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## From The President's Desk

*"Be the solution to the soil pollution"*

The significance of celebrating the 'World Soil Day' lies in our re-affirmation to preserve the soils and to create healthy soils for a healthier and more sustainable life of humanity. I urge the people to lend a hand to save soils and make everyday 'Soil Day'. Soil pollution has slowly become a major challenge that we need to overcome for establishing a healthy environment. The soil is mother of living micro and macro living organisms and a large part of bacterial biodiversity.



Soil plays a fundamental role in the regulation of pollutants in ecosystems. Soil is an important source of pollution in and of itself and a carrier of pollutants. Soil is an important link for pollutants through precipitation, sorption and immobilization reactions. Due to intensive agricultural and industrial activities resulted in extensive degradation of soil environment. Soil pollution is outcome of a wide range of agrochemicals such as pesticides, herbicides, ammonia, petroleum hydrocarbons, lead, nitrate, mercury, naphthalene, etc in an excess amount which is currently used by the farmers to sustain food and nutritional security for their livelihood support.

The primary cause of soil pollution is lack of awareness among people. Due to many different human activities such as over use of the pesticides, open dumping urban garbage & solid waste, this will reduce soil quality, fertility, productivity and water holding capacity. Moreover, the presence of excess chemicals will increase salinity, alkalinity or acidity, water log and barren land which have been arisen from indiscriminate use of chemical fertilizers and pesticides. The excess uses of pesticides cause death of useful and beneficial macro-micro organisms thereby make the soil hard and infertile. Besides the application of urea and ammonium sulphate develops acidity in the soil whereas impounding of water over the surface causes water logged. There is urgent need to minimize the excess use of chemical fertilizers and pesticides so as to reduce the soil pollution.

However, eco-friendly farming system approach namely organic farming, biological farming, integrated farming, alternative agriculture, regenerative agriculture and ecological agriculture is only the approach to reduce the soil pollution.

**28<sup>th</sup> National Conference**

**Jan. 31-Feb. 2, 2019**

**Ooty, Tamil Nadu**

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**International Conference 2019**

**A Joint Conference of  
WASWAC, ISCO & SCSI**

**Nov. 5-9, 2019**

**At New Delhi**



## Glimpses of 27<sup>th</sup> National Conference at Jorhat

The 27th National Conference of Soil Conservation Society of India (SCSI) New Delhi on “Sustainable Management of Soil and Water Resources for Doubling Farmers’ Income” was organized by SCSI in collaboration with Assam Agricultural University from 25<sup>th</sup> to 27<sup>th</sup> October 2018 at Assam Agricultural University, Jorhat, Assam.

### Inaugural Session

The conference was inaugurated by Sri Atul Bora, Minister for Agriculture, Horticulture and Food Processing, Animal Husbandry and Veterinary and Town & Country Planning, Government of Assam as Chief Guest of the function. Speaking on the occasion, Sri Bora requested scientists to devise ways and means to double the income of the farmers by 2022. He said that being an agrarian society, the farmers are the backbone of Indian economy and it is a responsibility on everyone to look after the well-being of the farmers. The Guest of Honour of the function Dr. K.M. Bujarbaruah, Vice-Chancellor, Assam Agricultural University during his speech expressed goodwill for success of the conference to find out new dimensions in solving the problems of the farmers specific to soil and water resources, in the backdrop of Government of India and ICAR initiatives to help scientific community in doubling the farmer’s income. Presiding over the ceremony, Dr. Suraj Bhan, President, SCSI said that the conference would try to come up with recommendations that will have far reaching effect on doubling farmers’ income. Dr. Ashok Bhattacharyya, Director Research (Agri), AAU and Chairman, Local Organizing Committee welcomed all the participants while Dr. Nilay Borah presented the vote of thanks. More than 250 participants including scientists, officers, field functionaries, research scholars, students and progressive farmers attended the Conference. Two publications, viz. Souvenir of National Conference and Book of Abstracts were also released on the occasion.

### Technical Sessions

The conference had a total of nine sessions on different topics of importance. The first technical session I(a) with the theme “Soil health management under field crops based land use system” was chaired by Dr. Suraj Bhan, President, SCSI, New Delhi. Shri Jagat Vir Singh, Secretary, SCSI, New Delhi, co-chaired the session. Two lead papers were presented by Dr. Ranjan Aggarwal, PAU, Ludhiana and Dr. Shiveshwar Pratap Singh, DRPCA, Bihar. A total of seven papers were presented in the session. The session I(b) was chaired by Dr. M. S. Hada Prof (Soils) PAU, Ludhiana and Co-chaired by Dr. Vikas Sharma, SKUAST, Jammu. All total five papers were presented in the session.

The session II with the theme “Soil Health Management in Horticulture and Integrated Farming System based land use system” was chaired by Dr. B.S. Negi, Ex Director, Horticulture Mission, Govt. of Uttarakhand and Co-Chaired by Dr. P. K. Mandal, Additional Director of Agriculture (Retd), West Bengal. Delivering the keynote address, Dr. Negi emphasized the importance of promoting location and crop-specific sustainable soil management practices like INM, balanced and judicious use of chemical fertilizers accompanied by secondary and micro nutrients in conjunction with organic manures and bio-fertilizers, use of soil amendments to reclaim acidic/alkaline soils, encourage organic farming and to increase efforts to provide soil test-based recommendations to farmers for growing crops. A total of 4 papers were presented by different scientists.

The technical session III with the theme “Soil Health Management Under Hill Ecosystem” was chaired by Dr. Biseswar Rath, Technical Expert (WM), NRADA, New Delhi and Co-chaired by Ms. V. Papang, Director, Soil & Water Conservation Department, Meghalaya. Delivering his keynote address, on “Scope of Precision Irrigation in India”, Dr. Rath, emphasized on various benefits of





resources towards livelihood security” was conducted under the chairmanship of Dr. S.S. Grewal, President, SPACE, Punjab. Dr. S.K. Dubey, acted as co-chairperson. Presenting his keynote address, Dr. P.K. Baruah, Director, NERIWALM on “Water Quality Sustenance – Threats and Opportunities” observed that water quality of many river systems like Brahmaputra, Dihing, Jia Bharali, Chiang etc were contaminated with different heavy metals. However, he opined that the sources of the pollutants were unknown. Dr. Baruah, also outlined various efforts by different agencies at locating the source of river water contamination which is likely to affect the flora and fauna, which may affect the effort of the Government in doubling farmers’ income. He invited workers in the field for collaboration with NERIWALM for sustaining water quality. Dr. Feroz Ahmed, Scientist, Aranyak, Assam, Mr. Khyanjeet Gogoi, TOSEH-ROGCP, Assam and Dr. D.J. Nath, Professor, AAU presented three different lead papers in the session.

Every technical session was divided into 2 sections – oral and poster presentation. A total of 27 posters were displayed in the combined Technical session I, II and III. Similarly, a total of 23 posters were presented in combined session IV, V and VI. A total of 18 posters were presented in combined session VII, VIII and IX.

#### Valedictory Session

The session was chaired by Dr. Suraj Bhan, President, SCSi and Dr. Jayanta Deka, Dean, College of Agriculture, Assam Agricultural University graced the occasion as the Chief Guest. The session wise report and general recommendations were presented by Dr. D. K. Patgiri,



Professor (Soil Science), AAU and Chairperson, Technical Committee of the 27<sup>th</sup> National Conference of SCSi. Various awards for best oral and poster presentation of the papers were conferred to the recipients in the session. Dr. Jayanta Deka, Dean, College of Agriculture, Assam Agricultural University and Chief Guest of the function expressed satisfaction for successful completion of the conference and urged to follow up the recommendations for implementation. Dr. Suraj Bhan, President, SCSi in his presidential remarks reiterated the need for comprehensive and collective effort for sustainable management and conservation of soil and water resources. On the occasion, Dr. Anshuman Kohli announced the session wise awards for poster and best paper presentations. Vote of thanks were presented by Dr. Bipul Deka, Professor (Soil Science), AAU, Jorhat and Joint Organizing Secretary of the 27<sup>th</sup> National Conference and Shri Jagatvir Singh, Secretary General, SCSi, New Delhi.

## Does Management Influence Soil Profile Penetration Resistance in Rice Based Systems ?

PIU BASAK AND ANSHUMAN KOHLI

Rainfed systems involving rice as the *kharif* season crop can often result in a rice-fallow sequence due to scarcity of soil moisture for planting the subsequent *rabi* season crop. Year after year, the same rice fallow sequence would likely create the situation of sole rice cropping ecology. The feasible option for raising a *rabi* season crop is either through early establishment of the post rice crops utilizing the residual soil moisture or providing supplemental irrigation to the *rabi* season crops. A post rice crop in such ecologies has a potential to not only increase the farm income, but also improve the soil habitat by increasing diversity of the dominant flora and the resulting microflora as well as the soil micro-environment. The soil microenvironment can effectively be characterized, among other parameters, using measurements of the soil profile penetration resistance. Soil profile penetration

resistance can be an indicator of the resistance offered by the soil to the growing roots. Hence it can be an indicator of the state of health of the system.

Soil penetration resistance depends on ephemeral soil properties such as water content, density and matric potential. Major soil factors influencing penetration resistance are matric potential (or water content), bulk density, soil compressibility, soil strength parameters and soil structure. Soil physical constraints such as compaction, low water holding capacity, infiltration rate and high penetration resistance of soil to roots can adversely affect plant growth in rainfed areas. An adjusted irrigation regime with fertilizer application may help to minimize the risk of soil compaction, which increases the crop productivity in rainfed lowland ecologies of south Bihar. Now the pertinent issue here is how the

management practices would likely influence the soil profile penetration resistance in rainfed rice based systems. An experiment in largely rainfed zero tilled rice based cropping systems with three levels of nitrogen fertilizer application i.e. 60, 40 and 20 kg N/ha ( $W_1$ ,  $W_2$  and  $W_3$  respectively) in *kharif* rice followed by three levels of irrigation i.e. 400, 300 and 200 mm respectively in post rice *rabi* season crops *viz.* durum wheat ( $C_1$ ), barley ( $C_2$ ), chickpea ( $C_3$ ) and linseed ( $C_4$ ) to evaluate the natural changes of soil penetration resistance (PR) shows some interesting trends. Penetration resistance depicted distinct trends of variation across various fertigation regimes and cropping systems. Before the establishment of the third season rice crop, the treatments with higher levels of irrigation water application ( $W_1$ ) through fertigation, displayed a steep increase in profile penetration resistance up to about 25-30 cm depth followed by a similarly steep decrease in penetration resistance with depth. This appears to be due to greater disruption of soil aggregates on account of rapid movement of water in dry soils resulting from fertigation. Thus breakage of aggregates due to the effect of entrapped air escaping from the aggregates would have ultimately resulted in soils with greater penetration resistance.  $W_2$  fertigation regime exhibited a rather gentle increase in penetration resistance but this increasing trend is seen to a greater depth in the profile after which there is a gentle decreasing trend of penetration resistance. In  $W_3$  fertigation regime, the initial increasing trend of penetration resistance with depth is at a further lower rate but persists to still greater depths before decreasing again. Among various cropping systems the penetration resistance in rice lentil cropping system, appears to be higher at all depths in comparison to other cropping systems. The penetration resistance measured at the surface averaged at about 1700 kPa but steeply increased to a level of about 4000 kPa at a depth of up to 20-25 cm. This could probably be due its low root biomass

and root penetration in comparison to other cropping systems. For the same reason, the slope of the trend line relating penetration resistance and soil depth was high, reflecting a sharp increase in penetration resistance down the profile. In rice-chickpea cropping system, the PR was lower than rice-lentil cropping system but higher than rice-durum wheat and rice-barley cropping systems. The penetration resistance in rice-durum wheat plots was found to exhibit wide fluctuations leading to non-significant polynomial trend-line of order 3 when penetration resistance was plotted against the respective depths. Penetration resistance measurements just before rice crop harvesting showed that there was no observable difference in terms of the influence of various fertigation regimes and rice based cropping systems. The *rabi* season crops in this experiment namely durum wheat, barley, lentil and chickpea have widely varying shoot biomass as well as root biomass production levels. Differential root biomass in the profile produced by these crops would have added differential levels of organic matter into the profile, which definitely has been reflected in the soil profile penetration resistance. These effects were found to be short lived as subsequent observations of soil profile penetration resistance after harvesting of rice crop found no observable difference in terms of the influence of various fertigation regimes and cropping systems. The effect of various fertigation regimes on the profile penetration resistance observed after the *rabi* season harvest is nullified by the time of harvest of the subsequent rice crop in the system, probably because the differential organic matter addition in various plots would likely be decomposed by the end of the rice season. A time frame of 2-3 years has shown the potential of rice based cropping systems and fertigation level to modify the profile penetration resistance, the observed effects being short lived; however, these effects can potentially influence system sustainability over the long term.

## Utilizing Bio-Char Potential for Acid Soil Management

OGUBOYANA SRIKANTH YADAV AND SANJAY-SWAMI

Residue burning traditionally provides a fast way to clear the agricultural field of residual biomass, facilitating further land preparation and planting. However, in addition to loss of valuable biomass and nutrients, biomass burning leads to release of toxic gases including GHGs. In this context, bio-char, a pyrolysis product of plant biomass offers a significant, multidimensional opportunity to transform large scale agricultural waste streams from a financial and environmental liability to valuable assets. Use of bio-char in agricultural systems is one viable option that can enhance natural rates of carbon sequestration in the soil, reduce farm waste and improve the soil quality.

Out of 142 million ha of cultivable soil in India, 49 million ha of soil are acidic, of which 26 million ha of soil having soil pH less than 5.6 and the rest 23 million ha of soil having soil pH range 5.6 to 6.5. In North Eastern Hill (NEH) region, about 21 million ha of soils are acidic in reaction. Meghalaya is having different pH range soils as moderately acidic (11,86,300 ha), and slightly acidic (10,54,400 ha). To overcome the problem of soil acidity, farmers adopt variety of soil amendments like manures, lime, compost and bio-sorbents. Although, liming is good practice to overcome the acidity problem, yet the latest, cheap and good organic source is bio-char as the availability of biomass is much more in NEH region. The

usefulness of bio-char increases when it is applied in combination with organic manures like FYM, vermicompost, poultry manure, pig manure, etc.

Meghalaya is known for a large array of vegetables, both sub-tropical and temperate. Tomato (*Solanum lycopersicum* L.) is one of the most important vegetable crops supporting the livelihood of many vegetable growers in the NEH region of India. Hence, the optimization of doses of bio-char with vermicompost and recommended dose of fertilizers to maximize the yield of tomato in acid soil is very much required. Keeping this in view, a field experiment was conducted at the Research Farm of School of Natural Resource Management, College of Post Graduate Studies (CPGS), Umiam, Meghalaya during *rabi* season of 2017 to assess the combined effect of biochar (B) with vermicompost (V) and inorganic fertilizers (F) for improving nutrient uptake and productivity of tomato cv. Mega Tomato-2. Sixteen combination of treatments as control  $T_0$  (without B, V and

F),  $T_1$ : B (2 t/ha),  $T_2$ : B (3 t/ha),  $T_3$ : B (4 t/ha),  $T_4$ : B (2 t/ha) + 75% RDF (Recommended nitrogen, phosphorus and potassium (NPK): 120, 80 and 60Kg/ha),  $T_5$ : B (2 t/ha) + 100% RDF,  $T_6$ : B (3 t/ha) + 75% RDF,  $T_7$ : B (3 t/ha) + 100% RDF,  $T_8$ : B (4 t/ha) + 75% RDF,  $T_9$ : B (4 t/ha) + 100% RDF,  $T_{10}$ : B (2 t/ha) + 75% RDF + V (2.5 t/ha),  $T_{11}$ : B (2 t/ha) + 100% RDF + V (2.5 t/ha),  $T_{12}$ : B (3 t/ha) + 75% RDF + V (2.5 t/ha),  $T_{13}$ : B (3 t/ha) + 100% RDF + V (2.5 t/ha),  $T_{14}$ : B (4 t/ha) + 75% RDF + V (2.5 t/ha),  $T_{15}$ : B (4 t/ha) + 100% RDF + V (2.5 t/ha) were tested. The trial was laid out in RBD and replicated thrice. The results indicated that plant height, number of fruits/plant, fruit size and fruit yield of tomato was superior with the application of B (4 t/ha) + 100% RDF + V (2.5 t/ha) and the soil pH also improved significantly over control. Hence, application of bio-char in combination with vermicompost and inorganic fertilizers may be recommended for Meghalaya farmers to enhance tomato productivity coupled with managing their acidic soils.

## “Pediton Festival”: A Celebration of World Soil Day-2018

The Bihar Chapter of the Soil Conservation Society of India in association with the Department of Soil Science and Agricultural Chemistry, Bihar Agricultural University, Sabour organized a series of events under the banner of “Pediton Festival” to celebrate the World Soil Day -2018. The World Soil Day -2018 was celebrated in a befitting manner as “Pediton Festival” from 04-06 December, 2018.

The festivities started with a scintillating extramural lecture entitled “Site-specific management of nitrogen fertilizers using optical sensor to improve nitrogen use efficiency of cereal crops” by Dr Bijay Singh, INSA Honorary Scientist, PAU, Ludhiana on the eve of World Soil Day on 4<sup>th</sup> December, 2018. Dr Bijay Singh highlighted the use of optical sensor (Green Seeker) as a futuristic technology in field nitrogen management and encouraged the researchers to work for cheaper alternatives of precision nitrogen management such as leaf colour chart. Hon’ble Vice Chancellor, BAU, Sabour, Dr Ajoy Kumar Singh, formally inaugurated the popular poster displays by cutting the ribbon and then made detailed observations on the popular posters prepared and displayed by the post graduate students. The popular posters highlighted the theme of this year’s World Soil Day – Be the Solution to Soil Pollution among other informative and farmer pertinent issues. A special World Soil Day -2018 issue of the Wall Magazine of the Department of Soil Science and Agricultural Chemistry was also unveiled on the occasion. A farmer student interaction was held on the occasion in which the students interacted with the invited progressive farmers of the area and got acquainted with the field problems in soil

management. The World Soil Day-2018 memorial lecture was delivered by Dr Bijay Singh, INSA Honorary Scientist, PAU, Ludhiana entitled “Are Nitrogen Fertilizers Deleterious for Soil Health” on 5<sup>th</sup> December, 2018. Dr Bijay Singh emphasised that the application of nitrogen fertilizers is essential for maintaining the high yields of the crops to feed the ever growing population. However, in order to maintain the soil health, farmers need to apply nitrogen fertilizers judiciously as per the need of the crops. A field trip of post graduate students was organized on 6<sup>th</sup> of December, 2018 to explore the heavy textured soils of the *tal* areas and *Ahars* in the typical ecological setting of South Bihar.



## Meghalaya Chapter of SCSI Observed World Soil Day to be the Solution to Soil Pollution

The Meghalaya Chapter of Soil Conservation Society of India in collaboration with the School of Natural Resource Management, College of Post Graduate Studies in Agricultural Sciences, Central Agricultural University, Barapani celebrated 'World Soil Day' on 5<sup>th</sup> December, 2018 in a befitting manner. Prof. S. Ayyappan, Chancellor of CAU, Imphal and Former Director General of ICAR & Secretary, DARE, New Delhi graced the occasion as Chief Guest while Prof. M. Premjit Singh, Vice-Chancellor, CAU, Imphal presided over the function. More than 100 farmers from nearby villages of Mawlein Mawkhan, Sorkhyndur, Pallwi, Nongrim Nongladew, Liarsluid, etc. participated in this mega event.

Dr. N.B. Singh, Dean of the College, while welcoming the farmers and dignitaries informed that that World Soil Day (WSD) is observed annually on 5<sup>th</sup> December as a means to focus attention on the importance of healthy soil and advocating for the sustainable management of soil resources.

Dr. Sanjay Swami, Associate Professor (Soils) & Chairman of the SCSI-Meghalaya Chapter apprised the house about various activities taken up by the chapter for improving soil health in this hilly tract. He informed that this year's theme of Soil Day is to "Be the Solution to Soil Pollution!" He further added that in Meghalaya, around 2.24 M ha land is affected from soil acidity problem, and a large tract of coal mine areas of Jaintia Hill district is affected from heavy metal pollution. To address these issues, a team of Soil Scientists of the college is working hard and conducting research on standardization of bio-char application rates for managing soil acidity stress, phyto-remediation of heavy metal polluted soils and identifying critical limits of phosphorus. Soil samples are being collected from the farmers' field to prepare Soil Health Cards to advise the farmers for better management of soil health. He announced that around 100 farmers are going to get Soil Health Cards during the programme. He also informed the house that in compliance of the recent directives from Ministry of Agriculture & Farmers Welfare, ten villages of Umsning block has already been identified and adopted by the Post Graduate students in the discipline of Soil Science and activities for improving soil health will be taken up soon.

Prof. M. Premjit Singh, during his address, stressed on 'Soil Health Card' scheme of the Ministry of Agriculture and Farmers Welfare, Government of India and called for focusing attention on soil health in agricultural areas across the country, to boost productivity and bring about increased prosperity. He requested the farmers to ask queries relevant to their soil test report given in the Soil Health Cards to scientists present in the programme and

take maximum benefit. The day was celebrated by organizing many activities like essay competition for the students on the theme of "Be the Solution to Soil Pollution!" and conducting on farm demonstration on scientific method of collecting good soil samples for farmers. Around 100 Soil Health Cards were distributed to the farmers and the student winners of essay competition in three categories viz. I, II and III were awarded with cash prize during the celebration.

The Chief Guest of the function, Prof. S. Ayyappan congratulated SCSI-Meghalaya Chapter team for organizing such a wonderful programme involving students and farmers both with the remarks that students, the future agriculturist, must go to the fields for better understanding of actual field problems faced by the farmers. He also highlighted that farmers of Meghalaya have been forced to depend on agriculture for years without knowing the exact fertility status of their soil. He explained that 'Soil Health Card' is a field-specific detailed report of soil fertility status and other important soil parameters that affect crop productivity. The exact understanding of soil status leads to better and more economic use of fertilizers and better soil management practices. He advised the farmers to avoid using fertilizers without testing soil and said that use of fertilizers without first testing the soil is just like taking medicine without first consulting a physician to find out what is needed. He further stressed that the significance of celebrating the 'World Soil Day' lies in our re-affirmation to preserve the soils and to create healthy soils for a healthier and more sustainable life of humanity. He urged the gathering to lend a hand to save soils and make everyday 'Soil Day.'

Many queries were raised by the farmers on various aspects of Soil sampling, Soil testing and Soil Health Cards and the scientists provided on spot reply. Dean, CoA, Kyrdemkuali, all the School Incharges, Senior Professors, faculty members, village headmen, students and members of SCSI- Meghalaya chapter also participated in this event. The programme ended with vote of thanks proposed by N.J. Singh, Assistant Professor (Soils) & Secretary, Meghalaya Chapter of SCSI.



## West Bengal Chapter of Soil Conservation Society of India Organised World Soil Day

West Bengal chapter of soil conservation society of India celebrated World Soil Day on 5<sup>th</sup> December 2018 through Farmers meeting held at Marichgram, Haringhata Block, Dist Nadia, West Bengal Sri P. K. Mondal Ex-Additional Director of Agriculture, Government of West Bengal was present to deliver a special talk on the various processes of land degradation as an environmental threat and major global issues and to protect these finite natural resources. Members of the society were also participated in the discussion to interact with the farmers on the importance of soil with food, water, climate, biodiversity, living organism and other ecosystem services. Besides the farmers meeting with society members, students and other faculty members were organized at the Department of soil and conservation, Bidhan Chandra Krishi Viswavidyalaya to concern about the various sources of soil pollution and their mitigation against soil erosion, Salinization, acidification, compaction, chemical, contamination, arsenic pollution etc. at the onset Prof. P.K. Tarafdar President of this chapter, highlighted the importance of celebration of World Soil Day and theme

of the year 2018 as “**Be The Solution To Soil Pollution**”. Prof. N.C Das and Prof. R.Roy emphasized that combating and addressing soil pollution becomes the only way to minimize the risks to food security, human health and the environment. The meetings were concluded by Prof. S.K De, secretary of the chapter with vote of thanks to all participants.



**4<sup>th</sup> WASWAC World Conference**  
**20<sup>th</sup> ISCO International Conference**  
**4<sup>th</sup> SCSi International Conference**

*Joint International Conference on*

**Soil and Water Resources Management for Climate Smart Agriculture  
and Global Food and Livelihood Security**

At New Delhi, India, November 5<sup>th</sup>-9<sup>th</sup>, 2019

### Conference updates

Detailed information and updates about the Conference will be available at the website of <http://soilconservation.org>, SCSi ([www.scsi.org.in](http://www.scsi.org.in)), ISCO (<https://www.tucson.ars.ag.gov/isco/>) and WASWAC

### Organizing Committee

**Chairman:** Dr. Suraj Bhan, President, SCSi

**Co-Chair:** Prof. Samir A. El Swaify (ISCO), USA; Prof. Li Rui (WASWAC), China; Dr. Miodrag Zlatic (WASWAC), Serbia

**Convener & Organizing Secretary:** Dr. Sanjay Arora (India)

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### Editorial Board

Suraj Bhan, Sanjay Arora, Jagat Vir Singh

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