व जिबैरेलिक अम्ल (100 पी.पी.एम.) से 12 घंटे तक प्राइमिंग करने से बीज गुणवत्ता मानको, पौध की ऊँचाई, उत्पादकता गुणों व बीज उत्पादन में सार्थक वृद्धि पायी गयी।
- गोहूँ में एन्थ्रैक्स के दौरान 100 पी.पी.एम. जिबैरेलिक अम्ल के छिड़काव से प्रति वाली बीजों की संख्या, जैविक उत्पादकता, 1000 बीज का वजन व बीज उत्पादन में सार्थक वृद्धि पायी गयी।
- एस.आर.आई के द्वारा संकर धान के बीज उत्पादन व गुणवत्ता में वृद्धि के लिए किए गये प्रयोग में पाया गया कि एस.आर.आई पद्धति से पी.आर.एच.—10 का उत्पादन करने पर पुष्प गुच्छ की लम्बाई, प्रति वाली बीजों की संख्या, एक पौध का उत्पादन व प्रति प्लाट बीज उत्पादन में परम्परागत प्रणाली से के.आर.एच.—4 का उत्पादन की तुलना में सार्थक वृद्धि पायी गयी।
- भण्डारण के दौरान मुख्य हानिकारक कीटों के प्रबंधन में कीटनाशक प्रतिरोध का रासायनिक वर्णन करने के लिए संकलित किए गये हानिकारक कीटों का प्रतिरोध स्तर जानने के लिए डेल्टामेथिन कीटनाशक से जैविक मूल्यांकन किया गया। राष्ट्रीय बीज निगम के विभिन्न भण्डार गृहों से संकलित किए गये कीटों में उच्च स्तर का प्रतिरोध पाया गया। राष्ट्रीय बीज निगम के सिकन्दराबाद भण्डार गृह में पाये गये *राइजोपेथा जैमिनिका* व *ट्राइबोलियम कास्टानियम* की संख्या में प्रतिरोध स्तर अधिक पाया गया जबकि निगम के बेंगलुरु भण्डार गृह में पाये गये *राइजोपेथा जैमिनिका* व *ट्राइबोलियम कास्टानियम* की संख्या में वर्ष 2013—14 के दौरान कर्नाटक के चित्रदुर्गा जिले से भूँगाफली बीज उत्पादकों से प्राथमिक आकड़े संकलित किये गये। आकड़ों के विश्लेषण से यह पाया गया कि भूँगाफली बीज उत्पादन में स्थिर व परिवर्तनीय लागत का अनुपात 23:7 था। मानव श्रम (27 प्रतिशत), पशु व मशीन श्रम (26 प्रतिशत), बीज लागत (11 प्रतिशत) व खाद एवं उर्वरक (8 प्रतिशत) भूँगाफली बीज उत्पादन लागत के मुख्य अवयव थे। भूँगाफली बीज उत्पादन की कुल लागत, सकल आय व शुद्ध आय क्रमशः रू. 33245/—, रू. 63200/— व रू. 29955/— प्रति हेक्टेयर थी। भूँगाफली बीज उत्पादन की लागत, अनाज उत्पादन की तुलना में 18 प्रतिशत अधिक थी जबकि बीज उत्पादन की शुद्ध आय अनाज उत्पादन की तुलना में 40 प्रतिशत अधिक पायी गयी।

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