NEWSLETTER
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बीज अनुसंधान निदेशालय

ICAR-DIRECTORATE OF SEED RESEARCH

NEWSLETTER

10th Annual Review Meeting of ICAR Seed Project – Seed Production in Agricultural Crops

10th Annual Review Meeting of ICAR Seed Project-"Seed Production in Agricultural Crops" was organized in liaison with CCARI, Goa. Aforesaid meeting was held under the chairmanship of Dr. J. S. Sandhu, Deputy Director General, ICAR, New Delhi. Whereas, chief guest of the meeting was Hon'ble Shri. Pratap Singh Raoji Rane, Former Chief Minister, Goa. Dignitaries such as Sh. V. K. Gaur, CMD, National Seed Corporation; Dr. R. R. Hanchinal, Chairperson, PPV & FRA; Dr. J. S. Chauhan, ADG (Seed), ICAR; Dr. N. P. Singh, Director, CCARI, Goa; Dr. Dhiraj Singh, Director, DRMR, Bharatpur; Dr. Varaparsad, K. S. Director, IIOR, Hyderabad; Dr. Ngachan, Director, ICAR RC NEH region and Dr. R. C. Agarwal, Registrar General, PPV& FRA graced the referred meet. This meeting was attended by Nodal officers of various State Agricultural universities, ICAR institutes and scientist working in the field of seed research.

10th Annual Review Meeting of ICAR Seed Project – Seed Production in Agricultural Crops held during 24-25 August, 2015 at CCARI, Goa

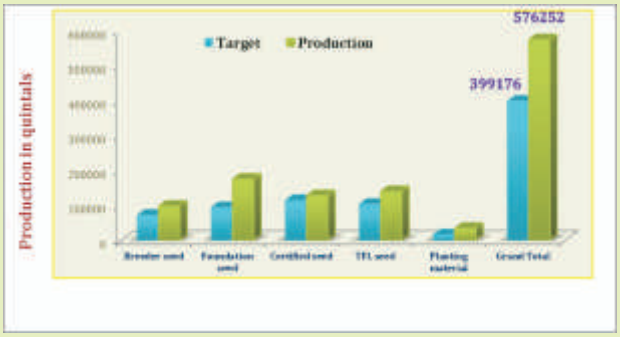
Dr. J. S. Chauhan, ADG (Seed) presented insights of the ICAR Seed Project. He highlighted about increment in agricultural production *vis a vis* seed sufficiency. He emphasized about the importance of SRR for productivity increment. He stressed upon that focus of XII Plan should be to increase overall seed production/VRR/SRR and seed quality control regime of the country. Dr. N. P. Singh, Director, CCARI, Goa welcomed dignitaries of meet and gave a brief introduction on diverse specializations of CCARI, Goa and prognosis aspects of the institute. Dr. S. Rajendra Prasad, Project Director, DSR, Mau at the outset welcomed dignitaries on and off the dais and briefed the gathering about progression of ICAR Seed Project and future thrust areas of ICAR Seed Project. He exhorted that as current year is International Year of Soils; our objective is to produce quality seed by taking care of soil health for a healthy life. He highlighted the salient achievements during past ten years of project implementation with respect to quality seed production, infrastructure creation, farm mechanization, and technology dissemination. He has thrown light on bar-coding, model deployment, alternative areas of hybrid seed production for various crops and emphasized about strengthening of Seed System in North east states. Former Chief Minister of Goa, Shri. Raoji Pratap Rane during his remarks underlined importance of improved "seed and breed" and its timely availability to resource poor farmers of the country in alleviation of poverty and increment in food grain production. He emphasized on research aspects of salt tolerant varieties for low lying lands in the state of Goa. He highlighted the importance of GMO's which can play a lead role in meeting the day to day growing food requirements and suitable for climate change conditions, thus highlighted importance of seed programme on GMO's.

In the Presidential address, Dr. J. S. Sandhu, DDG (Crops), ICAR, highlighted the importance of ICAR Seed Project, thus with the inception of mega seed project, the food production increased to 265 million tonnes (2014) from 218 million tonnes (2005), thereby emphasized the success of the project. Under this project, institutions were strengthened with infrastructure necessary for quality seed production. He highlighted importance of farmers' participatory seed production programme in increasing seed availability at farm level. He also made a mention about need for improving the existing varieties for enhanced stress tolerance. In response to GMO's, emphasized that ICAR is working on transgenics to meet out the challenges of climate change. He further emphasized to promote public sector hybrids through this project.

Network Projects

ICAR Seed Project-"Seed Production in Agricultural Crops"

During the year 2014-15, total production of quality seed including all classes was 576252 quintals against the target of 399175 quintals. Production comprises 97982 quintals of breeder seed, 175622 quintals of foundation seed, 128465 quintals of certified seeds, 140006 quintals of truthfully labelled seed and 34176 quintals of planting material of field crops. In addition, 2018 lakhs planting material and 8.48 lakh tissue culture plantlets were produced against the targets of 204.8 and 3.67 lakhs, respectively.



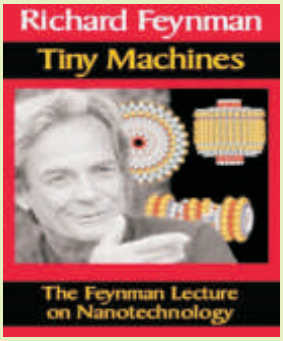
Progress under ICAR Seed Project – Seed Production in Agricultural Crops during 2014-15

During the financial year 2014-15, an amount of Rs. 1129.45 lakh was released to different centres. Apart from mere production, capacity building with focus on skill intensification, technology dissemination, model deployment (Farmers' Participatory Approach and Seed Village Programme), employment generation, commercial orientation addressing gender outlook i.e. women entrepreneurship, expansion of activities in untapped areas are significant contributions of this project.

Feature article

Nanotechnology and its Application in Seed Science Research

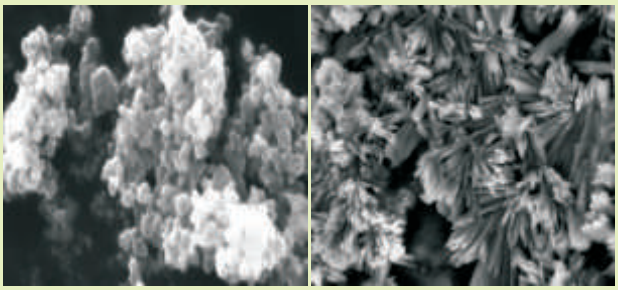
Sripathy K V, Manjunath Prasad C T, Rajendra Prasad S, Ramesh K V, Udaya Bhaskar K and Umesh R. Kamble



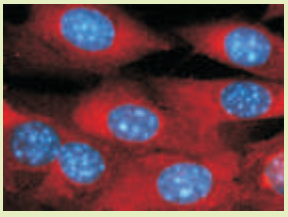
According to British Royal Academy of Engineering "Nanotechnology" is defined as the design, fabrication and utilization of materials, structures, devices and systems through control of matter on nanometer scale (1-100nm). Nanotechnology encompasses engineering, production and application of physical, chemical and biological systems at the scale of atoms or molecules (Bhushan, 2010) and infusing such concepts and principles in agricultural sciences to evolve processes and products that precisely deliver inputs in production systems that ensure food security and environmental safety is known as "Nano Agriculture". Richard Feynman, Nobel Laureate in Physics first envisioned the use of atoms and molecules for engineering the devices in 1959 and much later in the year 1974, Norio Taniguchi coined the term "Nanotechnology". Today nanoscale materials find use in areas covering all facets of human life and promising wide hope of breakthroughs in the area of agriculture. Nanoparticles (NP's) can be classified into three groups: (a) Natural nanoparticles, which includes particles originating from natural processes, e.g. clay particles (b) Incidental nanoparticles, includes particles generated as byproducts out of human activities like grinding and combustion (c) Engineered Nano Particles (ENP's) includes particles designed with specific properties and composition (Anandraj*et al*., 2011). Engineered nanoparticles include: fullerenes [molecule of pure carbon in varied shapes like

hollow, tube, sphere etc e.g. carbon nanotubes (CNT's)], metal nanoparticles (pure metal NP'slike Ag, Au, Fe and metal oxides like TiO_2, ZnO, CuO, SiO_2 etc), quantum dots (ENP's exhibiting size dependent optical or electronic properties) and organic polymers (polymers derived out of nanoscale particles like dendrimers, polystyrene etc). The ENP's are being widely used for various applications in development of industrial goods along with potential application in the field of agriculture and allied sectors. These nanoscale ENP's exhibit dissimilar electrical, optical, magnetic, chemical and mechanical properties when compared to what they usually exhibit at macroscale, the increase in surface/volume ratio of NP's which results in increased activity of electrons in the vicinity is attributed to the differential behavior of these particles (Chen and Yada, 2011).Seed is a vehicle for delivery of improved technologies and is a mirror for portrayal of inherent genetic potential of a variety/hybrid. Seed offers to integrate production, protection and quality enhancement technologies in a single entity in a cost effective way. Scientific community involved in exploring the way forward for potential application of nanotechnology in the field of seed science research to tackle some of the most beleaguered areas. Nanotechnology in the form of ENP's can find its practicality in vital areas of seed science research as discussed below:

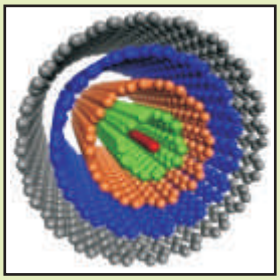
Nanoparticulate Seed Invigoration: metal nanoparticles can be grouped into two classes based on its chemical nature like pure metal NP's, which includes elemental silver (Ag), gold (Au), Iron (Fe) etc and metal oxide NP's, which include oxides (ZnO, TiO_2, SiO_2), nitrides(BN and TiN)and carbides (Fe_3C, BC) of these elemental forms. These nanoparticles can be effectively used for invigoration of seeds, which can be amalgamated to seed through process of dry dressing of seeds, priming (nanopriming) or by novel technique known as electrospray. Prasad *et al.* (2012) reported that ZnO nanoparticles at concentration of 1000 ppm improved the germination, root growth, shoot growth dry weight and pod yield in groundnut. Electrospray is novel technique in which NP's suspension is spurted on



seed surface in the form of aerosols through syringe system mounted on mechanical device, Wu *et al.* (2014) demonstrated electrospray of TiO_2, CuO and Au NP's significantly enhanced germination and related physiological characteristics in aged lettuce seeds and seeds placed in unfavorable conditions. Mechanism of nanoparticles in seed hypothesised like they act as antioxidants through which they quench reactive oxygen



species like super oxide anion radical (O_2^-),hydrogen peroxides (H_2O_2) and consequently generate O_2 like catalase (Kajita*et al*.,2012). Dry dressing and priming of seeds with NP's like Ag found to have profound influence in controlling surface microflora and insect pests, Min (2009) reported that Ag NPs could be used as an alternative to pesticides for the control of sclerotium forming phytopathogenic fungi. Metal NP's at different low concentrations proved to increase the agronomic performance of plants especially in stress conditions. Jaberzadeh *et al*. (2013) documented 0.02% of TiO_2 NP's spray at critical growth stages like crown root initiation, flowering in wheat during water deficit conditions increased essential agronomic traits including seed yield. Metal NP's also shown the potential to overcome dormancy in the weed seeds, metal nano formulations was found to relieve dormancy in the bulbs of *cyperus rotundus* and other weed species which needs further investigation. Carbon Nano Tubes (CNT's) are allotropes of carbon belonging to the member of fullerenes family, with cylindrical hollow structure. There are two types of CNT's: Single Walled Nanotubes (SWNTs) are nanotubes designed by one atom thick sheets of carbon and Multi Walled Nanotubes (MWNTs) made by multiple sheets of carbon overlying on one another. Khodakovskaya *et al*. (2009) reported that carbon nano tube (CNT) can penetrate thick seed coat forming micropores and increases water uptake which is responsible for the significantly faster germination and higher biomass production in tomato. These CNT's possess high mechanical strength, so when coated to seed it pierces seed coat forming `new pores for better permeation of moisture and which could be effectively used for seed management in rainfed agriculture system. The use of Quantum Dots (QDs) technique, developed by Su and Li.(2004), as a fluorescence marker coupled with immuno-magnetic separation proved useful to separate unviable and infected seeds.



Nano Smart Delivery System in Seeds (Smart Seeds): present commercial technologies allows coating of seeds with fertilizers, pesticides, herbicides, growth hormones etc. along with some inert material as a carrier with limitations of runoff, leaching, narrow stability against degradation and uncontrolled release. In smart delivery system many nanoscale carriers like zeolite, magnesium sulphate, calcium carbonate and Mesoporous silica core shells including encapsulation and entrapment, polymers and dendrimers, surface ionic and weak bond attachments and other mechanisms may be used to store, protect, deliver, and release by control of intended payloads in crop production processes (Agrawal and Rathore, 2014). Nano lignocellulosic materials like organic polymers: dendrimers, polystyrene etc. in pure forms or in the biocomposite forms can be used for encapsulating the nanocarriers in controlled release formulation delivery systems. The seeds enabled with such smart delivery mechanism are often known as “smart seeds”. One of the advantages of nanoscale controlled release formulation delivery vehicles in seed applications is improved stability of payloads against degradation in environment, thereby increasing its

effectiveness while reducing the amount applied. This reduction helps to address agricultural chemicals run-off and environmental consequence (Johnston, 2010).

Nanotechnology in Seed Packaging and Handling: Lignocellulosic nanomaterials has opened up new area for novel and value-added nano biomaterials and products for example, cellulosic nano crystals can be used as light weight reinforcement in polymeric matrix as nanocomposite (Laborie, 2009; Mathew *et al*., 2009) such application can be used for development of light weight, highly durable and cost effective packaging material for seeds. In future bio and gas sensors could gain importance, when these sensors integrated with packaging materials to monitor the seed quality in such micro environments could indicate any abnormal conditions through change in color of the sensors.

Conclusion: Agriculture growth rate is experiencing a plateau and there is immediate need to boost the productivity for self-sustained food production for which nanotechnology can play catalytic role. In the light of statement made by agricultural laureate M .S. Swaminathan ("Second green revolution through quality seed") nanotechnology have the potential to revolutionize the 21st century agricultural technology and ways to answer the most long-suffering hurdles in the areas of seed science research. "The next big thing is really small" but with the capacity to move mountains in the arena of agricultural sciences.

Research Highlights

Seed Physiology

Seed quality enhancement of Rice with botanicals

Leaf extracts of *Oscimum tenuiflorum, Azadiracta Indica, Panica granatum, Dalbergia sisso, Carissa carandas, Ficus sycomorus* and *Syzygium cumini* were found beneficial for seed enhancement of rice seeds variety MTU-1064 where as the leaf extracts of *Datura wrightii, Cannabis sativa, Morus nigra* and *Solanum nigrum* were found deleterious when compared with control.

Effect of pulse electromagnetic field on seed quality enhancement of Tomato

Tomato seeds treated with pulse electromagnetic field@50 Hz showed improvement in germination, speed of germination, shoot and root length, seedling dry weight, vigour index I&II and chlorophyll content over control.

Seed Molecular Biology

QTL mapping for seed vigor in rice

In the present investigation, segregation pattern of F_2 population shown was 3:1 ratio (based on prominent basal leaf: sheath colour), followed the law of Mendelian inheritance.

F_2 segregating population

Germination test of 155 rice germplasm lines revealed that variance due to genotype was significant for vigour traits. In the same way, TZ test carried to test viability of identified low vigour lines (GP-100 and GP-74) and high vigour cultivars (IR 36, IR 64 and BPT-5204). Observations on quantitative traits of 155 germplasm lines of rice revealed that the variance due to genotype was significant for all the quantitative traits studied indicating the presence of larger variations in the germplasm. Test weight ranged from 9.9 to 32.8 g with the mean of 23.2 g. Correlation of test weight with plant height, panicle length and flag leaf length was positive and significant, whereas negatively correlated with number of panicles and number of tillers.

Seed Production Research

Improving hybridization efficiency in castor through exogenous application of Plant Growth Regulators

In a bid to meet delineated objectives, two castor hybrids were taken at two different locations i.e. in conventional area of cultivation (castor hybrid GCH 7 at SK Nagar, Gujarat) and unconventional area of cultivation (castor hybrid GCH 6 at ICAR-DSR, Mau). Seed quality of the parental lines was evaluated before sowing and treatments viz. GA3 (200 & 300 ppm), Brasinosteriod (10 µM), Mepaquat chloride (100 & 200 ppm) Nutrigold (0.5%) and control (distilled water) were given for evaluation of hybridization efficiency improvement. Observations such as number of spikes per plant, spike length, internode length, plant height, number of nodes up to base of primary spike and number of ISF /Plant were recorded. Observations on pollen viability of ISF and revertants inferred poor viability status. Data regarding seed yield and effect of exogenous application shall be taken in due course of crop growth.

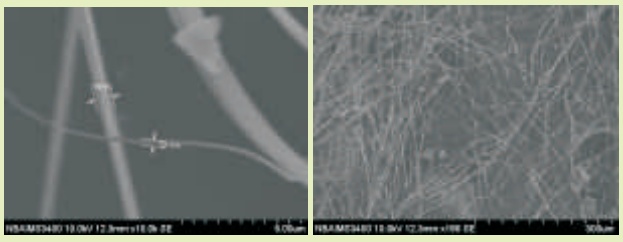
Hybrid seed production in GCH-6 (male & female lines)

Offtypes in pisitillate line

Seed Quality Enhancement

Hydropolymers: As Regulatory Switch for Germination and Smart Delivery System in Hybrid Seed Production of Maize

Nano fibre synthesis with the use of biodegradable polymer system was carried out at CIRCOT, Mumbai.



Standardization of cellulose acetate polymer system for electro spinning of nano fibres was done. Scanning Electron Microscopy facility of ICAR - NBIAM, Mau was utilized for characterization of synthesized nano fibres.

Meetings / Trainings

Organized

International Certificate Course "Requisites of Seed Production, Processing and Quality Assurance"

In a bid to instill expertise of seed technology and quality assurance among seed personnel of Nigeria, certificate course titled *"Requisites of Seed Production, Processing and Quality Assurance"* is being devised by ICAR-DSR, under the aegis of ICAR. Referred training programme is sponsored by West Africa Agricultural Productivity Programme (WAAPP) with an aim to augment agricultural productivity in Nigeria. Aforesaid training programme is devised with an objective to enhance participants' knowledge and skills in quality seed production and seed quality assurance. Eight participants from Nigeria attended aforesaid training programme from 20th July, 2015 to 20th Jan, 2016. Dr. S. Rajendra Prasad, Project Director, ICAR-DSR was OIC of referred training programme.

First phase of WAAPP Training Programme at ICAR-DSR regional station, Bengaluru

- Dr. A. N. Singh organized five days training programme entitled "Pre and Post Harvest Management Techniques" in collaboration of NSC at ICAR – DSR, Mau.
- Dr. A. N. Singh organized two trainings programmes on "Seed Production Technology & Scientific Cultivation of Paddy" at Sansad Adarsh Gram *viz.* Dumranw & Chakra on 04.08.15 & 05.08.15, respectively.
- Dr. Govind Pal organized one day training programme on participatory seed production techniques of paddy and pigeonpea at DSR, Mau on 28.09.2015.

Attended

- Dr. Chandu Singh and Dr. Madan Kumar attended four days (3rd - 6th Oct, 2015) international training entitled "Quality Rice Seed Production" organized at Institute of Agricultural Sciences, BHU, Varanasi, UP.
- Dr. Govind Pal participated in workshop of nodal officers of ICAR research data repository for knowledge management initiative during August 04-05, 2015 at NASC Complex, New Delhi.
- Dr. Govind Pal participated in national seminar 2015 on 'Strategy to drive skill based agriculture development forward for sustainability and rural employability' during November 5-7, 2015 at BHU, Varanasi.
- Dr. Govind Pal participated in the interaction meeting of FAOs of ICAR Institutes with AS & FA, DARE/ ICAR on 20th Nov, 2015 at ICAR-IIWM, Bhubaneswar.

Publications

Research Article

- Govind Pal, Radhika, C., Udaya bhaskar, K., Singh, R. K., Ram, H. and Rajendra Prasad, S. (2015). Comparative economics of seed production vis-à-vis grain production of pigeonpea in Karnataka. *Legume Research* (online published).
- Hardev Ram, Singh, R. K., Govind Pal and Rajendra Prasad, S. (2015). Seed yield and economic profitability affected by tillage and genotypes in wheat (*Triticum aestivum* L.) of eastern Indo-Gangetic plains of India. *Journal of Agro ecology and Natural resource management.* **2**(4): 296-298.
- Tiwari, A. K., Kumar, R., Kumar, G., Kadam, G. B. and Saha, T. N. (2015).Comparing digital image analysis and visual rating of gamma ray induced Bent grass (*Agrostis stolonifera*) mutants, *Indian Journal of Agricultural Sciences* **85** (1):93-106.
- Tiwari, A. K., Kumar, R., Kumar, G., Kadam, G. B., Saha, T. N. and Girish, K. S. (2015). Comparing digital image analysis and visual rating of gamma ray induced Kentucky bluegrass *(Poapratensis)* mutants. *Indian Journal of Agricultural Sciences,* **85** (8):1046-1049.
- Tiwari, A. K., Tiwari, T. N. and Prasad, S. R. (2016). Seed dormancy in ornamental plants: A review. *Indian Journal of Agricultural Sciences* (Accepted).
- Tiwari, T.N., Dipti Kamal, Singh, R. K. and Rajendra Prasad, S. (2015). Plant growth regulators priming enhances seed quality and enzyme activity in mung bean (*Vigna radiata* L.). *Annals of Agriculture Research*, *New Series,* **36**(4):01-8.
- Tiwari, T.N., Dipti Kamal, Sinha, A. K.and Rajiv K. Singh (2015). Relative performance of seed priming with tap water and in organic salt on germination, invigoration, growth and yield of wheat(*Triticum aestivum* L).*Indian Journal of Agricultural Sciences*(Accepted).
- Tiwari, T. N., Srivastava,T. K., Mandal, A. B. and Dipti Kamal (2015). Effect of seed coating with hoagland solution on seed quality and field performance in rice (*Oryza sativa* L.). *Indian Journal of Agricultural Sciences,***85**(9):1153-57.
- Vinutha, K. S., Rajendra Prasad, S., Jeevan Kumar, S. P., Rame Gowda, Ravi Shankar, P. Optimization of Seed production techniques in a single cross maize hybrid. *Seed Research* **42**: 210-216.
- Vinutha, K. S., Rajendra Prasad, S., Jeevan Kumar, S. P., Rame Gowda, Ravi Shankar, P. Influence of

staggered sowing, Planting ratio, and subtending cob leaf clipping on seed quality parameters of maize. *Seed Research* **42**(1): 91-97.

Abstract

- Govind Pal, Radhika, C., Singh, R. K., Udaya bhaskar, K., Ram, H. and Rajendra Prasad, S. (2015). A study on quality seed production in Pigeonpea for sustainability and rural employability: A case study in Karnataka, In Souvenir cum Abstract book of ISEE Golden Jubilee National Seminar, 2015 during November 5-7, 2015 at BHU, Varanasi (Page No. 130-131).

Database

- Tiwari, A. K. and Singh, K. P. (2015). AICRP on Floriculture database on Rose (2010-11 to 2013-14). Published by ICAR-DFR Pune.
- Singh, K. P., Tiwari, A. K. and Saha, T. N. (2015). AICRP on Floriculture database on Tuberose (2010-11 to 2013-14). Published by ICAR-DFR Pune.

Training Manual

- Tiwari, A. K., Singh, K. P., Shephalika, A. and Singh, P. (2015).Practical Manual on Lawn Management. Published by ICAR-DFR Pune.
- Udaya bhaskar K., Sripathy K. V., Ramesh K.V., Umesh R. Kamble, Chandu Singh, Bhojaraja Naik and Radhika C. Training Manual on "Requisites of Seed Production, Processing, Testing and Quality Assurance" (Vol. I and II). Published by ICAR-DSR, Mau.

Popular article

- Tiwari, A. K. and Prasad, S. R. (2015). Seed Production of flowering annuals: A profitable diversification of Agriculture. *Floriculture Today*, (August issue): 48-51.

Award

- Dr. Govind Pal received 'Best Paper Presentation Award' in the National Seminar 2015 on 'Strategy to drive skill based agriculture development forward for sustainability and rural employability' during November 5-7, 2015 at BHU, Varanasi.
- Dr. Govind Pal received 'Young Scientist Award - 2015' by Indian Society of Extension Education, New Delhi

Other Activities

Distribution of soil health cards during the occasion of World Soil Day

ICAR - DSR organized "Soil Health Card" distribution programme during the occasion of "World Soil Day" on 5th December, 2015. 300 Soil Health Cards were distributed among farmers in selected villages, where *Mera Gaon Mera Gaurav* programme is operating, in collaboration with U.P. State Agriculture Department. The programme was presided over by Dr. S. Rajendra Prasad, Project Director, ICAR-DSR and Deputy Director of Agriculture, Mau Dr. Ashutosh Mishra was present as the chief guest of the function. A number of lectures on various aspects of maintaining soil health were delivered by the senior faculty of the institute. An interactive session to solve farmers' problem along with poster exhibition on the theme of soil health was also organized. Dr. Arvind Nath Singh, Sr. Scientist coordinated the programme.

Dignitaries distributing Soil Health Cards

Kisan Gosthi organized on the occasion of World Soil Day at ICAR-DSR, Mau

Personnel		
Staff	**Administrative**	**Date of Joining**
Sh. Ashok Kumar Tripathi	LDC	01.12.2015
Staff	**Scientific**	**Date of Relieving**
Dr. S. Natarajan	Principal Scientist	23.12.2015

भारतीय कृषि अनुसंधान परिषद की बीज परियोजना– 'कृषि फसलों का बीज उत्पादन' की 10वीं वार्षिक समीक्षा बैठक

भारतीय कृषि अनुसंधान परिषद की बीज परियोजना की 10वीं वार्षिक समीक्षा बैठक का आयोजन भा.कृ.अनु.प.–केन्द्रीय तटीय कृषि अनुसंधान संस्थान, गोवा, में किया गया। बैठक की अध्यक्षता डा. जे. एस. संधू, उप महानिदेशक (फसल विज्ञान), भारतीय कृषि अनुसंधान परिषद, नई दिल्ली ने की। समारोह के मुख्य अतिथि गोवा के पूर्व मुख्यमंत्री माननीय श्री प्रताप सिंह रावजी राणे थे। इस बैठक में गणमान्य व्यक्तियों जिसमें मुख्यतः डा. जे. एस. चौहान, सहायक महानिदेशक (बीज), भा.कृ.अनु.प., नई दिल्ली; वी. के. गौर, मुख्य प्रबन्धक निदेशक, राष्ट्रीय बीज निगम; डा. एन. पी. सिंह, निदेशक, केन्द्रीय तटीय कृषि अनुसंधान संस्थान, गोवा; डा. धीरज सिंह, निदेशक, तोरिया और सरसों अनुसंधान निदेशालय, भरतपुर; डा. वाराप्रसाद, के. एस., निदेशक, भारतीय तिलहन अनुसंधान संस्थान, हैदराबाद; डा. नागाचन, निदेशक, पूर्वोत्तर पहाड़ी क्षेत्रों के लिए भा.कृ.अनु.प. अनुसंधान परिसर, बारापानी; डा. आर. आर. हंचिनाल, अध्यक्ष एवं आर. सी. अग्रवाल, महापंजीकार, पौधा किस्म और कृषक अधिकार संरक्षण प्राधिकरण, नई दिल्ली उपस्थित थे। इस बैठक में विभिन्न राज्य कृषि विश्वविद्यालयों एवं भारतीय कृषि अनुसंधान परिषद के संस्थानों के नोडल अधिकारियों एवं वैज्ञानिकों ने भाग लिया।

डा. जे. एस. चौहान, सहायक महानिदेशक (बीज) ने बीज परियोजना पर विस्तार से चर्चा की व बीज पर्याप्तता से कृषि उत्पादन में वृद्धि को रेखाकिंत किया। इन्होने कहा की 12वीं पंचवर्षीय योजना में हमारा मुख्य ध्येय देश में बीज उत्पादन, बीज प्रतिस्थापन दर, किस्म प्रतिस्थापन दर में वृद्धि के साथ बीज का गुणवत्ता नियंत्रण होना चाहिए। डा. एन. पी. सिंह, निदेशक, केन्द्रीय तटीय अनुसंधान संस्थान, गोवा ने सभी का स्वागत करने के साथ संस्थान के कार्यों की विस्तार से चर्चा की। इस बैठक में डा. एस. राजेन्द्र प्रसाद, परियोजना निदेशक, बीज अनुसंधान निदेशालय, कुशमौर, मऊ ने योजना के अंतर्गत हुई प्रगति पर प्रकाश डाला व परियोजना से सम्बन्धित भविष्य के महत्वपूर्ण विषयों को रेखांकित किया। उन्होने आग्रह किया कि चूकि वर्तमान वर्ष 'अन्तर्राष्ट्रीय मृदा वर्ष' के रूप में मनाया जा रहा है अतः हमारा उद्देश्य मृदा के स्वास्थ्य को बनाये रखते हुए गुणवत्तायुक्त बीज उत्पादन होना चाहिए। उन्होने परियोजना के अंतर्गत पिछले 10 वर्षों में गुणवत्तायुक्त बीज उत्पादन, आधारभूत संरचना, प्रक्षेत्र यांत्रिकरण व तकनीकी हस्तान्तरण के क्षेत्र में प्रमुख उपलब्धियों को रेखाकिंत किया। गोवा के पूर्व मुख्यमंत्री माननीय श्री प्रताप सिंह रावजी राणे ने गुणवत्तायुक्त बीज एवं नस्ल के महत्व पर प्रकाश डाला व कहा कि खाद्यान्न उत्पादन बढ़ाने एवं गरीबी मिटाने के लिए सही समय पर गुणवत्तायुक्त बीज को किसानों को उपलब्ध कराना होगा। गोवा के निचले क्षेत्रों के लिए लवण सहिष्णु किस्में विकसित करने के लिए अनुसंधान की आवश्यकता पर भी बल दिया। जलवायु परिवर्तन व बढ़ती खाद्यान्न मांग के परिप्रेक्ष्य में बीज परियोजना के अंतर्गत जी. एम. फसलों के महत्व पर प्रकाश डाला। डा. जे. एस. संधू, उप महानिदेशक (फसल विज्ञान), भा.कृ.अनु.प. ने इस

परियोजना के महत्व पर प्रकाश डालते हुए कहा कि इस परियोजना के सहयोग से हमारा खाद्यान्न उत्पादन वर्ष 2014 में 265 मिलियन टन पहुँच गया। इस परियोजना के सहयोग से संस्थानों के अंतर्गत गुणवत्तायुक्त बीज उत्पादन के लिए आधारभूत संरचना विकसित की गयी। इन्होने प्रक्षेत्र स्तर पर गुणवत्तायुक्त बीज की उपलब्धता बढ़ाने में कृषक सहभागी बीज उत्पादन कार्यक्रम के महत्व पर भी प्रकाश डाला एवं इस परियोजना के माध्यम से सरकारी क्षेत्र के संकर बीजों को प्रोत्साहित करने पर बल दिया।

इस परियोजना के अंतर्गत वर्ष 2014–15 के दौरान कुल 399175 कुन्टल गुणवत्तायुक्त बीज के मांग के सापेक्ष कुल 576252 कुन्टल गुणवत्तायुक्त बीज (सभी श्रेणियों) का उत्पादन किया गया।

शोध उपलब्धियाँ

- विद्युत चुम्बकीय क्षेत्र से उपचारित टमाटर के बीज में अंकुरण, अंकुरण की गति, जड़ एवं तना की लम्बाई, पौध का शुष्क वजन, ओज सुचकांक और पर्णहरित की मात्रा नियंत्रित की तुलना में अधिक पायी गयी।
- धान के 155 जर्मप्लाज्म के अंकुरण जाँच में पाया गया कि ओज लक्षणों में जीनोटाइप के कारण भिन्नता सार्थक थी। कम ओज लाईन (जीपी–100 और जीपी–74) एवं अधिक ओज किस्मों (आईआर–36, आईआर–64 और बीपीटी–5204) की जीवनशक्ति जाँचने के लिए टीजेड परीक्षण किया गया। वजन जाँच का सहःसम्बन्ध पौध की ऊँचाई, पुष्पगुच्छ व पत्ती की लम्बाई से धनात्मक व सार्थक था एवं पुष्पगुच्छ व टिलर की संख्या से ऋणात्मक था।

पादप वृद्धि नियंत्रक से अरंडी में संकर बीज उत्पादन की दक्षता बढ़ाने वाले प्रयोग के अर्न्तगत परम्परागत क्षेत्र (एस. के. नगर, गुजरात) में अरंडी संकर जीसीएच–7 को व गैर–परम्परागत क्षेत्र (मऊ, उत्तर प्रदेश) में अरंडी संकर जीसीएच–6 को लगाया गया। इस प्रयोग के अंतर्गत विभिन्न मापदण्डों के आंकड़ें लिए गये।

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