# SEED SPICES
## E - Newsletter
ICAR-National Research Centre on Seed Spices

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## Important Events

### केन्द्र ने 16वॉ स्थापना दिवस मनाया

राष्ट्रीय बीजीय मसाला अनुसंधान केन्द्र तबीजी, अजमेर द्वारा 19 जनवरी 2016 को 16वॉ स्थापना दिवस मनाया गया। इस अवसर पर भारतीय कृषि अनुसंधान परिषद के पूर्व उप महानिदेशक (बागवानी), डॉ. एच.पी. सिंह मुख्य अतिथि के रूप में सम्मिलित हुए तथा टास, नई दिल्ली के सचिव एवं पूर्व कुलपति बिरसा कृषि विश्वविद्यालय, डॉ. एन.एन. सिंह विशिष्ट अतिथि थे। समारोह में संस्थान के वैज्ञानिकों एवं अन्य कर्मचारियों के अलावा कृषि विज्ञान केन्द्र के परियोजना समन्वयक, डॉ. जी. एन. माथुर, डी. ए. वी. कॉलेज के प्राचार्य डॉ. अनूप सिंह तथा अन्य प्राध्यापक तथा ए.आर.एस. के वैज्ञानिक भी उपस्थित थे। इसके अतिरिक्त विभिन्न क्षेत्रों से आये बीजीय मसाला फसलों के प्रगतिशील किसान भी समारोह में सम्मिलित हुए।

संस्थान के निदेशक डॉ. बलराज सिंह ने सभी अतिथियों का स्वागत किया तथा केन्द्र द्वारा अर्जित विभिन्न उपलब्धियों का विवरण अतिथियों के सम्मुख प्रस्तुत किया। विशिष्ट अतिथि डॉ. एन.एन. सिंह ने केन्द्र द्वारा किए जा रहे अनुसंधान कार्यों की प्रशंसा की तथा विभिन्न जलवायु क्षेत्रों के अनुसार जैव–विविधता का प्रयोग करते हुए नवीन प्रजातियों का विकास करने की आवश्यकता पर बल दिया।

समारोह के मुख्य अतिथि डॉ. एच.पी. सिंह ने इस अवसर पर केन्द्र के निदेशक डॉ. बलराज सिंह के नेतृत्व में चल रहे बीजीय मसाला अनुसंधान एवं विकास में हुई उपलब्धियों की सराहना की और कहा कि हमें स्मार्ट कृषि के साथ–साथ युवाओं की कृषि कार्यों में सहभागिता को बढ़ावा देने हेतु बीजीय मसालों में नूतन एवं नवोन्वेषी तकनीकियों के माध्यम से राष्ट्रीय ही नहीं अपितु अन्तर्राष्ट्रीय स्तर पर इस संस्थान की पहचान बनानी हैं। कार्यक्रम के अन्त में सभी अतिथियों को निदेशक द्वारा स्मृति–चिन्ह भेंट कर धन्यवाद ज्ञापित किया गया।



## Important Events

# Auditorium inaugurated and dedicated to Dr. Rajendra Singh Paroda

On 25th January 2016, the newly furnished auditorium at ICAR-NRCSS was inaugurated and dedicated to Padama Bhushan Dr. R. S. Paroda. On this auspicious occasion Dr. R. S. Paroda Chairman, TAAS, New Delhi and former Secretary DARE and DG ICAR was the Chief Guest, Dr. S. Ayyappan, the present Secretary DARE and DG ICAR was Chairman of the inaugural function and Dr. N. K. Krishna Kumar, DDG (Horticulture Sciences) was the Guest of Honour. Among the other eminent dignitaries in the function were present Shri Ram Chandra Choudhary, Chairman Ajmer Dairy, Dr. Anup Kumar, Principal, DAV College Ajmer and Dr. G. N. Mathur, Programme Coordinator, KVK, Ajmer. The dignitaries visited NRCSS research farm and had interactions with the scientists of the center. Dr. Ayyappan appreciated the ongoing research programmes at the center and also cherished about the excellent implementation of Swachh Bharat Abhiyan in the campus with the out come as a good model- free of plastic scrap, papers and parthenium weed in particular.

In his inaugural address Dr. Ayyappan elaborated the significant contributions made by Dr. R. S. Paroda in achieving new heights and horizon by ICAR and Indian Agriculture. He enumerated numerous contributions and policies implemented under the leadership of Dr. Paroda by conceiving several research institutions, development of infrastructures and especially the NASC complex at New Delhi. Dr. N. K. Krishna Kumar felicitated Padma Bhushan Dr R. S. Paroda on behalf of Indian Society of Seed Spices, Ajmer and addressed the august gathering. Dr. Paroda in his enlightening speech along with other subjects highlighted the importance of seed spices in the region and its contribution to national economy being export oriented commodity. He also emphasized the aspect of nutritional security of the country. At the concluding step Dr. Balraj Singh, Director, NRCSS, proposed the vote of thanks and expressed his gratitude to Dr. R. S. Paroda, Dr. Ayappan, DG and Dr. Krishna Kumar, DDG for his kind personal presence and making this function memorable. He also thanked all the dignitaries, invites, staff, media and local agencies for their marathon effort to make this function a grand success.








Important Events

# National Seminar on "New Dimensional Approaches for Enhancement of Seed Spices Productivity and Profitability under Era of Climate Change"

National Research Centre on Seed Spices, Ajmer, Indian Society of Seed Spices (ISSS), Ajmer and Directorate of Arecanut and Spice Development (DASD), Calicut jointly organized National Seminar on "New Dimensional Approaches for Enhancement of Seed Spices Productivity and Profitability under Era of Climate Change" during 2-3 February, 2016 at National Research Centre on Seed Spices, Ajmer with an objective towards upliftment of livelihood, income and prospects of Indian spice growers. In the seminar a heterogeneous group of more than 250 delegates, comprising of scientists, teachers, officers (Department of Agriculture and Horticulture), exporter's, traders, farmers and students participated from all over the country.

In the inaugural session, Dr. Balraj Singh, Director, NRCSS and Chairman Organizing Committee, welcomed the Chief Guest of the function, Dr. R. R. Hanchinal, Chairman, PPV&FRA, New Delhi, President, Dr. S. K. Malhotra, Commissioner of Agriculture and Horticulture, Ministry of Agriculture and Farmers Welfare, Govt. of India, New Delhi, Guest of Honours, Dr. M Anandraj, Director, Indian Institute of Spice Research, Calicut, Dr. Nirmal Babu, Project Coordinator, AICRP (Spices), IISR, Calicut and Dr. Homey, Cherian, Director, Directorate of Arecanut and Spice Development, Calicut, other dignities on and off the dias, delegates, press and media. Dr. M. Anand Raj, Director, IISR, Calicut in his communication to the audience highlighted and suggested to address pesticide residue problem being reported in seed spices. Dr. Nirmal Babu appraised that India being 'a bowl of seed spices' occupies prominent position in world with respect to area, production and export of seed spices. Dr. Homey Cherian, emphasized towards producing seed spices with good quality with low price. He pointed out that good quality spices have better market in world. Keeping in view climate change scenario, Dr. SK Malhotra, Commissioner Agriculture & Horticulture asked researcher to develop suitable varieties and technologies for enhancing quality seed spice production which may fetch better price. In his inaugural address Chief Guest Dr. Hanchinal advised to take care of germplasms, varieties and farmers right towards development of improved varieties for seed spices.

During the two days deliberations 17 lead papers and 13 research papers were presented by the participating scientist for deliberation and discussions and finalisation of recommendations for benefit of researchers, teachers, extension officials, students, exporters, traders and farmers. In the plenary session, major and concrete recommendations were finalised. Dr. G. Lal, Principal Scientist (Horticulture) was the Organising Secretary, Dr. R. S. Mehta, Principal Scientist (Agronomy) and Dr. Ravindra Singh, Principal Scientist (Agronomy) were Co-organising Secretary of the seminar.





## Research Highlights

# New bacterium *Bacillus aerophilus* (KING'S B-15/ COR-20) identified for enhancing the coriander growth and yield

**(Brijesh Kumar Mishra, Y.K. Sharma, O.P. Aishwath, Krishna Kant and M. K. Vishal)**

Twenty five Coriander plant soil samples were collected from Baran, Jhalawar and Kota Districts of Rajasthan for isolation of rhizospheric bacteria on nutrient agar medium. All the thirty six coriander rhizospheric bacterial isolates were screened for their ability to promote seedling germination and growth. Plant growth promotion potential of 10 selected rhizobacterial isolates were tested in RBD under open field experiment consisting of 11 treatments with 03 replications at NRCSS experimental farm during 2013-2015. Various growth and yield attributes such as germination, root-shoot length, dry weight, microbial population in soil, flowering, branches, umbels and umbellate etc. were recorded during the crop growth period at 30 day intervals. Significant effect of PGPR treatment on coriander crop yield was recorded and highest yield was found in T9 (1374.52 kg/ha) which was at par with T10 (1315.16kh/ha) and lowest yield was observed with T5 (1127.76 kg/ha) which was at par with control.

**Table: Effect of PGPR on coriander plant biometrical data at harvest**

| Treatments | Pr. Branches | Sec. Branches | Umbels /pl. | Umbellets /umbel | Seeds/ umbellets | Seed yield/pl. |
|---|---|---|---|---|---|---|
| **T1** | 7.73 | 15.40 | 25.60 | 5.80 | 6.40 | 10.83 |
| **T2** | 8.13 | 16.53 | 28.80 | 5.53 | 7.13 | 9.58 |
| **T3** | 7.33 | 14.13 | 24.27 | 5.73 | 8.20 | 11.55 |
| **T4** | 7.73 | 16.07 | 27.20 | 5.47 | 7.00 | 11.85 |
| **T5** | 7.33 | 13.67 | 22.93 | 5.67 | 7.93 | 7.71 |
| **T6** | 7.40 | 14.47 | 23.47 | 5.80 | 7.53 | 10.98 |
| **T7** | 7.60 | 15.80 | 27.33 | 5.40 | 7.40 | 9.00 |
| **T8** | 7.47 | 15.40 | 24.93 | 5.67 | 7.53 | 12.38 |
| **T9** | 8.33 | 16.00 | 28.13 | 5.53 | 8.07 | 13.38 |
| **T10** | 7.80 | 15.53 | 26.13 | 5.80 | 7.73 | 12.21 |
| **Control** | 7.33 | 12.47 | 21.47 | 5.67 | 6.00 | 8.25 |
| **CD (0.05)** | 0.95 | 1.24 | 2.79 | N.S. | 1.25 | 4.32 |
| **SEm** | 0.32 | 0.42 | 0.95 | 0.13 | 0.42 | 1.46 |

Rhizobacterial isolates T9 (King's B-15/ Cor-20) was found effective for enhancing the coriander plant growth attributes as well as seed yield. A methodology was standardized for development of talc based biofertilizer formulation for coriander PGPR isolates. The rhizobacterial isolate King's B-15/ Cor-20 (T9) from coriander crop rhizosphere was evaluated in the field during 2013-14 and 2014-15 at experimental farm of NRCSS, Ajmer and was found the best among the selected PGPR isolates towards yield and yield attributing traits of coriander. The molecular characterization of NRCSS/Cor-King'B-15 revealed that it has 100 % similarity with bacterial species *Bacillus aerophilus* and its 16S rRNA gene sequence has been submitted to Genbank of NCBI with accession no. KU 588625.

# Transfer of Technology

## Trainings/ seminars organized

| Sr. No | Name of the sponsoring agency | Duration | Title of the training | No. of farmers |
|---|---|---|---|---|
| 1 | 5 days farmers training sponsored by Project Director ATMA, Jodhpur (Rajasthan) | 29-12.2015 to 02.01.2016 | Bijya Masala Phasalon Ki Unnat Kheti | 30 |
| 2 | 5 days farmers training sponsored by Project Director ATMA, Jodhpur (Rajasthan) | 4-8, January, 2016 | Bijya Masala Phasalon Ki Unnat Kheti | 30 |
| 3 | Three days farmers training under ATMA from Neemach (MP) | 12-14, January, 2016 | Bijya Masala Phasalon Ki Unnat Kheti | 22 |
| 4 | Two days Institutional Farmers Training sponsored by Deputy Director (Agriculture Extension), Ajmer under RACP | 15-16, February, 2016 | Improved production technology for rabi crops | 30 |
| 5. | Two days Institutional Farmers Training sponsored by Deputy Director (Agriculture Extension), Ajmer under RACP | 17-18, February, 2016 | Improved production technology for rabi crops | 30 |
| 6 | Two days Institutional Farmers Training sponsored by Deputy Director (Agriculture Extension), Ajmer under RACP | 19-20, February, 2016 | Improved production technology for rabi crops | 30 |






## Human Resource Development

### Honour and awards

During the National Conference on "Natural Resource Management in Arid and Semi-Arid Ecosystem for Climate Resilient Agriculture and Rural Development" held at SKRAU, Bikaner on 17.2.2016 organised by Soil Conservation Society of India, New Delhi Dr. O.P. Aishwath, Sr. Scientist (Soil Science) was conferred the Leadership Award, which was presented by Vice Chancellor, SKRAU- Bikaner and Minister of State for Mines, Forest and Environment Shri Rajkumar Rinwa along with president of SCSI, New Delhi, in the presence of other dignitaries.




### Winter School/Symposia/seminars/conferences/workshop attended

All the scientists and Technical officers have attended National Seminar on "New dimensional approaches for enhancement of seed spices productivity and profitability under era of climate change" held at ICAR-NRCSS, Ajmer during 2-3 February 2016.

Dr. R. S. Mehta, Principal Scientist (Agronomy) attended National Symposium on "Vegetable legumes for soil and human health" held during 12-14, February,2016 at Indian Vegetable Research Institute, Varanasi and he presented a lead paper on "Fenugreek as potential legume vegetable crop" authored by Balraj Singh, R.K. Kakani, R.K. Solanki, Ravindra Singh and Gopal Lal. He also presented a research paper on " Performance of Dill ( *Anethum sowa* Roxb) based intercropping for enhancing system productivity".

Dr. O.P. Aishwath, Sr. Scientist (Soil Science) participated and presented a paper in 25th National Conference on "Natural Resource Management in Arid and Semi-Arid Ecosystem for Climate Resilient Agriculture and Rural Development" held at SKRAU, Bikaner on 17.2.2016.

## From the Director's Desk

The first issue of 8th volume of the Seed Spices E-newsletter, 2016 highlights some of the significant activities, salient research and training achievements by the centre during this period. The rabi season of the year 2015-16 is at its full bloom, the whole ICAR-NRCSS campus environment is saturated with floral aroma and fragrance of coriander, cumin, fennel, fenugreek and other minor seed spices.



During this period ICAR-NRC on Seed Spices celebrated it's 16th foundation day on 19th January, 2016 and the occasion was graced by Dr. H. P. Singh, former DDG (Horticulture), ICAR who delivered the foundation day lecture to the audience encompassing scientists, researchers, teachers, extension workers and stake holders.

Infra-structural facilities of NRCSS campus was further strengthened by inauguration of the newly furnished Dr. Rajendra Singh Paroda Auditorium on 25th January, 2016. Padama Bhushan, Dr. R.S. Paroda, Chairman TAAS, New Delhi and former DG, ICAR inaugurated the auditorium in the gracious presence of Dr. S. Ayyapan, Secretary DARE & D.G. ICAR, Dr. N.K. Krishna Kumar DDG (Horti. Sci.) & other dignitaries. ICAR-NRCSS witnessed the scientific discussion along with researchers, students, policy makers, farmers and other stake holders during the two days national seminar on "New Dimensional Approaches for Enhancement of Seed Spices Productivity and Profitability under Era of Climate Change" during 2-3 Feb, 2016.

Under research highlights a new bacterium *Bacillus aerophilus was* identified for enhancing growth and yield of coriander which has been developed as talc based bio fertilizer by our scientists. Six-farmers trainings were organized at NRCSS campus out of which 3 were sponsored by ATMA and rest by State Agriculture Department.

I hope that the contents of this news letter would be informative and useful to all stakeholders of seed spices. Any suggestions for improving the content of the E-newsletter will be highly appreciated.





Balraj Singh