ICAR-NRCSS E-NEWS LETTER

Vol 14 (1) Seed Spices E-News Letter January - March - 2021

From Director's Desk

First trimester of 2021 which is also last quarter of financial year 2020-21 was started with down curve of Covid 19 spread all over the country and institute activities were carried out by observing with maintaining social distancing and following Covid safety protocol. A new pest of anise was identified in farm grown crop. Suitable harvesting stage of fennel was worked out for various uses of fennel seeds. Successful cultivation of pesticide free cumin was demonstrated and one interface meeting of seed spice stakeholders was organized at place of production. Three days farmers training were organized at ICAR-Research Complex for NEH Region, Umiam for technologies dissemination in North Eastern region. Farmers fair and training programmes were organized for seed spices cultivation under SCSP, TSP and Biotech Kisan hub projects. Monitoring of different FLDs and farmers field of FPSP programme was also done by NRCSS scientists. XXVI meeting of the ICAR Regional Committee-VI was held in virtual mode under chairmanship of DG, ICAR. First time NRCSS organized a Six Week Experimental Learning under Student READY Programme on Rural Entrepreneurship and Awareness Development in Seed Spices for 4th year students of B.Sc. (Hons.) Agriculture of Dayanand College, Ajmer. Twenty first foundation day of institute was celebrated on 19th January. National Republic Day, International womens day and World waters day were celebrated with all NRCSS staff. Scientists of NRCSS attended various webinars, training programmes in virtual mode of interaction. Most of the experiments were in stage of harvesting and post harvest processing of harvested produce was going on simultaneously. Institute is continue serving the seed spice stakeholders in best of its capability under harsh working environment due to Covid 19

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A record of thrips, *Anascirtothrips arorai* (Thysanoptera: Thripidae) – a new pest of anise (*Pimpenella anisum L.*) in Rajasthan, India

Thrips, *Anascirtothrips* arorai (Thysanoptera: Thripidae) is reported here for the first time from anise (*Pimpenella anisum L.*) crop, a medicinal seed spice in semi-arid region of Rajasthan, India. A systematic observation was made during Rabi 2020-21 in experimental field at research farm of ICAR-National Research Centre on Seed Spices, Ajmer, Rajasthan. During the observation, anise crop was found infested by thrips. The thrips samples were collected and sent for the identification to ICAR-National Bureau of Agricultural Insect Resources, Bengaluru (Karnataka) and later it was identified as *Anascirtothrips* arorai.Adults of A. arorai are winged, small body size, cylindrical shape, brown to pale yellow in colour, faint brown markings laterally on tergites Male similar to female but smaller, larva is wingless and yellow in colour. The thrips species *A. arorai* was discovered first time in the Paleartic region of Israel in 1961 with new nithche: inside fig fruits and in the galls of *Gynaikothrips ficorum*. The pest is also described from Mandla district, India from Ficus species (*A. ficus*) by Mound & Wang (2000).

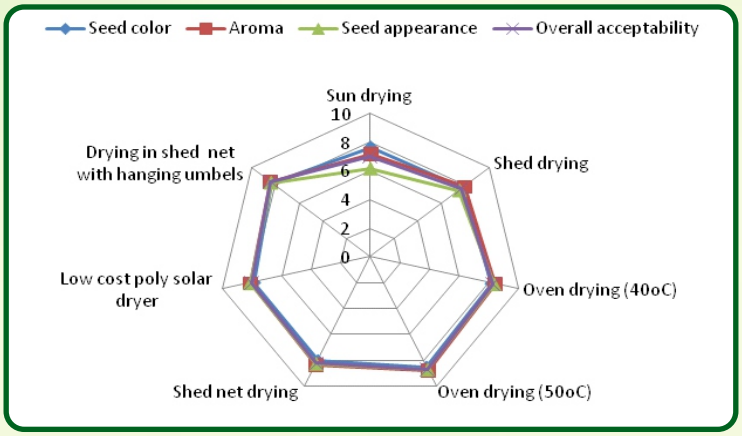
Infestation of *A. arorai* was initiated on anise plants in last week of November with 3-5 thrips/plant and maximum population 16-24 thrips/branch was recorded in January first weeks and in between its infestation lightly fluctuate low and high. Both nymph and adult suck the sap from infested plant (leaves, succulent shoots and stem), causing white patches and drying up. Initial infestation of this thrips species cause leaf curling and black blotches appear on leaves.Thrips can be managed by adopting static pest monitoring to find the pest inception on crop. Apply field sanitation and 1-2 spray of imidacloprid 17.8 SL @ 0.3 ml/lit at sufficient thrips population appeared on plants.

Acknowledgement: We are grateful to Dr. Rachana R.R., Scientist (Germplasm Collection and Characterization), ICAR-National Bureau of Agriculture Insect Resources, Bengaluru for identification of thrips species. Photo source: https://keys.lucidcentral.org/keys/v3/thrips_of_california/identify-thrips/key/california-thysanoptera-2012/Media/Html/browse_species/Anascirtothrips_arorai.htm is duly acknowledged.

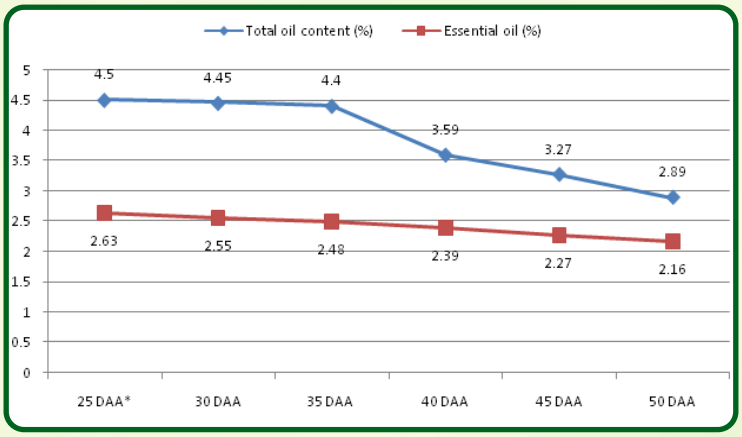
N.K. Meena, A.K. Verma, K. Kant and R.D. Meena

Suitable harvesting stage in fennel for chewing and culinary purposes

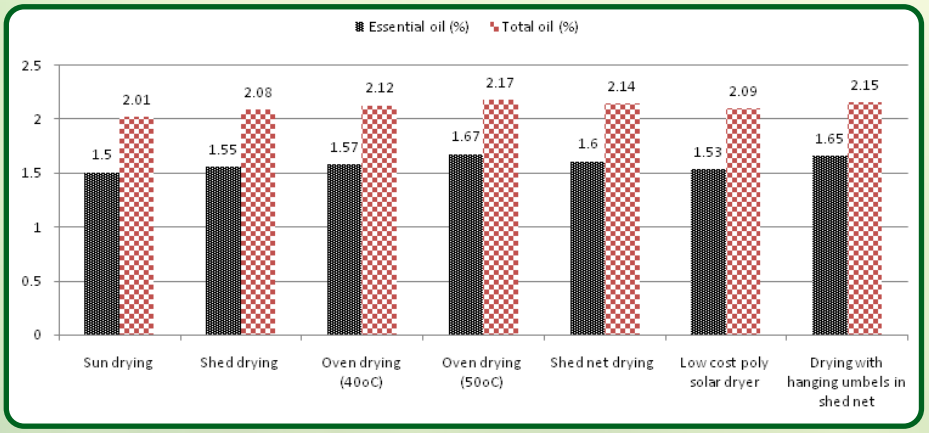
Fennel (*Foeniculum vulgare* Mill.) seeds are widely used in the pharmaceutical, food, cosmetic, and healthcare industries. Apart from being major ingredient of many Asian cuisine, ripe or semi ripe seeds are being used as mouth freshener due to its pleasant aroma and sweet taste. Fennel being a member of umbelliferae family bears seeds on umbels which emerge on plants at different growth stages of its development. Harvesting of seeds of fennel is being done when seeds start turning from green to light brown and moisture in seeds is approximately 20-25%. Perfect stage of seed development is becoming important if seeds are to be harvested for chewing and culinary purpose where fibre content, colour, sweetness and aroma plays significant role in deciding quality of seeds. In addition to that early harvesting of fennel (for chewing purpose) led to get premium prices in domestic and international markets. Experiments at ICAR-NRCSS Ajmer were conducted for this purpose where quality attributes of fennel seeds *viz*.,seed colour, aroma,sweetness,fibre content and texture of the seeds were analyzed. Results showed that to get best quality fennel seedsfor chewing purposes, harvesting could be done at 35-40 days after anthesis.



Sensory attributes of fennel seeds harvested at 35-40 DAA and dried by different drying methods



Variation in total oil and essential oil contents as affected by different harvesting stages



Effect of drying method on essential oil and total oil content of fennel seeds harvested at 75-85 DAA

Drying of fennel seeds by oven drying method (50^{0}C temperature)

Drying of fennel seeds under green shed with hanging umbels

Fennel seeds (umbel wise) harvested at 40 days after anthesis

Fennel seeds samples harvested at 85 days after anthesis

Similarly for culinary purpose, based on various sensory characteristics and seed physico-chemical characteristics,it is suggested that seeds could be harvested at 75-85 days after anthesis in Ajmer climatic conditions. inadditionto that a trial on different drying methods was also carried out to retain and obtain the best quality of seeds harvested for chewing and culinary purposes and among all drying methods overall acceptability, Highest seed test weight, total soluble sugar (TSS) essential oil and highest total was recorded highest in the seeds dried by oven drying method (50^{0}C) followed by drying in green shed with hanging umbels. Drying method also influenced fennel seed germination attributes and highest seed germination was recorded in seeds dried in shed with hanging umbels followed by oven drying method (40^{0}C) and shed drying.

Shiv Lal, S.N. Saxena and B.K. Mishra

Successful cultivation of pesticide free cumin at Nagaur, Rajasthan

Cumin (*Cuminum cyminum L.*) is important seed spice crop of western Rajasthan and Gujarat. It is important export commodity that earn large foreign exchange to the country. Cumin crop harbours large numbers of diseases and pests which cause significant loss to the crop not only at field level but also at storage condition. Excessive uses of synthetic chemical pesticides causes presence of residue in seeds which hamper the export to highly regulated market of Western countries. A pilot project on production of pesticide free cumin crop was conducted at Village-Inana, Mundwa, district- Nagaur, Rajasthan launched in farmers filed for pesticide free production utilizing Bioagents/botanicals for pests and diseases management. The project was financed by Directorate of Arecanut and Spice Development Board (DASD), Calicut. Under the project 25 farmers were selected for pesticides free cumin production in one hectare area each at village Inana, Mundwa, Nagaur. All input to raise good crop at farmer's field were given by ICAR-NRCSS as per the protocol. Suitable training regarding all aspect of crop production, crop protection and post harvest management was given to the farmers at farmers filed. Total six training was given to the farmers to raise good crop at the field. The pests and diseases management of the crop from seed sowing to crop maturity was monitored by the scientists involved in the project and suitable non chemical products were given for effective control. The pests and diseases of cumin was observed and treated successfully were, wilt (*Fusarium oxysporumf.sp. cumini*), Blight (*Alterneria burnsii*), Powdery mildew (Erysiphe polygoni), nematode (*Pratylenchus thornei*), thrips (*Thrips tabaci*), Aphids(*Aphis gossypii* and *Myzus persicae*). The bioagents/ botanicals applied to control includes *Trichoderma viridi, Trichoderma harzanium,Paecilomyces lilacinus, Pseudomonas fluorescens, Bacillus subtilis, Verticillium lecanii, Botanical* Insecticide and Azadirachtin 10000 ppm. The bioagents applied were used as seed treatment, soil application with FYM and as foliar spray. As a result a successful crop was harvested without compromising average productivity of cumin. In the process of developing business value chain, an interface meeting of cumin growers and traders/exporters was organized at place of production i.e. Mundawa, Nagaure. The meeting was chaired by Dr. S.N. Saxena, Director, ICAR-NRCSS along with Sh. B.L. Meena, Deputy Director, DASD, Calicut Sr. M.Y. Honnur, Deputy Director, Spice Board, Jodhpur, Dr. Krishna Kant, B.K. Mishra from ICAR-NRCSS. Cumin exporters Sh. Micheal Arokia Raj from Jayanti Spices, Sh. Om Prakash Sharma from Swani Spice Mill Pvt. Ltd., Sh. Giriraj Sharma from ITC Ltd and some local traders based at Mundwa and Nagaur were also present on this occasion along with invited stakeholders. The exporters/traders attended the meeting interacted with the farmers and official regarding cumin cultivation. They highly appreciated the effort for pesticide free cumin production and ready to purchase the cumin at better price than existing market rate. The farmers were fully satisfied with the activities taken for production and wants for further extension of the programme in coming years. One beneficiary cumin grower Sh. Prahlad Ram shared his experience and informed about getting double price of pesticide free cumin during 2019-20 and this year he received offer of even more price. The project is successfully demonstrate the pesticide free cumin production technology with a clean export quality produce and can be double the farmer's income with same resources.

निर्यातकों के साथ जैविक जीरा उत्पादन करने वाले किसानों की बैठक : कृषि वैज्ञानिकों ने की किसानों की मार्केटिंग

गुणवत्ता परीक्षण के बाद विदेशों में बिकेगा ईनाणा का जैविक जीरा

नागौर पत्रिका

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28 हजार रुपए क्विंटल यहां से बेचा अमरीका में, वहां 55 ग्राम के बारह डॉलर

मेहनत रंग लाई तो बदल गई अवधारणाएं, अमरीका में बिक रहा प्रहलादराम का जैविक जीरा

Transfer of technologies

New initiatives in NEH regions for promoting seed spice cultivation

To promote seed spice cultivation in non-traditional areas of the country three days farmers training on "Production and post harvest management of seed spices" under collaborative programme of ICAR-NRCSS Ajmer and ICAR-Research Complex for NEH Region, Umiam was organised at Krishi Vigyan Kendra Umiam, Meghalaya from 16 to 18 March, 2021. Thirty five farmers from Ri-Bhoi district of Meghalaya attended the above training programme. Participants were imparted with knowledge on production and marketing techniques to enhance their income through cultivation of seed spices in NEH regions. The team from ICAR-NRCSS along with Dr. V. K. Verma, carried out monitoring of the demonstration sites and found the crops in good condition at seed formation stage on different farms.

Trainees attending three days training programme

Monitoring of demonstration plot by ICAR-NRCSS team with Dr. V.K. Verma

Field Day cum Training Programme on"Promoting GAP & IPM in Cumin"

Farmers fair cum training programme was organized at village Katyasani of Nagour on 29 January, 2021 by the ICAR-ICAR-National Research Centre on Seed Spices, Ajmer in collaboration with Biotech Kisan Hub, and South Asia Biotechnology Centre (SABC), Jodhpur in partnership with Department of Agriculture, Nagaur and the Spices Board of India under DBT Sponsored project on "Good Agriculture Practices (GAP) in selected seed spices in Western dryland region under Biotech kisan programme. More than eighty cumin growers from Merta tehsil of Nagaur participated in the day long training program followed filed day at cumin demonstration field of Sh Nema Ram Ji at village Katyasani. Various lectures by different speakers were delivered on important topics such as Good agriculture based cumin production System, opportunities for value addition in cumin., integrated diseases and pests management in cumin and production and marketing scenario of cumin in India. In addition, ICAR-NRCSS products such asbio-agents such as *Trichoderma viride*, *pseudomonas fluorescens*, *Verticillium lecanii* and neem oil were also distributed among the beneficiaries. In this programme DBT-SABC Biotech Centre led by Dr. Bhagirath Choudhary, Dr. Sandip Agale and Dr. Naresh were also participated and interacted with farmers on various facets of cumin crop management. The Programme fair cum field day was coordinated by Dr. S.S. Meena, Dr. Shiv Lal and Dr. Murlidhar Meena.

Farmers Fair on Promoting GAP & IPM in Fenugreek

ICAR-National Research Centre on Seed Spices, Ajmer has organized farmers fair at KrishiVigyan Kendra, Abusar-Jhunjhunu on Thursday, 18 February, 2021under DBT funded "Good Agriculture Practices (GAP) in selected seed spices in Western dryland region" under Biotech Kisan Programme Project.Total one hundred thirty eight participants participated in this programme, Director ICAR-NRCSS, Ajmer in his inaugural speech elaborated the purpose of ongoing field activities of the project. Dr. S.K. Sharma, Director Extension, SKRAU Bikaner sensitized the farmers on increasing residue problems in seed spices and asked to follow the IPM production technologies for better price realization from these crops. Dr. Bhagirath Choudhary briefed farmers about organic fenugreek production for higher income. Dr. Dayanand, Head KVK Abusar highlighted scope and importance of fenugreek in Rajasthan. After Farmers fair programme all the participants visited the fenugreek demonstration plot of Sh. Man Singh and Jai Singh fields at village Bhatiwari, of District Jhunjhunu, given by ICAR-NRCSS, Ajmer under above project. This event was coordinated by Dr. S.S. Meena, Dr. Shiv Lal and Dr. Chetan Jangir and S.R. Balai from ICAR-NRCSS, Ajmer and Dr. Dayanand, Senior Scientist & Head, KVK, Abusar-Jhunjhunu acted as local organizing Secretary.

Field Day at Buddi Arjunpura and monitoring by DBT High Power Committee

On 12th March, 2021 a high power committee from DBT comprised of Dr. Venteshralu, Member and Dr. Aslam, Ragistrar and Teams from South Asia Biotech Centre, Jodhpur, Spice Board Jodhpur traders cum exporters from Jodhpur and Chennai were present in this field day cum demonstration monitoring programme. More than thirty cumin farmer participated in this programme. The experts deliberated cumin farmers on IPM cumin production techniques and mechanisation in cumin with marketing demand from major importers. A Field Day was conducted on mechanical harvesting of cumin with tractor drawn multi-crop thresher subsidised by Spice Board, Jodhpur at cumin demonstration field of Sh. Hari Ram at Buddi village. After demonstration at Buddi, the team visited the seed spices demonstration at village Arjunpura and Bhillai and appreciated the seed spice crops at demonstration plots.

SCSP programme of ICAR- NRCSS

ICAR-NRCSS, Ajmer organized one day training on "Improved technologies for seed spice production" on 6 Feb., 2021under SCSP in collaboration with KVK, Rajasamand at KVK, Rajasamand. In this training programme training kit and

plant protection input (sprayer) were distributed among the 60 SCSP beneficiaries of Daboon, Relmangra, Mahid, Modwa, Bagol, Bhagwankalan, Kunwariya, Piplidodiya, Kuncholi, Kama, Amet, Devgarh, Jatoli, KumariyaKheda, Denriya, Raghunathpura, Kanooja, Madariya, Piprada, Ardiya,Kuraj, Badada, Banediya, Salora villages of Rajasamand.

In addition to this the subject specific lecture were delivered to participants by different resource persons of KVKs and ICAR-NRCSS, Ajmer. All farmers were also briefed about package for seed spices production, protection and returns per ha. As far as possible safety measures (mask) and appropriate social distancing were followed during the programme. This programme was coordinated and organized by Dr. Shyam Sunder Meena, Dr. Shiv Lal, Sr. Scientist (Horticulture), Dr Sanjay Kumar and S.R. Balai from ICAR-NRCSS, Ajmer and local coordinator Dr. P.C. Regar, Head & Sr Scientist (KVK, Rajasamand).

TSP programme of ICAR- NRCSS

Under TSP programme, ICAR-NRCSS technologies were demonstrated among the 205 farmers as a FLDs. Trainings were organized at various places and FLDs input given to the farmers. Some specific support extended by distributing sprayers and direct money was transferred in their account for the harvest and post-harvest management of given crop

FLDs, besides intellectual input about the technologies. The number of farmers benefitted at KVK Banswada were 45 from the villages-Kanpura, Badliya, Chadla, Mahubadipada, Ratnagiri and Amartoon, at KVK, Pratapgarh 85 from the villages Amlikheda, Rampuria, Uchbania, Nagdeda, kanad, Mabgarh and Namburel, at KVK Chittorgarh (Badisadri) 33

from the villages; Pujakafala, Payri, Junibadbal, Maravadya, Thikriyakheri, Ranimalya, Kevalpura, Matamagari, Lakshmipura, Kalyanpura, Khakhariyakheda, at KVK Udaipur (Salumber), 34 from the villages Morila, Malpur, Baghpur, Rajpura, Malpur, Borajtauran, Borajmanjhavat and at KVK Dungaepur (Faloj) from the villages Mada, Aatharsauwa

HRD activities

Six Weeks Experiential Learning programme organized at ICAR-NRCSS

ICAR-NRCSS organized a six weeks Experiential Learning under Student READY Programme on Rural Entrepreneurship and Awareness Development in Seed Spices for 4th year students of B.Sc. (Hons.) Agri. from Dayanand College, Ajmer (Rajasthan) during 01st February to 15th March, 2021. This programme is a new initiative of Indian Council of Agricultural Research to reorient graduates of Agriculture and allied subjects for ensuring and assuring employability and develop entrepreneurs for emerging knowledge intensive agriculture. In these training, students were given skill development training on Good Agriculture Practices of major and minor seed spices cultivation, seed production,seed quality, physiological disorders, seed processing, nursery preparation, pest and disease management, orchard establishment and management, IPM modules, precision resource management, protected cultivation farm management, breeding behaviour, different techniques of self and cross pollination, climate change and seed spices, medicinal and

therapeutic uses, value addition and marketing of seed spice. The participants were imparted with hands on knowledge in fields and in labs at ICAR-NRCSS by concerned scientist. The training was coordinated by Dr. Murlidhar Meena, Dr. Shiv Lal and Dr. Sanjay Kumar.

Scientific Meetings

XXVI meeting of the ICAR Regional Committee-VI

The XXVI meeting of Indian Council of Agricultural Research (ICAR)-Regional Committee-VI comprising the states of Gujarat and Rajasthan, UTs of Dadra and Nagar Haveli and Daman and Diu was organized by ICAR-Central Sheep and Wool Research Institute (ICAR-CSWRI), Avikanagar (Rajasthan) through virtual mode. Senior officers from ICAR HQ, New Delhi, Vice Chancellors of the State Agricultural Universities and State Veterinary Universities of the region, Members of Governing Body, ICAR, Directors of ICAR Research Institutes, Senior Officials (Principal Secretaries/Secretaries/Directors) of the State Departments of Agriculture, Animal Husbandry, Dairy and Fisheries participated in the discussions to prepare a roadmap for the development of agriculture including animal husbandry, dairy, fisheries, natural resource management and human resource development in the region. Dr. S. N. Saxena, Director, ICAR-NRCSS along with other scientists of NRCSS participated in the meeting.

Dr. T. Mohapatra, Secretary, DARE and Director General, ICAR introduced the dignitaries and participants about theme, objective and importance of the regional committee meeting. This meeting acts as a link between ICAR and state governments for identifying state specific problems related to agricultural and allied aspects offering suitable solutions if available and plan for working out the solutions (for the problems for which solutions are not available) by the NARS within specific timeline.

Additional Director, Agriculture Rajasthan State raised the issue of problem of wilt and blight disease of cumin in western and southern Rajasthan as this area consists more than 5 lakh hectare area under cumin cultivation. Dr. Saxena

informed the house about the technology of eco-friendly pesticide spray schedule for effective control of these diseases as well as successful biological control of these diseases. It was decided that ICAR-NRCSS, Ajmer shall discuss the disease problems in Cumin with Agriculture Department of Rajasthan State and provide suitable solution including spray schedule to them urgently. The detailed information on disease resistant varieties of cumin and other spices should also be submitted to Agriculture Department, Rajasthan State. As an action taken from ICAR-NRCSS, a detailed note has been communicated to State Agriculture department wherein it was proposed to organize a technical session with research and extension officers of State Agriculture Department working in cumin growing areas of western Rajasthan at NRCSS Ajmer to share the Advance Production Technology of Cumin.

Monitoring of AICRP centers

Monitoring of Seed Spices AICRP centres (Ist round) visit was conducted on 3rd March, 2021 at ICAR-National Research Centre on Seed Spices Tabiji Ajmer. Different AICRP experimental trails (cropm improvement, crop production and crop protection) laid out ICAR-NRCSS were monitored and reviewed. Monitoring team interacted with concern crop scientists and concern scientist informed about the salient findings of trails

Events/days/programmes etc.

21st Institute Foundation Day

ICAR-NRCSS celebrated 21st foundation day on 19th January 2021 at Dr. R.S Paroda Auditorium of ICAR-NRCSS, Ajmer in virtual and offline mode. Dr. N.S. Rathor, Honourable Vice Chancellor MPUA&T, Udaipur, Rajasthan was the Chief Guest of function. He addressed all the staff and participant to promote sees spices as herbal medicine and stressed upon value addition. Director ICAR-NRCSS briefed the gathering about the journey of ICAR-NRCSS and salient's research achievements of the year. Dr. V. Pandey, ADG-Hort-I, ICAR, New Delhi, Dr. P.L. Saroj, Director, ICAR-CIAH, Bikaner, Dr. Homey Cherian, Dr. Laxmi Kant, Principal, DAV, Ajmergraced the occasionas Guests of Honour by virtual mode. The programme was coordinated by Dr. O.P. Aishwath, Pr. Scientist. On this occasion different category (scientific, administrative, technical, supporting and contractual staff) personas contribution in institute building during the period was recognized and felicitated by distribution of certificate of appreciation.

Celebration of Republic Day

ICAR-NRCSS, Ajmer celebrated its 72nd Republic Day on 26th January to mark the day India became a sovereign republic. On the ocassion Director ICAR-NRCSS delivered speech on progress made by country in horticulture sector in general and seed spices in particular. All the staff of ICAR-NRCSS, Ajmer participated in the function.

World Water Day

A seminar on World water day was celebrated on 22nd March 2021 at ICAR-NRCSS, Ajmer. Mrs. Madhu Paroda, Former Sarpanch of Saradhna village was the Chief Guest of the function and all the officials of ICAR-NRCSS, Ajmer were attended this event. Dr. S.N. Saxena, Director, ICAR-NRCSS, Ajmer has emphasized about rationale, saving and conservation of water and its efficient utilization for various purposes so that our future demand of water could be meet out. He further informed that although 2/3rd water exist on earth but availability of fresh water is very limited, in order that the water saving technologies in seed spices should be promoted. Dr. Saxena also suggested all the scientific staff and other official to disseminate the water saving technologies standardized at ICAR-NRCSS and to create awareness among the stakeholders during various capacity building programmes to be organized in coming days under various schemes. On the occasion, Dr. Ravindra Singh, Pr.Scientist briefed about structures and various forms of water that exists on earth. He delivered a lecture of significance of water in crop production with reference to seed spice crops. Chief Guest has stressed upon on needs of blending traditional/ancient water saving technologies and modern approaches of efficient water utilization techniques to avoid scarcity of drinkable water. She further suggested that young generation should be made aware about importance of water.

International Women's Day

ICAR-NRCSS, Ajmer has organized International Women's Day on the theme Women Leadership in Agriculture: Entrepreneurship, Equity and Empowerment on 8th March, 2021. A detailed programme has been formulated to celebrate this special day. On this occasion the staff of ICAR-NRCSS, joined the International Women's Day programme organized at ICAR HQ via provided web link. In addition to that an separate event was also organized at farm section of ICAR-NRCSS, Ajmer in which woman farm workers, technical's, girl students of DAV, College Ajmer, farm staff and other ICAR- NRCSS officials participated. On this occasion an invited lecture was delivered by Dr. Sharda Choudhary, Sr. Scientist on theme "Women Leadership in Agriculture: Entrepreneurship, Equity and Empowerment". In this event Dr. S.N. Saxena, Director, ICAR-NRCSS, Ajmer felicitated the farm women's workers and shared his thought on women empowerment through agriculture. He applauded role of women in society and contribution made by women's in development of agriculture. This programme was attended by 20 female participants and 60 male participants.

Training/Workshop/Seminar/Virtual meet/Webinar) attended

S. No.	Name of Programme (Training/workshop/seminar etc.) attended	Organized By (Name of Institute)	Date of Programme	Participant (Name)
1.	Attendedan International SYMSAC X-2021,	Indian Society for Spices C/o ICAR-Indian Institute of Spices Research, Kozhikode-Kerala	9th –12 thFeb., 2021	Dr. Gopal Lal, Dr. B. K. Mishra, Dr. S. S. Meena, Dr. N. K. Meena, Dr. Shiv Lal, Dr. Narandra Choudary, Dr. A. K. Verma
2.	Monitoring AICRP centre Jagudan Gujarat	AICRP centre Jagudan, Gujarat.	5thFeb.,2021	Dr. Gopal Lal
3.	Monitoring AICRP centre, Jodhpur, Rajasthan.	AICRP centre Jodhpur, Rajasthan.	6thFeb.,2021	Dr. Gopal Lal
4.	Monitoring AICRP centre, Jobner, Jaipur, Rajasthan.	AICRP centre, Jobner, Jaipur Rajasthan.	15thFeb.,2021	Dr. Gopal Lal
5.	Participated and Presented a paper titled "Genotypic variability and therapeutic potential of fennel (*Foeniculum vulgare Mill*) Seed Extracts' SYMSAC-X - 2021	Indian Society for Spices C/o ICAR-Indian Institute of Spices Research, Kozhikode-Kerala	9th -12th Feb .,2021	Dr. S.N. Saxena
6.	Participated and presented the paper in the International symposium on Spices and Aromatic Crop (SYMSAC-X) 2021	Indian Society for Spices C/o ICAR-Indian Institute of Spices Research, Kozhikode-Kerala	9th -12th Feb .,2021	Dr. O. P. Aishwath
7.	Participated and Chaired the session in 2nd Asian Web Conference on "Managing Hill Resources and Diversities for Zero Hunger and Climate Resilience"	Soil Conservation Society of India (SCSI), Meghalaya Chapter, Barapani, India In collaboration with Central Agricultural University, Imphal, India	12th -13th Feb., 2021	Dr. O. P. Aishwath
8.	Farmers fair	SKNAU, Jobner, Jaipur	22th -26th Feb., 2021	Dr. M. D. Meena

9	National Horticulture Fair-2021, Bangalore	ICAR-Indian Institute of Horticultural Research, Hesaraghatta, Bangalore	08th -12th Feb., 2021	Dr. Gopal Lal
10.	Online meeting of Spice Board, Kochi on ethylene dioxide residue and other related issues in spice exports from, India	Spices Board, Kochi, India.	10th March, 2021	Dr. B. K. Mishra
11.	Interface meeting of stakeholders on pesticide free cumin production at Mundwa, Nagaur, MIDH project on Cumin	Under MIDH project on Cumin.	16th March, 2021	Dr. S. N. Saxena
12.	Attended virtual meeting of national codex contact point, FSSAI, New Delhi from	FSSAI, New Delhi	26th March, 2021	Dr. B. K. Mishra
13.	Participated and delivered lecture in farmers training programme on 'Production and post-harvest management of seed spices'	ICAR- Research Complex for NEH Region, Umiam.	16th -17th March, 2021	Dr. Y. K. Sharma, Dr. S.S. Meena and Dr M. D. Meena
14.	High Power Committee visit at various field demonstrations in Nagour district under DBT project	DBT project	12th March, 2021	Dr. S.S. Meena and Dr. M.D. Meena

New Joining

Dr. S.N. Saxena, Principal Scientist (Plant Physiology), ICAR-NRCSS, Ajmer has assumed charge of Director (Acting), ICAR-NRCSS in forenoon of 10th March, 2021.

Transfer/Deputation/Retirement

Mr. M.A. Khan, Chief Technical Officer (CTO) retired on 28th February, 2021 after serving in ICAR-NRCSS, Ajmer.

Dr. Gopal Lal, Director relived from ICAR-NRCSS, Ajmer on deputation for the post of Member (Agriculture), Cauvery Water Management Authority (CWMA), Department of Water Resources, River Development and Ganga Rejuvenation (DWRRD & GR), Ministry of Jal Shakti, New Delhi on 4th March, 2021.

Awards and recognition:

Dr. S. N. Saxena, Principal Scientist and Director (Acting), ICAR-NRCSS, Ajmer was awarded fellow of Indian Society of Spices, Calicut during International Symposium on Spices and Aromatic Crop (SYMSAC-X) held on 09-12.02.21for his outstanding contribution in seed spice research

Publications

- Aishwath, O.P., Mehta, R.S. and Lal, G. (2020). Impact of on-farm composted seed spices residues on *Trachyspermum ammi*, nutritional parameters and seasonal carbon offset by the crop and soil.International J. Seed Spices 10(2), 2020:16-24

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