



निर्देशक की डेस्क से

ICAR-IISR की तरफ से बधाई!

सोयाबीन भारत एवं विश्व की एक महत्वपूर्ण तिलहनी फसल है। यह मनुष्यों, पशुओं एवं मछलियों के लिए अच्छी गुणवत्ता वाले प्रोटीन के सबसे किफायती स्रोतों में से एक है। इसके क्षेत्रफल एवं उत्पादकता में वृद्धि हमारे शोध का मुख्य लक्ष्य है। भा. कृ. अनु. प.- भारतीय सोयाबीन अनुसंधान संस्थान, इंदौर से "सोयाबीन समाचार" के वर्तमान अंक को प्रस्तुत करने में मुझे बहुत खुशी है।



From Director's Desk

Greetings from ICAR-IISR!

Soybean is an important oilseed crop of India and world. It is one of the cheapest sources of good quality protein for humans, animals and fish. Increasing area and productivity of soybean is the main focus of our research plan. I have great pleasure in presenting the current issue of "Soybean News" from ICAR-Indian Institute of Soybean Research (ICAR-IISR), Indore.

यह अंक जनवरी से जून, 2021 की अवधि के लिए समाचारों और घटनाओं और प्रमुख अनुसंधान उपलब्धियों की झलक प्रदान करेगा। इस अवधि में सस्य एवं पोषण संबंधी महत्वपूर्ण लक्षणों जैसे शीघ्र परिपक्वता, फोटो-असंवेदनशीलता, उच्च तापमान, सूखा और लवणता के लिए सहिष्णुता, कीट प्रतिरोधकता, YMV प्रतिरोध, उच्च ओलिक एसिड और अन्य खाद्य संबंधी विशेषताओं के लिए सात नई सोयाबीन किस्मों की अधिसूचना जारी की गई।

सोयाबीन से संबंधित विभिन्न औद्योगिक समूहों एवं गैर सरकारी संगठनों के साथ सहयोग को बढ़ावा देने के कार्य को गति प्रदान की गई।

डीबीटी प्रायोजित बायोटेक-कृषि इनोवेशन साइंस एप्लीकेशन नेटवर्क परियोजना के तहत सीहोर जिले के चयनित गांवों में सोयाबीन उत्पादन की विभिन्न उन्नत तकनीकों का प्रदर्शन किया गया है। सोयाबीन की फसल के दौरान लघु वीडियो एवं परामर्श सेवा द्वारा किसानों को यू-ट्यूब एवं वाट्सअप के द्वारा समयोचित जानकारी प्रदान की गई। संस्थान ने मेरा गांव मेरा गौरव, और स्वच्छ भारत मिशन जैसे प्रसार कार्यक्रमों का आयोजन किया है, और सोयाबीन उत्पादन बढ़ाने के लिए नवीनतम प्रौद्योगिकियों के बारे में किसानों को प्रशिक्षित किया गया है। कई महिला किसानों को विभिन्न सोया-खाद्य पदार्थों को बनाने के लिए प्रशिक्षित किया गया एवं इसके स्वास्थ्य वर्धक गुणों के बारे में जागरूक किया गया।

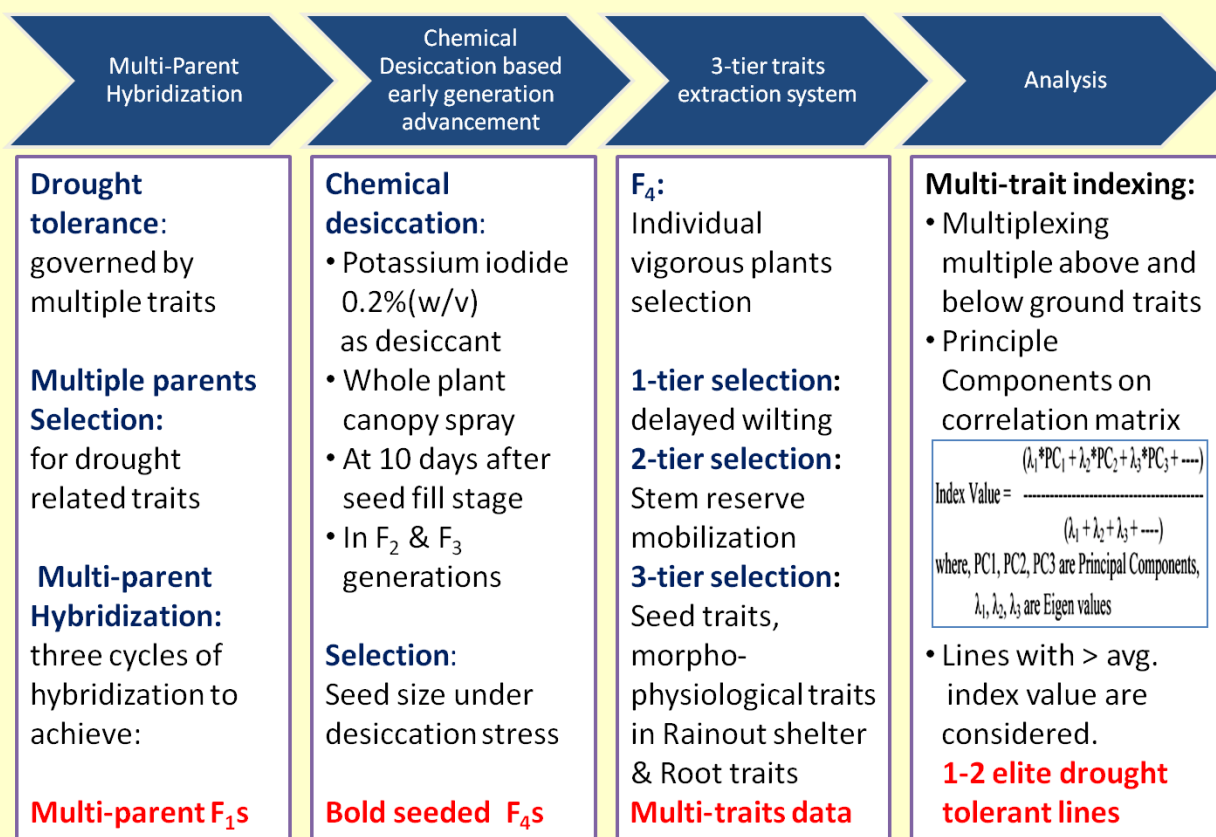
It will provide glimpses of news and events, and salient research achievements for the period January to June, 2021. The most significant achievement is notification and release of seven new soybean varieties with various agronomically and nutritionally important traits such as high yield, early maturity, photo-insensitivity, tolerance to high temperature, tolerance to drought, water logging, insect resistance, YMV resistance, high oleic acid and other food grade characteristics.

The linkages with industry and NGOs working in the soybean production and utilization have been strengthened.

Demonstration of various improved technologies of soybean production has been done in selected villages of Sehore district under DBT sponsored Biotech-Krishi Innovation Science Application Network project. During the soybean crop season, short films and advisories were provided to farmers through You-tube channel and Wattsapp. Institute has organized outreach programs like *Mera Gaon Mera Gaurav*, and *Swacchh Bharat Mission*, and trained number of farmers, including regarding the recent technologies to enhance the soybean production. A number of women farmers were also trained regarding preparation of various soya-foods its health promoting benefits.

A breeding pipeline for drought tolerant soybean developed:

A pipeline for breeding drought tolerant soybean, which includes a workflow to support plant breeding decisions, has been developed starting from multi-parent hybridization involving selection of parents for high yielding traits under water deficit condition and their intercrossing to achieve multi-parents F₁s, through chemical desiccation based early generations (F₂ & F₃) advancement using potassium iodide (0.2%w/v) whole canopy spraying at seed fill (R5 plus 8-10 days) stage leading to bold seeded F₄ base population for multi-tier selection screens. The workflow involved data extraction through three tier screens in advance generations (F₅ & F₆) on drought-related multiple morpho-physiological and root system architecture traits, multiple-traits indexing using SAS (version 3.0) software by principle component analysis for correlation matrix and identifying elite breeding lines showing index values more than average index value. Using the pipeline, three drought tolerant germplasm viz. TGX-709-50E (2.4), J-732 (1.1) and EC-107407 (0.2) were identified which showed higher index values for multiple drought related traits.



Release of two new varieties NRC 138 and NRC 142

NRC 142 the first double null variety free from antinutritional factor Kunitz trypsin inhibitor and lipoxygenase-2 (principal contributor to off-flavour) developed through Marker Assisted Forward Breeding released for commercial cultivation in Central and Southern zone. Maturity period of the variety in Central and Southern zone is 96 days. Average productivity of this variety in Central and Southern zone is 1999 and 2206 kg/ha, respectively.





NRC142 (free from Kunitz trypsin inhibitor and off-flavour generating liipoxygenase-2) crop at maturity

NRC138 is an early maturing with E1 mutant gene soybean variety developed through marker assisted forward breeding released for commercial cultivation in Central zone. The variety is YMV resistant and attains maturity in 92 days. Average productivity of this variety in Central zone is 1789 kg/ha.



NRC138 at active seed formation stage

51st Online Annual Group Meeting of All India Coordinated Research Project on Soybean

Dr Nita Khandekar, Director, ICAR-IISR, Indore welcomed the dignitaries and briefly highlighted the research achievements of soybean accomplished during 2020-21. Dr Sanjeev Gupta, ADG (O&P), congratulated the AICRP group on developing new soybean varieties with high yield, earliness and food usages. He expressed his concern related to poor varietal diversity and replacement rate and informed that out of 48 soybean varieties only 4 varieties make up the 60% of total breeder seed indent and if two more varieties are added the indent comes to 80%. He was seriously concerned that soybean is an exotic crop and is being introduced in regions with biotic and abiotic stresses and emphasized for increasing the varietal diversity. He suggested for innovative steps like breeding hubs in the zones where varietal development is poor, shuttle breeding, sharing of segregating material among centres, utilization of off-season nurseries. For large yield gaps resulting due to rainfed kharif nature of the crop, and suggested to develop good agronomy as contribution from varietal improvement is 40% but 60% is from management. He suggested for land engineering, residue management, conservation agriculture. He expressed his concern on non-sustainability of soybean pigeonpea intercropping and suggested for taking up experiment for finding out the reasons and specially for deficiency of micro nutrients like boron. Chairman of the session Dr T.R. Sharma, DDG (Crop Science) ICAR, New Delhi congratulated the AICRP for developing 33 high yielding and disease resistant varieties during last 10 years. He emphasized that since soybean crop has high protein and other desirable components, it should be exploited as food crop. He suggested that experiments for use of soybean for protein isolate manufacturing may be taken up by utilizing the technology developed by ICAR-CIPHET, Ludhiana. Increasing production and productivity of the major oil seed crop is extremely important since it will help in reducing import of edible oil to a greater extent. He also emphasized that there is need to develop short duration varieties, herbicide tolerant soybean varieties and directed pre-breeding for specific traits. He further suggested that since soybean genome has been sequenced, focus may be given on integration of biotechnological tools like MAS, GWAS and Comparative genome analysis for genetic improvement. He further urged for strong human resource development programme (HRD) for AICRP scientists and to set milestone driven research based on objectives identified for the centres and involving incentives and more resources to better performing centres.





Hon'ble Deputy Director-General of the Indian Council of Agricultural Research, Dr TR Sharma in his inaugural address emphasized promoting diversity of soybean varieties as well as climate-resilient, high-yielding soybean varieties among the farmers of different soybean-growing states. He also emphasized the use of molecular tools like Pre-breeding, Marker Assisted Selection, Genome-Wide Association Studies for fastening the process of varietal development in the shortest possible time. On this occasion, Dr Sanjeev Gupta highlighted the current status of the soybean seed replacement rate which is relatively low as compared to other crops, and the need for the popularization of location-specific new varieties.

During the technical session organized on the breeding of soybean for the development of varieties with specific traits and high yielding varieties, the Chairman of the session, Hon'ble Dr S.P.Tiwari (Former Vice-Chancellor, University of Agriculture, Bikaner and former Deputy Director-General, Education and Crop Sciences, Indian Council of Agricultural Research, New Delhi), expressed satisfaction over the work carried out by the ICAR-IISR regarding the development of food-grade specialty soybean varieties, conservation and evaluation of germplasm as well National Hybridization Program on Soybean which may bear fruits in the coming years.

Dr Hanchinal (Former Chairman, Plant Protection Variety and Farmers Right Act) stated that to break the yield stability in soybean, the research work using Induced Mutation Breeding in collaboration with Bhabha Atomic Research Center is to be taken up.

The committee constituted for the screening of proposals for identification of new soybean varieties approved a total of 7 new soybean varieties suitable for different regions of the country, out of which 4 varieties were recommended for the central zone i.e. RVSM 2011-35 (average productivity - 2200 kg/ha with resistance against stem fly, girdle beetle and defoliating insects), NRC 142 (specialty soybean variety suitable for food uses and First Indian Soybean Variety free from lipoxxygenase-2 and Kunitz Trypsin Inhibitor), NRC 138 (short duration (95 days) with average productivity of 1789 kg/ha); AMS 100-39 (Average productivity of 2087 kg/ha). Similarly, for the Southern Zone, bold seeded soybean variety KDS-992 (average productivity - 2658 kg/ha), MACSNRC-1667 (KTI free soybean variety with average productivity of 2051 kg/ha); Karune as First Indian Vegetable type soybean variety for green pod consumption and NRC 142.

World Water Day (Date: 22nd March 2021)

The Institute in collaboration with Krishi Vigyan Kendra, Kasturbagram, Indore celebrated the “World Water Day” on March 22, 2021 in Tillore Khurd Village in Indore district. On this occasion, Dr. Nita



Khandekar, Director, Indian Institute of Soybean Research, Indore called for joint efforts for collection of rainwater and its conservation. She urged the farmers to adopt recommended practices and technologies harnessing rain water as well as *in-situ* moisture conservation for maximizing the yield of soybean especially looking at the present situation incited by the aberrant weather conditions. She also said that training may be imparted keeping in mind the water conservation technology in organizing programs for the promotion of the technology of soybean production.

During this occasion, Dr. Alok Deshwal, Senior Scientist and Head of Krishi Vigyan Kendra highlighted the problem of scarcity of irrigation water and ground water level which is going deeper and deeper. Dr. Dr. S.D. Billore (Principal Scientist, IISR), advised the farmers with regard to the technologies available in soybean for conserving water. He also advised on the varieties to be grown under changing climate scenario. D.K. Mishra, Scientist (Horticulture) from the Krishi Vigyan Kendra also discussed about the importance of new irrigation methods like drip as well as sprinkler and their utility especially in horticultural crops. Mr. Arun Kumar Shukla and Mr. Nitin Pachalania KVK, Indore also interacted with the farmers during the programme.

Launch of “Agribusiness Incubation Centre” of ICAR-IISR

The two day Sensitization Workshop on **Launch of “Agribusiness Incubation Centre”** of ICAR-IISR, was organized by the Institute. The Agribusiness Incubation Centre (ABIC) has provision of facilitating the capacity building programme for the upcoming entrepreneurs as well as those desirous to initiate agri start-ups on soybean farming and allied sector. The Chief Guest of the programme Dr. T.R. Sharma, Deputy Director General (Crop Science) of ICAR, New Delhi expressed satisfaction over the recent initiatives conducted by the ICAR institutions with response to the call given by the Prime Minister’s Office to make the country self sufficient (*Atmanirbhar*) through conducting startup activities for design and development of various products using low cost and indigenous technologies such as use of protein hydrolysate (an amino acid available in soymeal) in food products and other ancillary uses like organic fertilizer after its degradation.

He also called for developing and strengthening linkages with different stakeholders to make this ABIC a grand success. The workshop was inaugurated on virtual mode in the august presence of Dr. Sanjeev Saxena, Assistant Director General (Intellectual Property and Technology Management, ICAR) who appreciated the efforts of ICAR-IISR to initiate ABIC and commented that centre has a potential for creating multiple ventures. On this occasion, Dr. Sanjeev Gupta, Assistant Director General (Oilseed & Pulses), Indian Council of Agricultural Research emphasized on area expansion and utilization of soybean in secondary agriculture.

Dr. Nita Khandekar, while welcoming a conglomeration of nearly 150 participants from different sectors as well as the dignitaries from the ICAR headquarters highlighted the importance of oilseed sector vis-à-vis soybean in the national economy which necessitate fulfilling the role of soybean in meeting the sustainable development goals (SDGs) of United Nations Agenda 2030. She further, highlighted the need for increasing the productivity of soybean which has already contributed for the socio-economic transformation of millions of small and marginal farmers of Central India also has tremendous potential for contributing the nutritional security of the poor countrymen through supply of enormous health benefits and cheapest source of quality protein in ample quantity.

The programme included a first technical session on “Commercialization of technologies developed by ICAR-IISR” conducted on 16th March 2021 with the session initiated by Dr. Sudha Mysore, CEO, Agrinovate India (Department of Agricultural Research and Education, GOI) who highlighted the mechanisms for commercialization of ICAR technologies and as session by Dr. Dayakar Rao, CEO, Nutrihub, ICAR-Indian Institute of Millet Research, Hyderabad covering the technical discussion-cum-experience sharing from other organizations where such programmes have recently been launched.



There was also a separate technical session by Dr. Vineet Kumar (Principal Scientist) who highlighted the scope of commercialization of specialty soybean varieties developed by ICAR-IISR including NRC 142 which is being appreciated from all the corners as the First Indian Soybean Variety ie. free from both anti-nutritional factors as well as off-odor facilitating suitability as well as acceptability in the Indian kitchen. The other issues in this technical session were discussed by Dr. Neha Pandey (Scientist, Food Technology) offering details of processing technologies for utilization of soybean in the form of food uses. Besides promoting entrepreneurial activities in soy-food sector, she also presented an urgent need to integrate soy in our daily diet subjected to following recommended processing techniques. Dr. D.V. Singh, Principal Scientist (Farm Machinery and Power) who has a credit of developing number of farm equipments like BBF Seed Drill, FIRBS Seed Drill, Sweep Seed Drill, Sub-soiler has convincingly presented their usefulness in yield stabilization even in case of drought years recently experienced on account of impact of climate change. Similarly, Dr. M.P. Sharma (Principal Scientist, Microbiology) and the In-charge of Agri-Business Incubation Centre explained about the ready-to-use consortia developed by the institute having micro-organisms in liquid form paving the way for ease of seed treatment during the sowing of soybean.

The Second Technical Session, chaired by Dr. Vilas A. Tonapi (Director, Indian Institute of Millet Research, Hyderabad) and co-Chaired by Dr. K. Shrinivas (CEO, a-idea, National Academy of Agricultural Research and Management, Hyderabad) included discussion on issues related to establishing the start-ups, their funding opportunities, rules and regulations for registration, labeling/branding & marketing of the final product from the approved agencies like Food Safety Standards Authority of India, National Center of Organic Farming (DAC, GOI) OF etc. The session also included presence of eminent speakers from NABARD, MSME, National Institute of Rural Development etc. who provided guidance in seeking financial assistance in establishing the entrepreneurial activity start-up using the technologies developed by ICAR-IISR.



International Women's Day celebration

Women's day celebration at the institute was organized with full of enthusiasm and joy on 8th March, the day designated by U.N. as International day for women's right and international peace. To cherish the efforts and struggle of women for the equality and justice various programs were organized at the institute especially for the women and girls students such as Poster making and Slogan writing competitions. The titles for Poster making and Slogan making were "Women leadership in agriculture" and "Women Empowerment" respectively. The program was reciprocated with sparkling response from the girl students and women staff of the institute. The winners were as under-

Poster making competition-

First prize was bagged by *Purva Dubey* (Microbiology)

Second prize was bagged by *Rucha Kawishwar* (Molecular breeding)

Third prize was bagged by *Palak Solanki* (Molecular breeding)



Slogan writing competition-

First prize was bagged by *Rachana Bajpai* (Microbiology)

Second prize was bagged by *Dipanti Chaurasia* (Microbiology)

Third prize was bagged by *Nisha Agrawal* (Molecular Breeding)

In alignment with the scheme “Atmanirbhar Bharat Abhiyan” launched by the honorable Prime Minister to give stimulus to the skilling ecosystem, a training program was held at ICAR-IISR Indore on 6/3/2021 for women laborers on „Soy processing and By-product utilization“. The training was organized by Mrs. Neha Pandey, Scientist Food Technology. The training was aimed at providing information to the laborers related to soy based products being made at the institute. The participants were shown the production of tofu at the tofu plant where they could understand the entire process of tofu production from boiling soybean beans.

In addition to that, another training program was held at ICAR-IISR Indore on 8/3/2021 for women laborers on “Hands on training on small equipments for drudgery reduction“. The training was organized by Dr. Punam Kuchlan, Seed Technology. The program aimed at equipping women technologically for reducing their work load in agricultural work and also increase the efficiency of work.



Webinar on “Soybean Breeder Seed Production and Infrastructure requirements” and “Selection of soybean varieties and methods of sowing” organized on 11th May 2021

To address the challenges and sensitize scientists, government officials and seed production agencies involved in soybean production, a webinar on “Soybean Breeder Seed Production and Infrastructure requirements” was organized by the Institute. Dr Nita Khandekar, while addressing a group of nearly 136 participants from various sectors as well as dignitaries from ATARI, Jabalpur, ATARI, Pune, ATARI, Jodhpur and scientist from KVKs, and different state agricultural universities, highlighted the importance the need for increasing the productivity of soybean. She stated that soybean cultivation had a significant impact to the socio-economic transformation of millions of small and marginal farmers of Central India, as well as to nutritional security, especially in terms of reducing protein malnutrition and providing of several other health benefits to both urban and rural communities. While delivering the talk on breeder seed production of soybean and the infrastructure setup needed, the program's speaker, Dr Mrinal Kuchlan, Senior Scientist (Seed Technology) highlighted the steps and mechanisms involved in institutionalizing the breeder seed production programme. He also raised awareness among various stakeholders about the challenges that breeder seed production and offered solution to the issues.

Another webinar on “Selection of soybean varieties and methods of sowing” under project extension of activity of DBT Biotech Kisan Hub in seven aspirational districts funded by DBT, Government of India was organized for farmers. The scientists of institute sensitized 30 progressive farmers of Khandwa, Badwani, Ujjain and Sehore districts about the selection of suitable varieties of soybean, use and method of seed treatment, use of BBF machine in sowing of soybean, methods for estimation of germination percentage of soybean seed at farmer level before sowing. The progressive farmers were also informed about the pest and disease management in green gram crop.

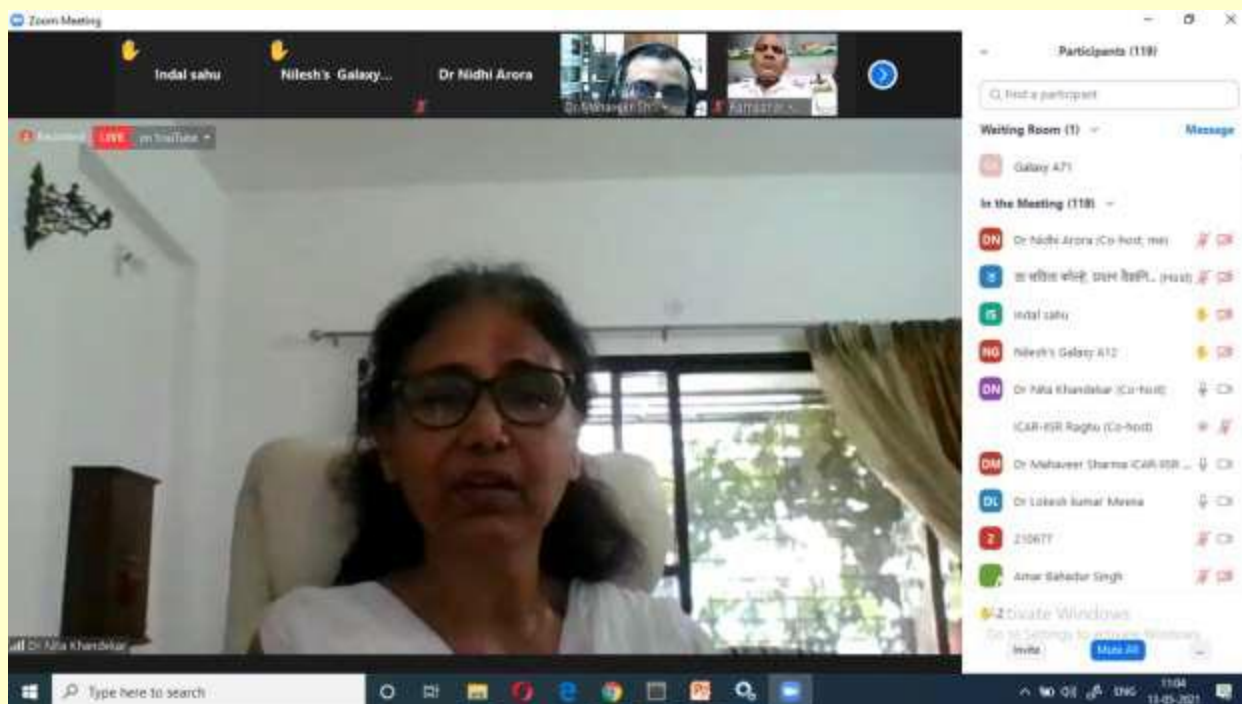
Webinar on “Organic Farming” organized on 13th May 2021

Organic farming is not a new method of farming. In fact, it is one of the ancient method of farming that aims to grow crops to keep the soil alive and in good health using organic waste, waste crops, animal and farm waste, aquatic waste and other organic materials. As a part of series of webinars planned by the institute before the commencement of the *kharif* season, the Institute has organized a webinar on Organic Farming with about 205 participants from Madhya Pradesh, Maharashtra and Rajasthan representing farmers, scientists and those involved in the dissemination of information i.e. extension workers belonging to the state agricultural departments, ATARIs, Krishi Vigyan Kendras, and NGOs. The webinar was delivered by the eminent experts from the eminent scientists from renowned ICAR institutions like Indian Institute of Soil Science, Bhopal and ICAR-National Dairy Research Institute, Karnal.

The aim of the webinar was to encourage the farmers of towards adoption of methods of organic farming in order to have healthy food and avoiding the food contaminated by some chemicals which have residual and toxic effect creating health hazards. Therefore, the organic farming is the only way to protect ourselves and nature from these dangerous chemicals. Dr. A.B. Singh, Principal Scientist and Head, Department of Soil Biology, Indian Institute of Soil Science outlined the advantages and principles of the organic farming. According to him, the organically produced agricultural products and food are not only safe, healthy for human consumption but also keeping pace in line with the environment flora and fauna. He briefed about the historical milestones related to the promotion of methods of organic farming consequent to the constitution of a task force by the Government of India for the cause of Organic Farming which later on also constituted an organization APAED for the promotion and marketing of organic produce. Dr. A.B. Singh also delivered some key principles of organic farming.

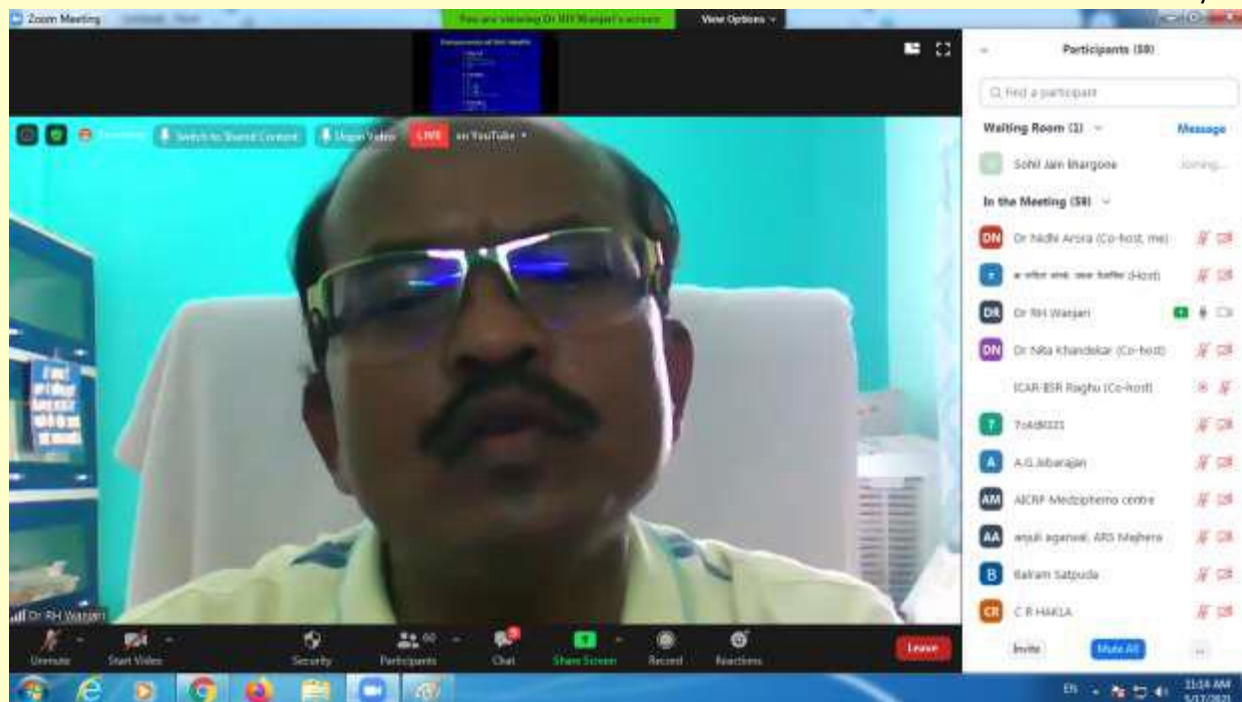


Later on, Dr. RK Verma, explained about organic farming, its needs, principles, components and benefits and loss of organic farming as compare to conventional farming. He also explained about biofertilizers, its applications and availability of them, vermi-composting, composting and farm yard manure. He also attracted the attention of burning of crop waste and its consequences. In his lecture he explained about process of doing organic farming, crop includes in organic farming and nutrient management. A scientific interaction involving question-answer session was also conducted on this occasion. The webinar concluded with the vote of thanks proposed by Dr. Lokesh Kumar Meena, Organizing Secretary of the event.



Webinar on “Balance and integrated nutrient management for sustainable crop production and soil health” organized on 17th May, 2021

Soil is a fundamental requirement for crop production as it provides plants with anchorage, water and nutrients. A certain supply of mineral and organic nutrient sources is present in soils, but these often have to be supplemented with external applications, or chemical fertilisers, for better plant growth. Integrated Nutrient Management refers to the maintenance of soil fertility and of plant nutrient supply at an optimum level for sustaining the desired productivity through optimization of the benefits from all possible sources of organic, inorganic and biological components in an integrated manner.



As a part of series of webinars planned by the institute before the commencement of the kharif season, the Institute organized a webinar on **“Balance and integrated nutrient management for sustainable crop production and soil health** with about 115 participants from Madhya Pradesh, Maharashtra, Tamilnadu, Gujarat and Rajasthan representing farmers, scientists and those involved in the dissemination of information i.e. extension workers belonging to the state agricultural departments, ATARIs, Krishi Vigyan Kendras and NGOs. The webinar was delivered by the Dr R. H. Wanjari, eminent expert from ICAR-Indian Institute of Soil Science, Bhopal.

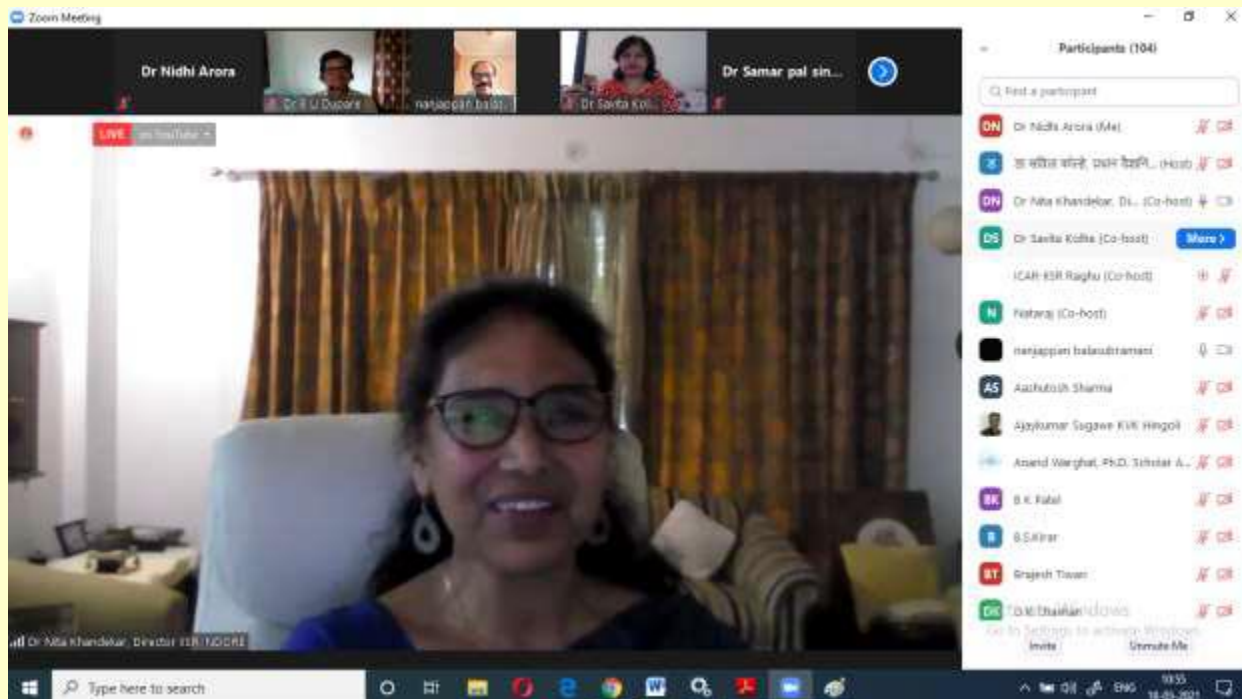
In his presentation during the webinar, Dr R. H. Wanjari, Principal Scientist, ICAR-Indian Institute of Soil Science outlined the advantages and principles of the balance and integrated nutrient management, site specific nutrient management and conservation agriculture (minimum/zero tillage, crop residue management/soil cover and crop rotation). He emphasized the advantages of integrated nutrient management practices, such as combined use of organic and inorganic nutrient sources enhances the availability of applied as well as native soil nutrients, synchronizes the nutrient demand of the crop with nutrient supply from native and applied sources, provides balanced nutrition to crops and minimizes the antagonistic effects resulting from hidden deficiencies and nutrient imbalance, improves and sustains the physical, chemical and biological functioning of soil and minimizes the deterioration of soil, water and ecosystem by promoting carbon sequestration, reducing nutrient losses to ground and surface water bodies and to atmosphere

Training Programme on "Climate Smart Technologies and Practices for Increasing the Soybean Productivity" held on May 18, 2021

A Four days online training programme on "Climate Resilient Technologies and Practices for Increasing the Soybean Productivity" was organized by the Institute and sponsored by the National Institute of Agricultural Extension Management, Hyderabad, India. Dr. BU Dupare Principal Scientist and Course Coordinator of the



training informed that the training was organized keeping in mind the problems of adverse weather conditions experienced since last two years which negatively affected the soybean productivity in major soybean growing areas. He expressed satisfaction that about 160 extension workers and scientists who are participating in this online training program will be instrumental in disseminating the climate smart technologies and practices developed by the Institute who are representing the state agriculture departments and KVKs working in the states like Madhya Pradesh, Maharashtra, Rajasthan, Chhattisgarh, Uttar Pradesh, Haryana, West Bengal.

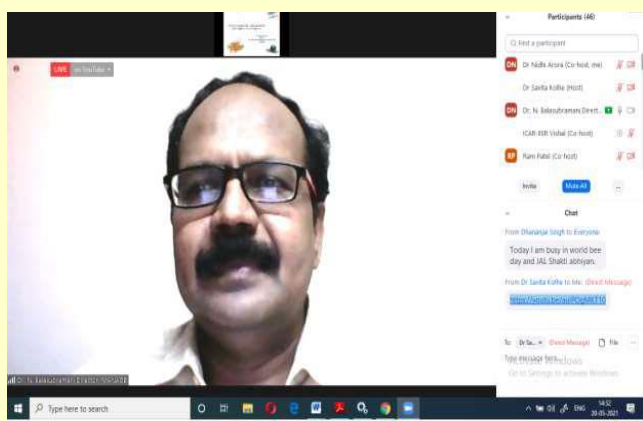
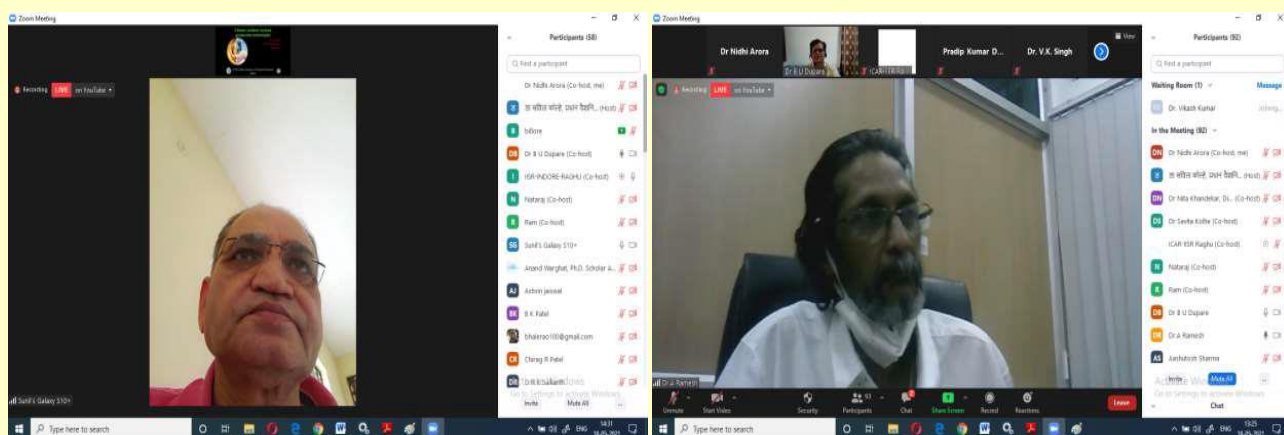


In her address Dr. Nita Khandekar, Director, Indian Institute of Soybean Research said that the training program will provide a significant role in transferring the knowledge about the agronomic practices developed by the institute especially in meeting the needs of farmers suitable for mitigating the situations caused by adverse climate. There is also a need to increase the per hectare yield of soybean to meet the demand of growing population of the country and their requirement for edible oil in which soybean is contributing nearly 25% out of other oilseed crops. She also said that a good representation of 160 trainees attending this training program after going back to their respective areas would promote production technologies and methods helpful for managing the crop yield even in case of drought conditions. She also invited a dedicated and concerted efforts from all the stakeholders especially the workforce deployed at the ground level i.e. Village level Extension Workers and Scientists belonging to Krishi Vigyan Kendra for reducing the gap reported between the production potential of the technology at the research farm and the realizable yield levels at the farmers field.

During the first technical session of the training program, Dr. Sanjay Gupta, Principal Scientist informed the participants about the climate resilient varieties of soybean suitable for different regions of the country. According to him, 143 varieties so far have been identified in the country since 1967. According to him, this year 15 soybean varieties were notified for various areas, out of which M.A.C.S. 1407, NRC-130, RSC. 10-46, and RSC. 10-52 and AMSMB 5-18 has been recommended for the central zone covering Madhya Pradesh, Rajasthan and part of Maharashtra. In addition to this, 4 other varieties have been recently identified for this zone (NRC 138, NRC 142, RVSM 2011-35 And AMS 100-39) giving the farmer a wide varieties of suitable choice as per the local climate scenario.

In another technical session, Dr. A. Ramesh propagated the climate-friendly nutritional management methods recommended in soybean cultivation such as weed mulching, sowing on Broad Bed Furrows/ Ridge & Furrows for judicious use of both organic as well as inorganic sources. Whereas Dr. Sunil Datt

Billore, Principal Scientist (Agronomy), advised to adopt other climate-resilient practices in soybean cultivation along with ways and means of controlling the weed. He also mentioned that there are plenty of various herbicides available now a days including pre-tank mixed formulations which can be used either during sowing or also in the standing crop.



The ICAR-IISR also launched a new news programme “ICAR-Madhya Bharat Samachar” on this occasion containing technical interaction with agricultural scientists of IISR as well as other ICAR institutions located in the Central India. The episodes of this news programmes would be uploaded on the YouTube Channel of the institute “IISR Soybean Indore” on weekly and fortnightly basis as per the requirement of the crop commodity.

Webinar on “Integrated farming system in dry land agriculture” on 24th May 2021

Farming system is an integrated resource management strategy for obtaining growth in economic and sustained crop and livestock production as well as preserving the resource bases with high environmental quality. Integrated farming system, a component of farming system research, introduces a change in the farming techniques for maximum production in the cropping pattern and takes care of optimal utilization of resources. Farm wastes are better recycled for productive purposes in the integrated farming system. The role integrated farming system (IFS): IFS approach as a biophysical and socio-economic capsule has immense potential to address instability of income, food and nutritional insecurity, unemployment, vulnerability and poverty of farmers as well as landless laborers. The goals of integrated farming system are maximization of yield of all component enterprises to provide steady and stable Income rejuvenation/amelioration of system's productivity and achieve agro-ecological equilibrium.

As a part of series of webinars planned by the institute before the commencement of the *kharif* season, the Institute organized a webinar on “Integrated farming system in dryland agriculture” with about 76 participants from Madhya Pradesh, Maharashtra and Rajasthan representing farmers, scientists and those involved in the dissemination of information i.e. extension workers belonging to the state agricultural departments, ATARIs, Krishi Vigyan Kendras, and NGOs. The webinar was delivered by the Dr S. K. Choudhary, eminent expert from College of Agriculture, Indore.

Initially, in her address, the institute Director Dr. Nita Khandekar highlighted the importance of Integrated farming system in dryland agriculture and also briefed about the ongoing efforts of the institute staff for promoting the need-based information on various agricultural issues to the farming community. The aim of the webinar was to encourage the farmers towards adoption of integrated farming system under rainfed/dryland conditions to sustain crop productivity and increasing the income of the farmers. The programme was started by welcome address and introductory remarks by Dr S. D. Billore, Head, Division of Crop Production, ICAR-IISR, Indore.

In his presentation during the webinar, Dr S. K. Choudhary, Chief Scientist, College of Agriculture, Indore, outlined the objectives, role, scope, aim and principles of the integrated farming system. Integrated farming system aims at increased productivity, profitability, sustainability, balanced food, clean environment, recycling of resources, income round the year. An integrated crop farming system represents a key solution for enhancing livestock production, minimizing the effects of intensive farming and safeguarding the environment through efficient usage of resources. He also discussed in detail about the components of integrated farming system such as Agriculture, Sericulture, Fish farming, Azolla farming, Horticulture, Dairy, Duck rearing, Kitchen gardening, Forestry, Poultry, Pigeon rearing, Fodder Production, Mushroom cultivation, Goat & Sheep rearing, Vermiculture, Piggery, Nursery and seed production.

Webinar on “Increasing soybean production through precision agriculture” on 27th May 2021

The Institute hosted a webinar on “Increasing soybean production through precision agriculture” on 27th May 2021 with the involvement of 59 participants including scientists, and researchers working in the ICAR and CSIR institutes, and the faculty members of various universities of Madhya Pradesh, Maharashtra, Andhra Pradesh, Karnataka and other states in India.

During this webinar, Dr M. Karthikeyan, Senior Principle Scientist, an eminent expert from CSIR-National Chemical Laboratory, Pune, deliberated on his experiences on Precision Farming in the state of Maharashtra. According to him, for production of crops and commodities, the inputs are utilized in precise amounts to get increased average yields, compared to traditional cultivation techniques. It is a data-driven approach that provides farmers information on the exact amount of resources he needs to deploy to farm and till land, for optimum output. He further added into that the Precision Agriculture can help in managing crop production inputs in an environmentally friendly way. This is the most recent innovative technology based on sustainable agriculture and healthy food production and leads to profitability and increasing production, economic efficiency and the reduction of undesired effects on the environment. Dr M



Karthikeyan introduced his research and prototype development on practical and low-cost weather monitoring system (**Smart Agri-informatics and Green Internet of Things to enable Agriculture-SAGITA**) designed in collaboration with other CSIR laboratories i.e. CSIR-Central Scientific Instruments Organisation, Chandigarh and CSIR- Central Mechanical Engineering Research Institute, Durgapur, West Bengal, exclusively for Indian Farmers to monitor, alert and control of scientific crop cultivation and lower consumption of resources, energy, water and costs from the aspect of environmental and crop monitoring. He highlighted the need of Precision Agriculture (PA) to meet the Sustainable Development Goals (SDGs) set by United Nations to be achieved till 2030. An information and technology-based farm management system identifies, analyses and manages variability in fields by conducting crop production practices at the right place and time and in the right way, for optimum profitability, sustainability and protection of the land resource.



Dr Milind Ratnaparkhe, Senior Scientist, ICAR-IISR, Indore, the Co-ordinator of the event discussed various issues for increasing soybean productivity and emphasized application of precision agriculture in this area. Research scientists working on various crops such as rice, wheat, maize, sugarcane and horticulture crops showed key interest in the application and use of low-cost IoT enabled weather monitoring system (SAGITA) developed by Dr Muthukumarasamy Karthikeyan and his collaborators. With the advent of technologies like Artificial Intelligence, IoT and more, it has become easier and faster to predict farming patterns. The newly developed weather monitoring system will help the farmers to increase agriculture productivity, prevents soil degradation, and will help in the Reduce of chemical application in crop production and will help in, efficient use of water resources.

Initially, in her address, the institute Director Dr. Nita Khandekar highlighted the importance of precision farming system in agriculture and also briefed about the ongoing efforts of the institute staff for promoting the need-based information on various agricultural issues to the farming community.

Webinar on “Increasing Current trends in genomics- assisted breeding of agronomic traits in Soybean” on 31st May 2021

The institute hosted a webinar on “**Increasing Current trends in genomics- assisted breeding of agronomic traits in Soybean**” on 31st May 2021 with the involvement of 82 participants including scientists, plant breeders and researchers working in the ICAR institutes and AICRP centres located in the states of Maharashtra, New Delhi, Jammu & Kashmir, Himachal Pradesh, Manipur, Jharkhand, Karnataka as well as the faculty members of popular universities like Devi Ahilya Vishwa Vidyalyaya, Indore, Javwharlal Nehru Krishi Vishwa Vidyalyaya, Jabalpur of Madhya Pradesh.

On this occasion, the distinguished speaker Dr Giriraj Kumawat, Scientist, Agri-biotechnology, ICAR-IISR, Indore deliberated on his experiences on **genomics- assisted Molecular breeding** in soybean crop. According to him, Use of new breeding techniques like genomic-assisted breeding hold the promise to increase genetic gain during varietal development programme. He also explained how Genomic-assisted breeding comprise of use of genomic approaches like genome-wide associations, haplotype based breeding, genomic selection, genome editing etc., are helpful in increasing soybean productivity.

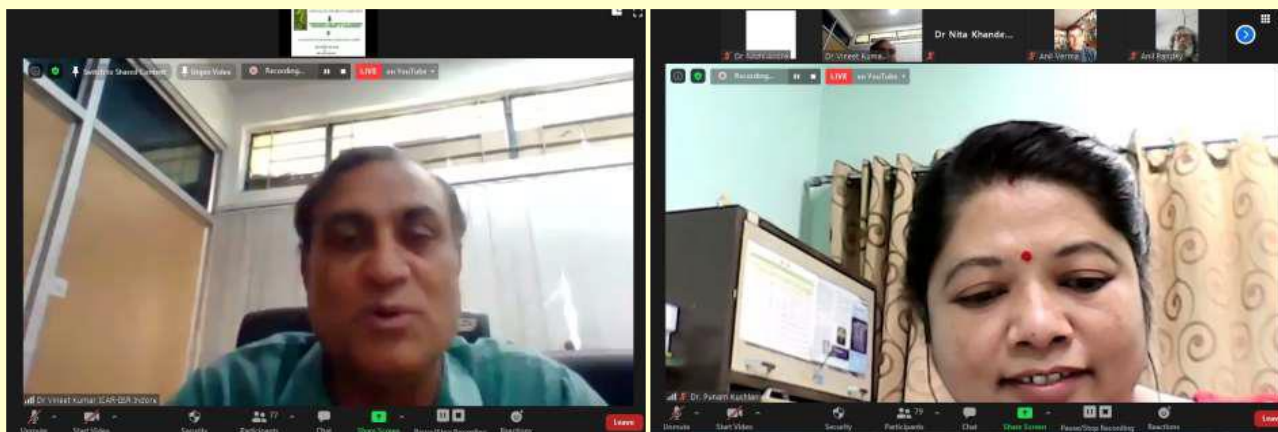
Dr Gyanesh Kumar Satpute, the Coordinator and the Senior Scientist, Genetics and Plant Breeding, ICAR-IISR, Indore, while discussing the various issues involved in increasing the soybean productivity also emphasized on application of **genomics- assisted breeding** in this area. He also added that Genomic-assisted breeding coupled with speed breeding could greatly help in the development of high yielding soybean varieties within shortest time duration. At the end of the session, Dr. Sanjay Gupta, Head of division, Crop Improvement, and Co-ordinator of today’s webinar, mentioned that the information delivered in this webinar for the scientific community for the rapid development of high yielding varieties (HYV) by the plant breeders of All India Coordinated Research Project on Soybean being operated across the country.



Webinar on “Specialty Soybean Varieties: Addressing the needs of Farmers, Industry and Consumers” on 4th June 2021

The institute hosted a webinar on “**Specialty Soybean Varieties: Addressing the needs of Farmers, Industry and Consumers**” on 4th June 2021 with the involvement of about 92 participants which included progressive farmers, consumers, potential entrepreneurs, soybean based industries, as well as agricultural scientists, plant breeders and researchers working in the ICAR institutes and AICRP centres.

On this occasion, the distinguished speaker Dr Vineet Kumar, Principal Scientist, Plant Biochemistry, ICAR-IISR, Indore explained the scenario of soy food consumption in the country which is only 6-7% at present since the most of the de-oiled cake is exported from the country. He highlighted the importance of soybean being the cheapest source of quality protein (only 10 Paisa for Soy Nuts and 40 paisa for soya Nuggets for each gm of protein compared to other sources) According to him, an anti-nutritional compound (Kuntiz Trypsin Inhibitor) present in soybean seed as well as Lipoxygenase-2, an amino acid associated with soy protein which is responsible for imparting bad odor has been a major constraints till now for low acceptability and popularity of soy food products in the country. He initiated his research programmes more than a decade ago mainly aiming at the development of soybean varieties suitable for direct consumption which now has started bearing fruits. According to him, earlier, the consumers had to process the soybean before being used for preparation of food products which involved lot of time, energy and cost. After 10-15 years of dedicated research, the Indian Institute of Soybean Research has come out of some soybean varieties which are suitable for direct food consumption and without any health risks which are called as Specialty Soybean varieties. These includes, soybean varieties India’s First Kunitz Trypsin Soybean Variety “NRC 127” recommended for Central India, MACSNRC 1677 (also KTI free) recommended for Southern India, NRC 132 recommended for Southern as well as Eastern States, NRC 142 (India’s first Double Null KTI and Lipoxygenase-2 variety) recommended for Central as well as Southern states and a recently notified NRC 147 (India’s first High Oleic Acid Variety for improved shelf life and oxidative stability) for Eastern Zone.



Dr Vineet Kumar also highlighted the other distinguishing characteristics of these specialty soybean varieties like yield, maturity duration and resistance/tolerance to various biotic problems. He informed that recently released soybean variety NRC 142 maturity duration of about 100 days and yield potential of about 28 q/ha along with multiple resistance to diseases especially against Yellow Mosaic Virus and Charcoal. He further explained the suitability of this variety for solvent extraction industries which invest more money for hydrogenation resulting in increased cost of vegetable oil used by the common people. Similarly, another specialty soybean variety NRC 147 which has more oleic acid for increased shelf life, has yield

potential of 2-3 ton/ha in Southern Zone and maturity duration of about 100 days. Dr Vineet Kumar also informed about the soybean breeding lines like NRC 140, NRC 141 (containing about 60% oleic acid) and very much suitable for the requirement of solvent extraction industries. At the end, he also informed about a vegetable soybean variety NRC 188 which promise a very profitable venture both for the producers as well as consumers.

Webinar on “Soybean varieties and Seed Availability” on 04.06.2021

An online webinar was organized on “Early, medium and long duration varieties of soybeans and their seed availability”, in which more than 220 farmers and extension workers from Indore as well as other districts of Madhya Pradesh participated. The programme was conducted in collaboration with District Administration and Deputy Director (Agriculture), Indore.

In her welcome address during the webinar, Dr. Neeta Khandekar, Director of the ICAR-IISR said that due to bad weather for the last two years, there has been a decrease in the achievement of targets set for the production of soybean. She, also requested the farmers to replace the popular soybean variety JS 95-60 with its alternative ie. JS 20-34.

On this occasion, Hon'ble Shri Shankar Lalwaniji praised the Soybean Research Institute of India for its efforts being made to efforts for the dissemination of the ways and means of addressing the problems of pests and diseases in soybean crop. Addressing the farmers, he said that in view of the bad weather and increasing outbreak of pests/diseases, the recommendation made by the Indian Institute of Soybean Research to grow 2-3 varieties should be followed.

During this webinar, Deputy Director Agriculture, District Indore Shri S.S. Rajput while providing the list of government as well as private seed companies of Indore district, he said to follow the recommendation of IISR, ie. Use of recommended seed rate for soybean (60-80 kg/ha) on the basis of minimum 70 percent germination so that the problem of shortage of seeds can also be resolved to some extent.

In this webinar, Dr. Mrinal Kuchlan of the Indian Institute of Soybean Research briefed about a simple way for testing the germination of soybean seeds using a tray filled with sand. Along with this, Dr. Amarnath Sharma, retired Principal Scientist (Entomology) and Head, Plant Protection Division interacted on the scientific methods to control yellow mosaic disease, white fly and other insects in soybean crop. Along with this, he advised to adopt other methods of integrated pest management like use of yellow sticky leaves, pheromone trap, light trap etc. for proper pest management in soybean crop.

On this occasion Principal Scientist of Indian Institute of Soybean Research Dr. B.U. Dupare (Principal Scientist, Agricultural Extension) briefed about advisory for soybean farmers of the state.

1. Farmers should cultivate at least 2-3 varieties of varying maturing durations (early maturing, medium duration and long duration) Presently, majority of the farmers of the state are preferring the soybean variety JS 95-60, which is being increasingly infected with the insect-pest and diseases. Therefore, it is advised to grow alternate soybean variety like JS 20-34.
2. In the last few years, soybean crop has been damaged due to excessive rainfall during the maturity of the crop. Therefore, it is advised to grow other soybean varieties like JS 20-29, JS 20-69, JS 20-98 while reducing the area under JS 95-60.
3. It is advised to test the germination of available seeds before sowing. Based on the 70 percent germination and seed size, a recommended seed rate of 60-80 kg/ha should be followed. In case of less germination (65%, 60%, 55% or 50%) the seed rate should be increased proportionately to 75, 80, 90 or 100 kg/ha.



4. Use disease free seeds for protection from fungal and virus borne diseases in soybean. It is also advised to carry out seed treatment with fungicide, insecticide and *Rhizobium*/PSB culture at the time of sowing in order to protect the crop from pests/diseases. For this, pre-mixed fungicide penflufen + trifloxystrobin 38 FS is recommended (1 ml/kg seed) or Carboxin 37.5% + Thirum 37.5% (3 g/kg seed) or Thirum (2 g) and Carbendazim (1 g) per kg. Alternatively, seed can also be treated with organic fungicide *Trichoderma viridi* (8-10 g/kg seed).
5. In addition to the above, yellow mosaic disease and stem fly outbreak occur every year in the areas after seed treatment with the above fungicide. Therefore seed should also be treated with recommended insecticides like Thiamethoxam (10 ml/kg seed) or imidacloprid (1.25 ml/kg seed).
6. After drying the seeds treated with the above recommended fungicide in the shade, inoculation with both *Bradyrhizobium* culture and PSB culture (5 g/kg seed) should be used immediately for sowing.

Webinar on “Soybean Disease Management in Changing Climate Scenario” on 7th June 2021

The Institute organized a webinar on “Management of diseases of soybean in the era of climate change” today dated 07.06.2021 with the involvement of 82 participants including progressive farmers of Maharashtra, Madhya Pradesh, Uttar Pradesh, Rajasthan and Bihar.



On this occasion, distinguished speaker Dr. Laxman Singh Rajput (Scientist, Plant Pathology) of Indian Institute of Soybean Research, Indore explained about the major diseases that occur in soybean crop grown by farmers of various states along with ways to manage them. According to him, the identification of the disease is very important in absence of which incur heavy losses to the soybean crop as well as increased cost of cultivation without monetary benefit. He said that yellowing of leaves in soybean is not always due to the infection of Yellow Mosaic Virus. We should also understand the situation that sometimes leaves turn yellow also due to excessive rain to which consider it as a disease. Dr. Laxman also said on this occasion that, for the last 2-3 years, an outbreak of a disease called anthracnose or pod blight is increasingly being seen in soybean crop of Malwa region, due to which a lot of loss has been seen in soybean yield. He therefore, appealed the farmers to reduce the area under JS 95-60, a most popular variety which is already susceptible to pod blight disease. Alternatively, he suggested to grow other soybean varieties like JS 20-69 and JS 20-98 which are resistant to these diseases.

Webinar on “Phenotyping strategies for screening of drought tolerance in soybean” on 10th June 2021

The institute hosted a webinar on “**Phenotyping strategies for screening of drought tolerance in soybean**” on 10th June 2021 with the involvement of about 40 participants which included progressive farmers, as well as agricultural scientists, plant breeders and researchers working in the ICAR institutes and AICRP centres. The audience represented various states across the country like Maharashtra, Rajasthan, Karnataka, Telangana, Himachal Pradesh and Uttarakhand and major soybean growing states like Maharashtra, Madhya Pradesh, Rajasthan and other Northern states.

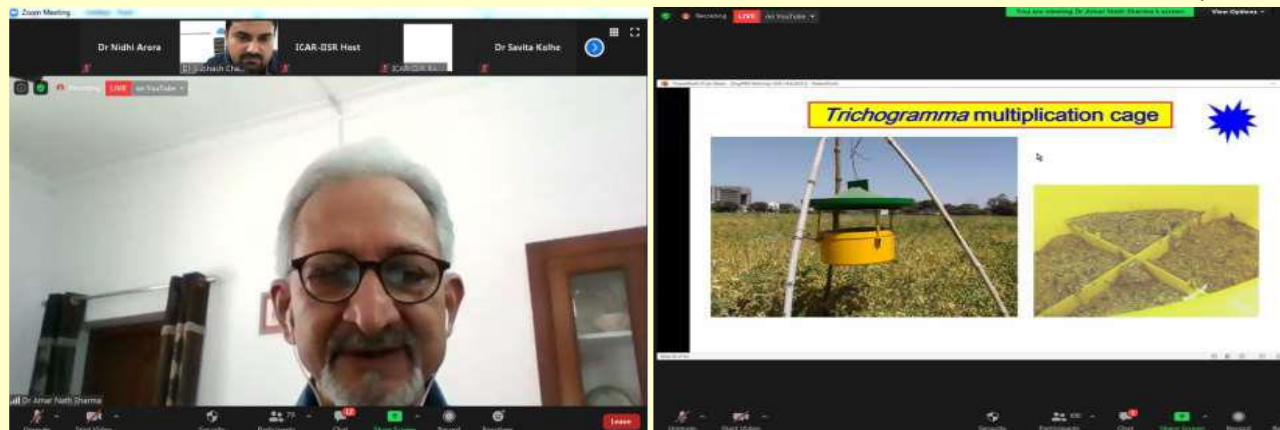
While discussing the subject, Dr Satpute said that the soybean crop at present is suffering on account of heavy yield losses as well as quality due to frequent unpredicted dry spells, once in every five years, in current era of changed climate scenario. Increasing soybean productivity, targeting breeding for yield *per se*, is challenging as productivity of released and new soybean varieties gets stagnated under such situation. He said that drought tolerance in soybean is governed by a complex set of traits thereby posing various challenges for the breeders to develop climate resilient varieties. To do this, use of novel phenotyping based breeding strategies hold the promise to increase genetic gain during varietal development. The Novel phenotyping based breeding strategies involve multi-parent hybridization, chemical desiccation based generation advancement, multi-tier screening for drought related traits etc. The ICAR-Indian Institute of Soybean Research, Indore has initiated work for development as well as identification of new germplasm and parental lines for drought related traits.

The institute has been successful in development of some varieties to manage the yield levels even in case of drought situation. Recently, the institute developed a new soybean variety NRC 136 for eastern part of the country (West Bengal, Bihar, Jharkhand, Orissa and Chhattisgarh) with the average yield level of 17 q.ha⁻¹ and also up to 30 q.ha⁻¹ in few cases following good practices in normal rainfed condition. This variety has also found give 30% yield advantage in rainout shelter experiments over JS 97-52, a popular variety of this region. Further, it is also highly resistant to Indian Bud Blight which is a prominent disease of this region along with moderate resistance to defoliating insects.

Webinar on “Integrated Pest Management in soybean” on 14th June 2021

The institute hosted a webinar on “Integrated Pest Management in soybean” on 14th June 2021 with the involvement of about 110 participants which included progressive farmers, agricultural scientists, agricultural officers and researchers working in the ICAR institutes, AICRP centres and Dept of Agriculture, MP. The audience represented various states across the country like Telangana, Himachal Pradesh, Manipur, Punjab, Delhi and Uttarakhand and major soybean growing states like Maharashtra, Madhya Pradesh, Rajasthan and other Northern states.





While discussing the subject, Speaker of the Program Dr A N Sharma, Ex-Principal Scientist (Entomology) and Head Crop Protection said that farmers should rely on all methods: physical, cultural, mechanical and biological control options with chemical control as the last option in Climate Smart Pest Management approach. He advocated use of some recommended combinations of weedicides along with chemical pesticides in early stages of crop which may prevent the soybeans in fields from early generations of pests. He discussed about different control measures for pest including pheromone trap, light trap, bird perches, yellow sticky trap and biological control measures.

Dr Sharma told that natural enemies of harmful pests or biological pest control measures can reduce the populations of harmful pests from 40% to 100%. Use of trap crop like *Suwa* with soybean in 12:2 ratio (soybean: Suwa) can minimize the use of chemical pesticide in soybean crop. He also detailed about different sources of botanical pesticides and methodologies to develop these environmentally friendly pesticides using leaves and seeds of *Babul*, *Dhatura* and *Sitaphal* etc. Dr Sharma briefed about seed treatment methodology for pesticides and also emphasized that insecticide should be applied separately after treatment of fungicide on seeds as FIR approach (Fungicide □ Insecticide □ Rhizobium). He also suggested about use of some newly notified varieties which are resistant to different pests i.e. stem fly, girdle beetle, leaf hopper, defoliators, bean bugs and pod borer etc. He discussed about recommended doses of different chemical pesticides for soybean and emphasized on optimum amount of water during spraying.

Training Programme on “Improved Soybean Production Technologies” Jointly Organized by ICAR-IISR and ITC E-Chaupal on 16th June 2021

The iInstitute, in collaboration with I.T.C. Limited organized an online training program "Improved Soybean Production Technology and New Innovative Practices of soybean Production" with the participation of more than 550 farmers and field staff associated with ITC from the states like Madhya Pradesh, Maharashtra, Rajasthan and Gujarat under the E-Choupal program. Initially, the Coordinator of the training programme, Dr B. U. Dupare welcomed the distinguishing guests and trainee participants and hoped to have meaningful scientific interaction. Dr Neeta Khandekar, Acting Director of the Indian Institute of Soybean Research, Indore, briefed about the major objective of increasing the productivity of soybean crop through which number of online webinars and training programmes are being organized by creating and strengthening linkages with various government as well as private organizations like ITC, Solidaridad etc. She also said that it will not be appropriate to compare the Indian soybean with other

countries as the average maturity duration for soybean there is more than 150 days compare to 100 days in India. Therefore, Indian Institute of Soybean Research has always been striving for the development of varieties and technologies capable of higher yield as well as characters resistant to major pest and disease resistance. She also expressed the hope to achieve the average productivity of soybean to 15 quintal/ha by 2025.



During the inaugural session, Shri C. Shashidhar, Head, of Agriculture Services, I.T.C. expressed hope to strengthen the proposed seed bank of ITC e-choupal, through the capacity building programme organized by the ICAR-IISR. While appreciating the scientific contribution of IISR Scientists in the development and dissemination of soybean production technologies, Dr. Anita Sharma, Crop Advisory Service E-Chaupal and Mr. Anil Kolla, expressed the preparedness of the participating farmers and field staff of ITC to take these technologies and practices to the field level for profit maximization and productivity enhancement.

On this occasion, 5 major technical sessions were organized for farmers, in which scientists of Indian Soybean Research Institute presented and discussed along with advice for adoption in the real field situation. Initially, Dr. Mrinal Kuchlan of the institute discussed about different location specific recommended soybean varieties like J.S. 20-69, J.S. 20-98, J.S. 20-34 along with the quality seed production techniques and procedure to test germination percentage. He advised that the soybean seed should have optimum germination percentage of 70%, the basis on which seed rate is to be decided. Thereafter Dr R.K. Verma delivered information related to various recommended methods as well as weedicides suitable in soybean crop. Dr. S.D. Billore, Head, Crop Production Division also interacted on "Recommended Agronomic Practices and Novel Methods for soybean Production". He said that the farmers who have irrigation facility should irrigate the crop in case of drought, before the development of cracks in the soil. On this occasion, Dr Lokesh Meena also interacted on "Major harmful Insects of Soybean and their control Measures". He said that if the insects are properly identified at an early stage, they can be easily controlled by following appropriate control measures involving physical, cultural and chemical measures. On this occasion, famous soybean entomologist Dr. A. N. Sharma, retired Principal Scientist also delivered a lecture on "Climate Smart Pest Management" in which he advised to adopt various techniques of pest management like trap crop, pheromone trap etc. while Dr. Laxman Singh Rajput gave information on use of chemical and organic cultures for seed treatment in soybean in order to prevent the incidence of popular diseases like yellow mosaic virus and other fungal diseases.

**Training Programme on “Climate Smart Soybean Production Technologies for Increasing Soybean Productivity”
Jointly Organized by ICAR-IISR and Solidaridad, Bhopal on 17th June 2021.**

The institute in collaboration with Solidaridad, Bhopal organized an online Collaborative Training Program "Climate Smart Soybean Production Technologies for Increasing Soybean Productivity" with the participation of more than 250 farmers and field staff associated with Solidaridad, Bhopal from the states like Madhya Pradesh, Rajasthan and Karnataka. Initially, the Coordinator of the training programme, Dr B. U. Dupare welcomed the distinguishing guests, trainee participants and also briefed about various technical sessions like climate smart varieties, climate smart insect-pest management and climate resilient practices like BBF and Ridge & Furrow planting methods especially included in the training programme.



In her brief inaugural address, Dr. Nita Khandekar, Acting Director of the ICAR-Indian Institute of Soybean Research, Indore, said that the productivity of soybean is largely affected due to various biotic factors like increased pressure of pest and diseases as well as adverse climatic conditions like drought and incessant rainfall at the time of maturity of soybean crop. She also highlighted the need to increase the productivity of oilseed crops including soybean which is greatly contributing toward achieving self-sufficiency in vegetable oil production. Dr Khandekar also said that the farmers should get rid of old soybean varieties like J.S. 95-60 which can be replaced by new varieties such as JS. 20-69, JS. 20-98, NRC 127 which are resistant to pest and diseases. Further, she expressed the hope that the institute would be able to meet the seed production targets of new varieties (NRC 130, NRC 138, NRC 142 etc.) recently notified by the Govt. of India.

International Webinar on “Genetic management of Asian soybean rust” on 18th June, 2021

The institute organized an International Webinar on “Genetic management of Asian soybean rust: current status and future perspectives” which was delivered by Dr. Naoki Yamanaka, Senior Researcher from Japan International Research Centre for Agriculture Sciences (JIRCAS) Japan. On this occasion, Dr. Yamanaka said that Japan is importing >90% of soybean to meet its requirement. To ensure soybean availability, JIRCAS is engaged in research and development of rust resistant cultivars in various countries like Brazil, Bangladesh, Paraguay, Uruguay, Argentina and Mexico. He said that genetic management of soybean rust is most economical and ecological way. Dr. Yamanaka, presented his work on genetic studies on soybean rust including mapping and characterization of rust resistant genes and development of gene pyramided

rust resistance lines. Asian soybean rust is an important disease of soybean causing significant yield losses in the states of Karnataka, Maharashtra, parts of Madhya Pradesh and North-east region. Increased monoculture practices and the emergence of new rust races may wreak havoc any time, which necessitates proactive measures to create durable resistance. Dr. Nita Khandekar, Director, ICAR-IISR, Indore, said that to improve soybean rust resistance in Indian soybean varieties, scientists in India will make efforts to use the resistant genetic material developed by JIRCAS through collaborative project. Dr. R. R. Hanchinal, President of Society for Plant

research and former President PPVP&FR, presided over the webinar. He said that more collaborative efforts are needed to insulate soybean from diseases. Dr S. K. Rao, Vice Chancellor, RVSKVV, Gwalior, said that there is no alternative to soybean crop for farmers in the central India and therefore multiple disease resistant soybean varieties are needed. Dr. S. Rajendra Prasad, Vice Chancellor, UAS, Bangalore, said that along with genetic management, biological control of diseases using microbial agents will be a cost effective and economical method for rust control. Dr. P. G. Patil, Vice Chancellor, MPKV, Rahuri, said that the rust is threat to soybean production in southern Maharashtra and the webinar have benefited soybean scientists of the state. Dr. Sanjeev Gupta, ADG (Oilseeds and Pulses), ICAR, special invitee of webinar said such webinars are very important for sharing knowledge and international collaboration. Coordinator Dr. Giriraj Kumawat presented vote of thanks.



Farmers Training Programme on “Improved Soybean Production Technologies” commemorating 75 years of India’s Independence “Amrit Mahotsav”

As per the instructions of the GOI and the Indian Council of Agricultural Research, New Delhi, regarding organization of programmes to commemorate 75 years of India's independence in the form of "*Amrit Mahotsav*", the Indore based ICAR-Indian Institute of Soybean Research (ICAR-IISR), organized a training programme on “Improved Soybean Production Technology” on June 19, 2021 in association with ITC. Ltd. virtually using zoom platform. The training program, broadcasted-live simultaneously on the social media channels of ICAR-IISR as well as ITC Ltd, was attended by about 7500 farmers from urban, rural and remote areas of Madhya Pradesh through which the farmers not only got scientific information on "improved methods and technologies of soybean production" but they also interacted with the scientists of ICAR-IISR through the live-chat/comments on YouTube channel which were addressed in the programme itself. It is expected that every trainee farmer participating in this programme will further pass on the information received from this training to other 10 farmers of their neighborhood and village, so as to reach 75,000 farmers through this single programme commemorating the magic figure of 75 years of India's Independence.

The training program was organized a few days before the commencement of sowing of soybean crop. Through this, the scientists of ICAR-IISR, Indore delivered latest information on latest methods and techniques related to the production and protection of crop from insect-pest and diseases through five major technical sessions. Dr. Mrinal Kuchlan, informed about newly released varieties of soybeans, like JS 20-69, JS 20-98, JS 20-34 etc. which may be promoted for replacement of popular soybean variety JS 95-60 as it has become prone to insect-pests and diseases. Similarly, Dr S.D. Billore advised the farmers to sow the crop using Broad Bed Furrow or Ridge & Furrow methods considering adverse climatic conditions which are experienced frequently since last few years. On this occasion, Dr. Rakesh Kumar Verma called for adoption of integrated methods for management of weeds including use of recommended herbicides. After this, Dr Lokesh Kumar Meena, Dr A.N. Sharma and Dr Laxman Singh Rajput explained the symptoms, damage and control of insect-pests and diseases along with important advise to carry out seed treatment using FIR i.e. Fungicide, Insecticide and Rhizobium/PSB culture at the time of sowing.

The programme was concluded in the august presence of Hon'ble Dr. AK Singh, Deputy Director General (Agriculture Extension), Indian Council of Agricultural Research, New Delhi who said that the Central Government at present is giving topmost priority to increase the production of oilseed crops particularly soybean and rapeseed-mustard. He also informed about the efforts of GOI for notifying some non-traditional districts for increasing the area under soybean. He also congratulated the farmers of Central India who are successfully growing the golden crop of soybean compared to those from areas like Bundelkhand of Uttar Pradesh and Uttarakhand. He directed the ICAR-IISR to make concerted efforts for promotion and adoption of improved soybean production technologies along with integration of soybean in the form of food uses in collaboration with Krishi Vigyan Kendras across the country. According to him, “Farmer Producer Organization” i.e. “Soybean Farmer Producer Group Organization” should be formed in order to get higher prices for the soybean which can be promoted under the patronage of FICCI (Federation of Indian Chambers of Commerce and Industry).

On this occasion, Director of the institute Dr. Nita Khandekar promised to strengthen the programmes on development and promotion of soybean technologies and practices among the farming community seeking the help from different extension agencies. In her brief address, she also informed that the ICAR-IISR has already made a roadmap for increasing the soybean area in the states like Bihar and Uttar Pradesh initially and can be further increased in the states like Punjab, Haryana and Orissa.

A farmer-scientist discussion session was also organized in this training program, through which the queries raised by the farmers through comments on Zoom-Chat and YouTube channel were addressed. The programme was organized and coordinated by Dr B.U. Dupare and Dr. Savita Kolhe of the Institute as well as Dr. Bhuvnesh from ITC Ltd.





Promotions

Name	Promoted to the post of	w. e. f.
Mrs. Priyanka Sawan	Assistant Administrative Officer	22.06.2021
Dr. D. N. Baraskar	Chief Technical Officer	
Mr. S. K Verma	Senior Technical Officer	

Transfers

Name	From	To	w. e. f.
Mr. Devendra Kumar	ICAR-IISR, Indore	ICAR-IGFRI, Jhansi	12.03.2021

Superannuation

Mr. Dhan Singh, SSG-II (28.02.2021)

Obituary

Shri Gulab Singh, SSG-II on 06.04.2021.



BHOPAL | THURSDAY | JUNE 17, 2021

ICAR-ISRI, ITC jointly conduct online training programme on Soybean production

PNS ■ INDORE

ICAR-Indian Soybean Research Institute, Indore and I.T.C. Company Limited jointly organized an online training programme 'Improved Soybean Production Technology and New Innovative Practices of soybean Production' with the participation of more than 550 farmers and field staff associated with ITC from the States like Madhya Pradesh, Maharashtra, Rajasthan and Gujarat under the E-Choupal programme.

of Soybean Research, Indore, briefed about the major objective of increasing the productivity of soybean crop through which number of online webinars and training programmes are being organized by creating and strengthening linkages with various government as well as private organizations like ITC, Solidaridad etc.

She also said that it will not be appropriate to compare the Indian soybean with other countries as the average maturity duration for soybean there is more than 150 days compare to 100 days in India.

Therefore, Indian Institute of Soybean Research has always been striving for the development of varieties and technologies capable of higher yield as well as characters resistant to major pest and disease resistance.

She also expressed the hope to achieve the average productivity of soybean to 15 quintal/ha by 2025.

During the inaugural session, C. Shashidhar, Head, of Agriculture Services, I.T.C. expressed hope to strengthen the proposed seed bank of ITC e-choupal, through the capacity building programme organized by the ICAR-ISRI. While appreciating the scientific contribution of ISRI Scientists in the development and dissemination of soybean production technologies, Anita Sharma, Crop Advisory Service E-Choupal and Anil Kolla, expressed the preparedness of the participating farmers and field staff of ITC to take these technologies and practices to the field level for profit maximization and productivity enhancement.

ई-चौपाल से जुड़े कृषकों और कार्यकर्ताओं को प्रशिक्षण

इंदौर। भारतीय सोयाबीन अनुसंधान संस्थान एवं आईटीसी लिमिटेड कंपनी द्वारा संयुक्त रूप से 'सोयाबीन की उन्नत उत्पादन तकनीक एवं प्रमुख क्रियाएं' विषय पर ऑनलाइन जूम प्लेटफॉर्म पर एक प्रशिक्षण कार्यक्रम का आयोजन किया गया। इसमें आईटीसी ई-चौपाल कार्यक्रम से जुड़े मध्य प्रदेश, महाराष्ट्र, राजस्थान एवं गुजरात के लगभग 550 कृषकों तथा फील्ड स्टाफ ने भाग लिया। कार्यक्रम के प्रारंभ में प्रशिक्षण संयोजक डॉ. वी.यू. दुपारे ने सभी का स्वागत करते हुए सोयाबीन की उन्नत उत्पादन तकनीक के प्रचार-प्रसार के लिए अच्छे चर्चा-सत्र में कृषकों के सकरात्मक सहयोग एवं तकनीक अपनाने की आशा व्यक्त की। प्रशिक्षण कार्यक्रम के प्रारंभ में संस्थान की कार्यवाह निदेशक डॉ. नीता खांडेकर ने कहा कि सोयाबीन फसल की उत्पादकता बढ़ाने के मुख्य उद्देश्य से इस वर्ष भारतीय सोयाबीन अनुसंधान ने कई प्रयास किए हैं।

प्रशिक्षण कार्यक्रम के शुभारंभ के अवसर पर आईटीसी के कृषि सेवा विभाग के अध्यक्ष सी. शशिधर ने अपने संबोधन में आईटीसी ई-चौपाल के माध्यम से सीड बैंक बनाने के लिए कंपनी की विस्तार सेवा से जुड़े लाभार्थी कृषकों को जानकारी दी। साथ ही आईटीसी फसल सलाह विभाग की प्रभारी डॉ. अनीता शर्मा एवं अनिल कोल्ल ने भी अपने विचार व्यक्त किए। उन्होंने सोयाबीन कृषकों के उद्यान एवं खेती की उत्पादकता वृद्धि के लिए संयुक्त प्रयासों को अधिक सुदृढ़ करने की आवश्यकता हेतु उनकी तत्परता दिखाई।



BHOPAL | TUESDAY | JUNE 8, 2021

ICAR-IISR hold webinar on managing Soybean diseases amid climate change

PNS ■ INDORE

In continuation to the series of webinars being organized by the Institute, Indore, the ICAR-Indian Institute of Soybean Research, Indore organized a webinar on "Management of diseases of soybean in the era of climate change" on Monday with the involvement of 82 participants including progressive farmers of Maharashtra, Madhya Pradesh, Uttar Pradesh, Rajasthan and Bihar.

On this occasion, distinguished speaker Laxman Singh Rajput (Scientist, Plant Pathology) of Indian Institute of Soybean Research, Indore explained about the major diseases that occur in soybean crop grown by farmers of various states along with ways to manage them. According to him, the identification of the disease is very important in absence of which incur heavy losses to the soybean crop as well as



increased cost of cultivation without monetary benefit.

He said that yellowing of leaves in soybean is not always due to the infection of Yellow Mosaic Virus. We should also understand the situation that sometimes leaves turn yellow also due to excessive rain to which consider it as a disease.

Laxman also said on this occasion that, for the last 2-3 years, an outbreak of a disease called anthracnose or pod blight is increasingly being seen in soybean crop of Madhya Pradesh, due to which a lot of loss has been seen in soybean yield. He therefore, appealed

the farmers to reduce the area under JS 95-60, a most popular variety which is already susceptible to pod blight disease.

Alternatively, he suggested to grow other soybean varieties like JS 20-69 and JS 20-98 which are resistant to these diseases. During the webinar, Dr. Laxman Singh Rajput also discussed different measures for control of white fly, a vector for yellow mosaic virus along with information about the symptoms and control measures for other diseases like yellow mosaic disease, pod blight, myrothecium leaf spot and rhizoctonia aerial blight.

वेबिनार में करीब 82 शोधकर्ताओं व वैज्ञानिकों ने लिया भाग

सोयाबीन की उत्पादकता में हासिल कर सकते हैं वृद्धि

इंदौर ■ राज सूत्र नेटवर्क

भारतीय सोयाबीन अनुसंधान संस्थान इंदौर की ओर से सोयाबीन की उच्च उत्पादन क्षमता वाली किस्मों के विकास में जीनोमिक्स असेसमेंट ब्रीडिंग पद्धति की उपयोगिता विषय पर वेबिनार आयोजित किया गया। इसमें महाराष्ट्र, दिल्ली, जम्मू और कश्मीर, हिमाचल प्रदेश, मणिपुर, झारखंड, कर्नाटक जैसे राज्यों में स्थित भारतीय कृषि अनुसंधान परिषद के अन्य संस्थानों के वैज्ञानिक, अखिल भारतीय समन्वित सोयाबीन अनुसंधान परियोजना के सोयाबीन प्रजनकों के साथ-साथ देवी अहिल्या यूनिवर्सिटी, इंदौर व जवाहरलाल नेहरू कृषि यूनिवर्सिटी, जबलपुर के शोधकर्ता, प्रोफेसर व वैज्ञानिकों सहित 82 शोधकर्ताओं ने भाग लिया।



वेबिनार के प्रमुख वक्ता भारतीय सोयाबीन अनुसंधान संस्थान के डॉ. गिरिराज कुमार, वैज्ञानिक, कृषि-जैव प्रौद्योगिकी ने सोयाबीन फसल में जीनोमिक्स असेसमेंट आणविक ब्रीडिंग पर अपने अनुभव साझा किए। उन्होंने कहा कि अंतर्राष्ट्रीय पटल पर विकसित नवीनतम सोयाबीन की उत्पादकता में वृद्धि हासिल की जा

सकती है। डॉ. जनेश कुमार सतपुते, वरिष्ठ वैज्ञानिक, अनुवांशिकी और यादव प्रजनन, भा.कृ.अनु.प. व वेबिनार के समन्वयक ने सोयाबीन उत्पादकता बढ़ाने के लिए विभिन्न मुरदां पर चर्चा करते हुए इस क्षेत्र में जीनोमिक्स असेसमेंट ब्रीडिंग के अनुप्रयोग पर जोर दिया। उन्होंने कहा कि जीनोमिक्स असेसमेंट ब्रीडिंग के साथ स्पेड ब्रीडिंग का उपयोग करके कम समय में अधिक उपज देने वाली सोयाबीन की किस्मों का विकास किया जा सकता है। सत्र के अंत में विभागाध्यक्ष, फसल सुधार, डॉ. संजय गुप्त ने कहा वेबिनार के माध्यम से प्राप्त जानकारी का भारतीय समन्वित सोयाबीन अनुसंधान परियोजना के देशभर में फैले पाठक प्रजनकों द्वारा अधिक उपज देने वाली किस्मों के विकास में उपयोगी होगा।

चार दिवसीय ऑनलाइन प्रशिक्षण कार्यक्रम

इंदौर। भा.कृ.अनु.प.-भारतीय सोयाबीन अनुसंधान संस्थान, इंदौर और हैदराबाद स्थित राष्ट्रीय कृषि प्रबंधन संस्थान की ओर से आयोजित सोयाबीन उत्पादकता बढ़ाने के लिए जलवायु स्मार्ट प्रौद्योगिकी और पद्धतियों विषय पर आयोजित ऑनलाइन प्रशिक्षण कार्यक्रम का समापन शुक्रवार को हुआ। इसमें पी.चंद्रशेखर, महानिदेशक, राष्ट्रीय कृषि विस्तार



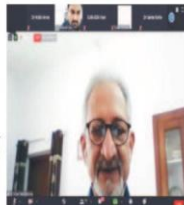
प्रबंधन संस्थान, हैदराबाद व डॉ. नीता खांडेकर, निदेशक एवं भारतीय सोयाबीन अनुसंधान संस्थान के सभी कर्मचारियों की उपस्थिति में सोयाबीन की खेती के लिए किए जाने वाले रा.प्र.प्र. के कृषि विज्ञान केंद्रों व कृषि विभागों में कार्यरत 160 प्रशिक्षणार्थियों को प्रमाण पत्र वितरित किए गए। समापन समारोह के अवसर पर

डॉ. चंद्रशेखर ने किसानों से सामूहिक रूप से फार्म प्रोड्यूसर्स कंपनी बनाने का अनुरोध किया ताकि उगाई गई फसल का वास्तविक लाभ प्राप्त किया जा सके, क्योंकि लाभ का बड़ा हिस्सा बिचौलियों द्वारा ले लिया जाता है।

डॉ. खांडेकर ने बताया कि वैज्ञानिकों को तकनीकी विकास के साथ-साथ विकसित तकनीकी को कृषकों के बीच लोकप्रिय बनाने के लिए शुरुआत में प्रबंधन संस्थान, हैदराबाद व डॉ. नीता खांडेकर, निदेशक एवं भारतीय सोयाबीन अनुसंधान संस्थान के सभी कर्मचारियों की उपस्थिति में सोयाबीन की खेती के लिए किए जाने वाले रा.प्र.प्र. के कृषि विज्ञान केंद्रों व कृषि विभागों में कार्यरत 160 प्रशिक्षणार्थियों को प्रमाण पत्र वितरित किए गए। समापन समारोह के अवसर पर

कीट नियंत्रण के हेतु अतिम विकल्प के रूप में रासायनिक नियंत्रण का उपयोग करना चाहिए

इंदौर। भारतीय सोयाबीन अनुसंधान संस्थान, इंदौर में सोयाबीन में समीक्षित कीट प्रबंधन पर वेबिनार आयोजित किया गया। कार्यक्रम के दस्ता डॉ. ए.एन. शर्मा, पूर्व प्रधान वैज्ञानिक (कीट विज्ञान) ने कहा कि किसानों को कीट नियंत्रण के सभी तरीकों रासायनिक नियंत्रण के साथ भौतिक, सांस्कृतिक, यांत्रिक और जैविक नियंत्रण विकल्प पर भरोसा करना चाहिए। डू जलवायु स्मार्ट कीट प्रबंधन में इन सभी कीट नियंत्रण विकल्पों के साथ अतिम विकल्प के रूप में रासायनिक नियंत्रण का उपयोग करना चाहिए।



एक कम कर सकते हैं। फार्मोफो कोटिंग के लिए ट्रेन और (बाल फ्रैक्चर) के लिए सूख को सोखने के साथ 12% अनुपात (सेक्वेन्स सूख) के उपयोग करने इसी संछेप को कम किया जा सकता है। उन्होंने कृमि, धूल और सोयाबीन आदि की फलित और बीजों का उपचार करके फसल को अनुपलब्ध कीटनाशकों को रोकना करने के लिए फसली आधुनिक कीटनाशकों के निर्माण से और लोको के बारे में भी विचार से कहा। वेबिनार के अध्यक्ष संजय गुप्त ने निदेशक डॉ. नीता खांडेकर की सम्मेलन डॉ. सुभाष चंद ने धन्यवाद प्रस्ताव रखा।

उन्होंने फसल के फुलवरी चरणों में फसल कीटनाशकों और खरपतवारनाशकों के कुछ अनुपलब्ध मिश्रणों के उपयोग की बात कही, जो सोयाबीन की कोटी की फुलवरी चरणों में बचाई है। डॉ. शर्मा ने बताया कि हार्मिक कोटिंग के प्रभावित रातु व वैश्विक कीट नियंत्रण के उपलब्ध हार्मिक कोटों की अवधि को 40% से 100%

ICAR-IISR to hold virtual meet-cum-workshop

PNS ■ INDORE

ICAR-Indian Institute of Soybean Research is organizing an Annual Group Meet-cum-Workshop through virtual on-line mode using Zoom App on March 12 and 13, 2021. The meet includes center-wise review of progress of research trials conducted during the year 2020 and planning of the research programs/trials of on soybean crop under All India Coordinated Soybean Research Project on Soybean (AICRPS) for the ensuing kharif season of 2021. About 150 scientists from different states/centres of AICRPS beside Indian Institute of Soybean Research, Indore are participating in this meeting.

Top level policy makers at the Indian Council of Agricultural Research, New Delhi headquarters including Deputy Director General (Crop Science) TR Sharma, Assistant Director General (Oilseeds and Pulses) Sanjeev Gupta, Assistant Director General (Seeds) DK Yadav, from the Headquarters are attending the Group Meet. Also, the eminent scientists like Satya Prakash Tiwari (Former Vice Chancellor, Swami Keshwanand University of Agriculture and Technology, Bikaner), SK Malhotra (Agricultural Commissioner, Government of India), Hanchinal (Former Chairman,

Plant Protection Variety and Farmers' Right Act) would be chairing the technical sessions and provide their guidance for strengthening soybean research programs.

The Annual Group Meet also includes finalization of proposals for identification of total 10 soybean varieties developed by the breeders and scientists belonging to various centres under AICRPS located in different states besides reviewing the research results of past year and finalization of technical program for the coming year. The proposals on identification of new varieties also includes 4 soybean varieties suitable for promotion in Central Zone.



प्रकाशक/ Published By**डा. नीता खांडेकर/ Dr. Nita Khandekar****निदेशक/ Director****भा. कृ. अनु. प. – भारतीय सोयाबीन अनुसंधान संस्थान/****ICAR- Indian Institute of Soybean Research****खण्डवा रोड, इंदौर 452001 (मध्य प्रदेश)/****Khandwa Road, Indore (Madhya Pradesh)****Phone: 0091-0731 2476188, 2362835****Fax: 0091-0731-2470520****Email: dsrdirector@gmail.com/ dsraddimin@gmail.com****Website: www.iisrndore.icar.gov.in****संपादक/ Editors****डा. मनोज कुमार श्रीवास्तव/ Dr. Manoj Kumar Srivastava****डा. सुभाष चन्द्र/ Dr. Subhash Chandra****डा. वान्गला राजेश/ Dr. Vangala Rajesh****डा. राघवेन्द्र मदार/ Dr. Raghvendra Madar****डा. सुरेन्द्र कुमार/ Dr. Surendra Kumar****डा. एम. शिवकुमार/ Dr. M. Shiva Kumar****डा. राकेश कुमार वर्मा/ Dr. Rakesh Kumar Verma,****डा. वी. नटराज/ Dr. V. Nataraj****डा. लक्ष्मण सिंह राजपूत/ Dr. Laxman Singh Rajput****छाया चित्र एवं मुख्य पृष्ठ रचना /Photography and Cover Design****डा. डी. एन. बारस्कर/Dr. D. N. Baraskar**