SEED SPICES
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G. K. Tripathi

XII IMC meeting

XII meeting of Institute Management Committee (IMC) was held on March 22, 2014 at the centre, under the Chairmanship of Dr. Balraj Singh, Director, NRC Seed Spices. The meeting was attended by honorable members Dr. Govind Singh, Director (Res.) SKRAU, Bikaner, Dr. A.K. Srivastava, Principal Scientist, NRC, Citrus, Nagpur, Dr. P. Chowdappa, Pr. Scientist. IIHR, Bangalore and Sh. Sunil Agarwal, AF&AO, Sh. Ravinder Singh, A.O., NRCSS was member Secretary of this meeting. Dr. Gopal Lal, Pr. Scientist and Dr. R. K. Kakani, Pr. Scientist also attended the meeting as special invitees. Dr. R. K. Kakani presented Research Progress Report of the centre made during 2013-14 which was appreciated by the committee. The IMC approved the financial and management agenda items (procurement of equipments, vehicle etc.) presented by the member secretary. The meeting ended with the vote of thanks to the Chairman & members given by Mr. Ravinder Singh.



Important Events

''जल उपलब्धता, उपयोग एवं संरक्षण में चुनौतियॉ''

विश्व जल दिवस–22 मार्च, 2014 के उपलक्ष्य में राष्ट्रीय बीजीय मसाला अनुसंधान केन्द्र, तबीजी, अमजे में राजभाषा हिन्दी में एक व्याख्यान एवं संगोष्ठी का आयोजन किया गया। इस अवसर पर वर्तमान परिस्थितियों तथा भविष्य को दृष्टिगत रखते हुये एक बहुत ही सामयिक विषय ''जल उपलब्धता, उपयोग एवं संरक्षण में चुनौतियॉ'' पर डॉ बलराज सिंह, निदेशक, राष्ट्रीय बीजीय मसाला अनुसंधान केन्द्र, तबीजी, अजमेर ने अपने राष्ट्रीय एवं अन्तर्राष्ट्रीय अनुभवों को ''जल ही जीवन है'' के नारे के साथ वैज्ञानिकों एवं भावी युवा पीढ़ी के शिक्षित युवाओं के साथ साझा किया। आपने व्याख्यान के माध्यम से यह रेखाकिंत किया कि, आखिर हमारी पृथ्वी पर तीन–चौथाई जल होने के बावजूद भी पीने योग्य जल एक सीमित मात्रा में ही है, जिसका मानव जाति द्वारा अंधाधुंध दोहन किया जा रहा है। जलाशयों, नदियों, झीलों एवं समुद्र तक को आधुनिक विकास की दौड़ में हम प्रदूषित करते जा रहे हैं। शहरीकरण, औद्योगिकीकरण एवं जलवायु परिवर्तन के कारण निकट भविष्य में जल की उपलब्धता एवं संतुलित उपयोग एक बहुत विकट समस्या हो सकती है।

आज इस जल दिवस के अवसर पर संस्थान के सभी वैज्ञानिकों, तकनीकी अधिकारियों एवं कर्मचारियों ने जल संरक्षण के महत्व को विस्तृत रूप में पहचाना और सभी ने मिल–जुल कर इस कार्य को आगे बढ़ाने पर जोर दिया। पानी की कमी के चलते कई जगहों पर आज भी जिन्दगी दांव पर लगी रहती है और कई इलाकों में महिलायें पैदल चलकर दूर–दूर से पीने का पानी लाती है। इनकी जिंदगी का अधिकांश समय पानी की जद्दोजहद में बीत जाता है। कृषि के क्षेत्र में भी कई स्थानों पर पानी का समुचित प्रबंधन नहीं किया जा रहा है, जबकि कृषि कार्य पूरी तरह से जल पर आधारित है।

डॉ बलराज सिंह ने सूक्ष्म सिंचाई, टपक सिंचाई एवं संरक्षित खेती के माध्यम से कृषि में सीमित जल के आधुनिक प्रबंधन पर विशेष जोर देने तथा प्रशासन एवं ग्राम स्तर पर राष्ट्रीय जल संरक्षण नीति के तहत वैज्ञानिक आधार पर कृषि उत्पादन का जोरदार समर्थन किया। आपने कृषकों एवं वैज्ञानिकों का आवहन किया कि वो प्रति बूंद कृषि उत्पादकता को ही अपना सही मापदण्ड समझकर अनुसंधान कार्यो को प्राथमिकता दें।





राजभाषा हिन्दी में एक व्याख्यान एवं संगोष्ठी

Important Events

जिस तरह से पंजाब और हरियाणा में ग्रीष्मकालीन धान की खेती को प्रतिबंधित किया गया है, उसी तरह अन्य राज्यों में भी जल के दुरूपयोग को रोकने के लिये आवश्यक सरकारी एवं गैरसरकारी कदम उठाने की आवश्यकता है। इस परिचर्चा के दौरान वैज्ञानिकों के द्वारा बनायी गयी नई तकनीक जैसे प्लास्टिक मल्चिंग, हाइड्रोजैल एवं लैजर लैवलर द्वारा भूमि का समतलीकरण तथा संरक्षित कृषि की विधियों द्वारा कृषि में जल उत्पादकता बढ़ाने की आवश्यकता है। आधुनिक जीवनशैली में जल की बर्बादी को रोकने के लिये युद्धस्तर पर जागरूकता एवं जल संरक्षण नीतियां बनाने की जरूरत पर सभी लोगों ने सहमति जताई। इसी परिपेक्ष्य में यह भी ध्यान देने योग्य है कि भारत में प्रति व्यक्ति जल उपभोग का सर्वाधिक 30 प्रतिशत जल शौचालय फल्शिंग में ही बर्बाद हो जाता है, जबकि प्रति व्यक्ति जल उपभोग का केवल 1–2 प्रतिशत जल ही पीने एवं भोजन बनाने में इस्तेमाल किया जाता है। अगर सही ढंग से पानी का संरक्षण किया जाए और जितना हो सके पानी को बर्बाद होने से रोका जाए तो जल की समस्या का समाधान बेहद आसान हो जायेगा। लेकिन इसके लिये जरूरत है कि आधुनिक प्रौद्योगिकी एवं जन–जागरण के समायोजन के साथ परंपरागत जल संरक्षण की पद्धतियों को भी आगे बढ़ाया जाए। आवश्यकता है जल संरक्षण को अपने जीवन–धर्म का हिस्सा बनाने की, क्योंकि आपका एक छोटा–सा प्रयास कई जीवों की प्यास बुझा सकता है। कार्यक्रम संचालन एवं धन्यवाद ज्ञापन डॉ. बृजेश कुमार मिश्र, वरिष्ठ वैज्ञानिक एवं राजभाषा प्रभारी ने किया तथा सभी उपस्थित अधिकारियों एवं कर्मचारियों ने व्यक्तिगत स्तर पर जल बचाने का संकल्प लिया।

XII-RAC Meeting Conducted



XII RAC meeting was held on April 1-2, 2014 at NRCSS, Ajmer. Dr. Balraj Singh, Director, NRCSS formally welcomed the Chairman Dr. V. A. Parthasarathy and other distinguished members of RAC. During the meeting research progress of the centre was presented and discussed. Various recommendations made by XI RAC, were also reviewed. The Chairman appreciated the actions taken as per recommendations. Field visit was also made by the chairman and members of RAC with all the scientists and after that plantations were made by Chairman and distinguished members. At the end of the meeting various recommendations were given to strengthen the ongoing activities.







Important Events

PROTECTION OF PLANT VARIETIES AND FARMERS' RIGHTS AUTHORITY

Dr. R.S. Meena, Scientist(SS) attended 8th Review Meeting of DUS test centres from 27-02-2014 to 01-03-2014 held at UAS, Dharwad. Dr. R. R. Hanchinal, Chairman of protection of plant varieties and farmers right authority, Govt. of India, New Delhi was the Chief Guest. The presentations were made by various experts of DUS centres on different crops. Dr. Meena NRC Seed Spices, Ajmer submitted report and others documents of DUS project running at NRCSS, Ajmer to the registrar of PPV&FRA, New Delhi.

Launching workshop of NMPB project conducted

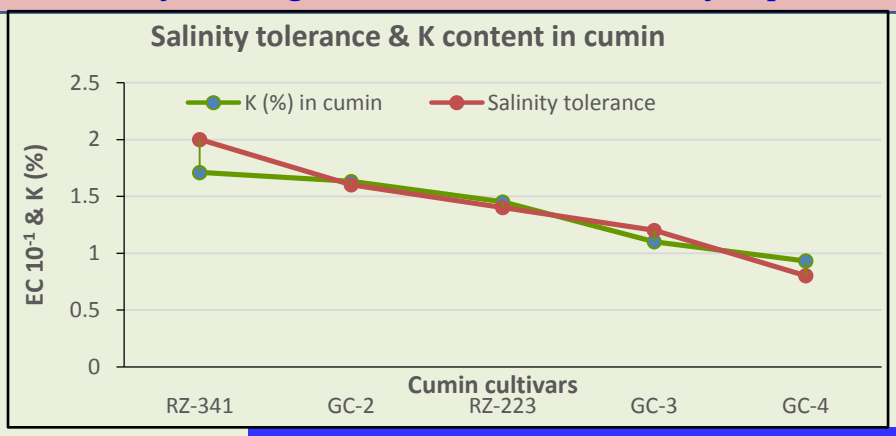
National Medicinal Plant Board (NMPB) project on "Exploitation of seed spices as a potential source of natural antioxidants, essential oil and oleoresins for enhancing export of value added products" was formally started with a workshop conducted on March 7, 2014. In this launching workshop Principal Investigator Dr. S. N. Saxena made a presentation of the project in which he explained about the origin and rational of the project. Project objectives and the activities to be carried out to achieve the objectives were elaborated by Dr. Saxena. Dr. Balraj Singh, Director congratulated to project investigators for getting the proposal approved and advised to work hard for achieving the objectives of project. He also thanked to NMPB, New Delhi and member secretary SMPB, Jaipur for their co-operation.



RESEARCH HIGHLIGHTS

Potassium content: A tool for predicting salinity tolerance in cumin cultivars

During evolution, plants developed a wide range of mechanisms to resist against various stressed conditions. Ionic composition and their ratios (K:Na) are one among them. Based on a kind of meta-analysis of projects results ("Nutrient influx efficiency in coriander, cumin, fennel and fenugreek" and "Evaluation of seed spices with problematic soil and water resources"), it has been observed that cumin cultivars having more of K content also has high salinity tolerance for germination (>50%) and seedling growth. Salinity tolerance in terms of EC, cumin cultivars were ranked as high, medium, low, very low etc. The relationship of K content in seed and straw with salinity tolerance level was observed as r^2=0.96 and r^2=0.95, respectively (Fig 1).Besides that during survey of cumin at farmer's field, performance of cumin was the best under saline patches also bears more of K content in both seed and straw in local cultivars. This might be the fact that K^+ plays an important role in maintaining cell turgor and osmotic adjustment. The vacuole and the cytosol are the two major pools of K in plant cells. Cytosolic K^+ concentrations are maintained at a constant level and are essential for plant metabolism, while vacuolar K^+ concentrations may vary dramatically as and when situation changes in external environment. However, low K^+ status might induce the formation of reactive oxygen species (ROS) and leads to cell damage under saline conditions, which attributes to the effects of K^+ deficiency and/or Na^+ toxicity on stomatal closing and the inhibition of photosynthetic activity and ultimately inhibits plant growth and reduces crop production. This is because of salinity-induced ROS formation can lead to programmed cell death (PCD) and a high cytosolic K^+/Na^+ ratio is essential for triggering salinity-induced PCD. Though, we have already reported that cumin is the highest salinity tolerant crop among the seed spices. Yet, during survey of literature, none of the information available on the current aspect. Hence, this could be new tool for screening of large number of cumin germplasm against the salinity tolerance by shading load of field and laboratory experiments and time.





O.P. Aishwath, R.S. Mehta, R.K. Yadav, R.L. Meena, B.K. Jha, R.S. Meena and Balraj Singh

Human Resource Development

Conference/symposia/seminars attended

Three months foreign (USA) training 15-12-2013 to 15-03-2014 under NAIP project in the area of "Marker Assisted Selection (Horticulture)"

Dr. Sharda Choudhary, Scientist attended foreign training in the Department of Crop, Soil, and Environmental Sciences, University of Arkansas, 115 Plant Sciences Building, Fayetteville, Arkansas 72701, USA from December 15, 2013 to March 15, 2014 under the training grant of the World Bank funded NAIP project in the area of "Marker Assisted Selection (Horticulture)" under the guidance Prof. Andy Pereira, Anheuser-Busch Endowed Professor of Plant Molecular Genetics. During the training programme several technical discussions, lectures, practical and sessions were conducted/ organized covering almost all relevant aspects of Marker Assisted Selection with reference to agricultural (rice) and horticultural (Cumin, Fennel, Fenugreek and Coriander) crops. Important areas covered during practical and technical discussion sessions included antioxidant potential analysis and development of molecular markers for seed spices and diversity analysis in rice varieties using SSR markers.

This scientific exposure has provided her with hands-on experience in various techniques in the laboratory, and also an opportunity to interact with researchers at the University of Arkansas (Fayetteville, Stuttgart and Little Rock). She had also attended relevant seminars, course lectures and scientific interactions/ meetings with faculty of University of Arkansas and USDA personnel to acquire desired knowledge and expertise about marker assisted selection in crops.



Trainings

Two days farmers' training programme conducted by NRCSS under NHM at KVK, Pali at KVK, Pali"

NRCSS has conducted two days farmers' training programme on "Production and post-harvest management of seed spices" under National Horticulture Mission on 6-7 March, 2014 at KVK, Pali (Rajasthan). About 60 farmers who grow seed spices have participated in the programme. Dr. B. L. Jangir, In-charge, Regional Research Station (CAZRI) Pali was the Chief Guest and Dr. P. L. Regar, Principal Scientist, RRS (CAZRI), Pali, was Guest of honour of the inaugural function. Dr. G. Lal presided over the function. Dr. R. S. Mehta, Dr. N. K. Meena and Dr. R. S. Meena were coordinators from NRCSS and Dr. Dheeraj Singh, Programme Coordinator and Dr. M. K. Choudhary SMS(Agronomy) were local coordinators from KVK Pali. In his presidential address Dr. Lal, advised farmers for ensuring quality of seed spice by adopting good agricultural practices. Dr. B. L. Jangir in his remark, put emphasis on diversification of existing cropping system with the introduction of seed spices for enhancing their income. Resource persons from NRCSS, Ajmer, KVK, Pali and RRS (CZARI), Pali delivered lecture on different aspects in the programme. Farmers were advised by different subject matter specialists for adoption of improved varieties and scientific cultivation practices to enhance production and productivity of seed spices with quality produce. On7th March, 2014 scientist farmer's interaction meeting was also organized in which, farmer's problems with respect to seed spice production were discussed and solutions were suggested. Six Scientists Trainee deputed by NAARM at KVK, Pali for FET, also participated in the training programme. Two bulletins namely *Bijiye* ***Masale:Kisano Ki Unnati Ka Adhar*** and ***Bijiye Masale: Kisano Ke Liye Vardan*** were also distributed among the participants.



Two days farmers training at KVK, Pali



Fenugreek field visited by trainees at KVK, Pali

Trainings

Training on "Application of bio-control agents for management of insect pest and diseases of seed spice crops"

Two days on campus training on "Application of bio-control agents for management of insect pest and disease of seed spices crops" was organized on 24-25 March, 2014 at NRCSS. The programme was inaugurated by Dr. Balraj Singh, Director, NRCSS. The training as conducted under DBT project "Management of pest and diseases of seed spices using biocontrol products through on farm demonstration at farmers fields". The main aim of training was to aware farmers about non chemical methods of pests and diseases management. Training consist of self preparation of botanicals insecticides by farmers and effective use of bio agent for their enhanced activity for pest and disease control. Farmers were also trained for organic production of seed spice crop using non chemical fertilizers, insecticide and fungicides. About 180 farmers were trained under the programme, belongs to villages Saradhana, Dang, Rampura, Jasvantpura, Budhwara, Sanoat, Masuda and Ratakot of Ajmer district.





Attended Fasal Vichar Goshthi

KRIBHCO has organised a Fasal Vichar Goshthi at Village Baghera, tehsil Kekri on 5th March, 2014. Dr. G. Lal, Principal Scientist (Hort.) and Mr. M.A. khan, Asstt. Chief Tech. Officer (Agril. Economics) of NRCSS have attended the Goshthi and interacted with the participants.



From the Director's Desk



In the month of March & April seed spices crops goes toward maturity. Every where we used to enjoy with fragrances of coriander, cumin, fennel and dill in the campus.

XII RAC meeting conducted which is very important to review the projects of the centre. We recorded very good suggestions from the Chairman and other distinguished members which will be milestones for our projects in future. In the Research highlights a very interesting thing is going to know by our scientist a tool for predicting salinity tolerance in cumin cultivars.

A project presented by Dr. S.N. Saxena, Pr. Scientist on "Exploitation of seed spices as a potential source of natural antioxidants, essential oil and oleoresins for enhancing export of value added products" which was initiated in small workshop on March 7, 2014 at NMPB, New Delhi. Dr. Sharda Choudhary completed three months foreign training on "Marker Assisted Selection (Horticulture)", in USA which will be useful in seed spices crops for future improvement programme of NRCSS.

NRCSS has taken an innovative step to reach out to the farmers in different parts of the state by conducting/ participating off and on campus farmers' training programmes. Two such very successful training programmes were conducted in Pali and at NRCSS campus.

Balraj Singh