PROCEEDINGS OF THE

4th International Conference

on

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

November 5th – 9th, 2019

Organized by

Soil Conservation Society of India, New Delhi, India

Jointly with

World Association of Soil and Water Conservation (WASWAC), China

International Soil Conservation Organization (ISCO), USA

4th International Conference
Soil and Water Resources Management for Climate Smart Agriculture and Global Food and Livelihood Security

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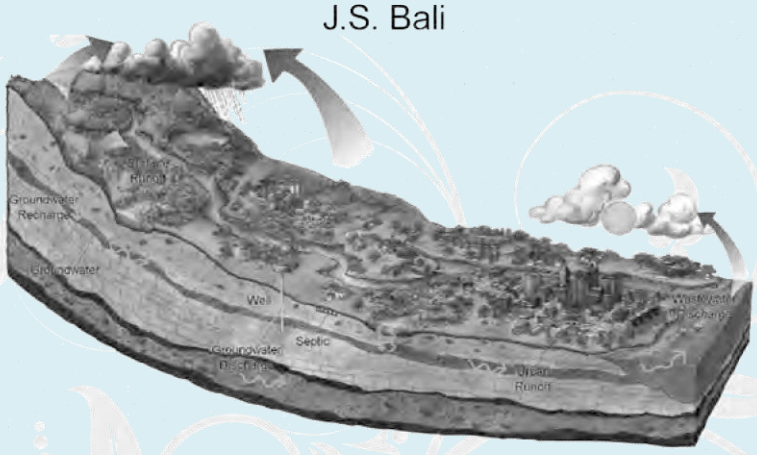
Sanjay Arora
Suraj Bhan

Pledge

J.S. Bali



I pledge to conserve Soil,
that sustains me.
I pledge to conserve Water,
that is vital for life.
I care for Plants and Animals and the Wildlife,
which sustain me.
I pledge to work for adaptation to,
and mitigation of Global Warming.
I pledge to remain devoted,
to the management of all Natural Resources,
With harmony between Ecology and Economics.

J.S. Bali

डि. प्रशांत कुमार रेड्डी, भा.प्रशा.से.
D. Prasanth Kumar Reddy, IAS

भारत के उप-राष्ट्रपति के निजी सचिव
PRIVATE SECRETARY
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Shri. Venkaiah Naidu
Hon'ble Vice-President of India

Message

The Hon'ble Vice President of India is happy to know that the Soil Conservation Society of India (SCSI) is organizing its 4th International Conference on "Soil and Water Resources Management for Climate Smart Agriculture, Global Food and Livelihood Security" from November 5 – 9, 2019 in New Delhi.

The Hon'ble Vice President extends his greetings and congratulations to the organizers and the participants and wishes the event all success.

16/9/19

(D. Prasanth Kumar Reddy)

New Delhi
16th September, 2019.

नरेन्द्र सिंह तोमर
NARENDRA SINGH TOMAR

सत्यमेव जयते

कृषि एवं किसान कल्याण,
ग्रामीण विकास तथा पंचायती राज मंत्री
भारत सरकार
कृषि भवन, नई दिल्ली
MINISTER OF AGRICULTURE & FARMERS' WELFARE,
RURAL DEVELOPMENT AND PANCHAYATI RAJ
GOVERNMENT OF INDIA
KRISHI BHAWAN, NEW DELHI

Message

The agriculture and allied sectors continue to be the largest source of livelihood security for millions of households across the world. The demand for food, fruit, feed, fiber and fuel is on rise that has led to intensification of agriculture. Also, there is increased diversion of natural resources such as land and water for non-agricultural use due to rising global population, urbanization and industrialization. There is urgent need for innovations to improve efficiency, equity and environment with simultaneous enhancements in farm productivity and profitability.

In the Indian context, the Conference would provide solutions in achieving our goal of sustaining agricultural growth at 4 per cent per annum and maintaining soil and water resources. I am happy to note that the themes of the Conference cover the most pertinent issues in the context of overall agricultural development. I hope the deliberations during the Conference will result in a road map in support of holistic development agenda, and bring out recommendations for future approaches and innovative techniques for applications in the entire value chain with farmers and market occupying the central place.

I congratulate Soil Conservation Society of India for taking the responsibility and for their efforts to jointly organize International Conference on Soil and Water Resources Management for Climate Smart Agriculture and Global Food and Livelihood Security with World Association of Soil and Water Conservation and International Soil Conservation Organization supported by Indian Council of Agricultural Research (ICAR), National Biodiversity Authority and other national and international organizations. I wish the event all success.

(Narendra Singh Tomar)

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गजेन्द्र सिंह शेखावत
Gajendra Singh Shekhawat

सत्यमेव जयते

जल शक्ति मंत्री
भारत सरकार
Minister for Jal Shakti
Government of India

01 OCT 2019

MESSAGE

There is no doubt that modern agriculture has delivered increases in food production that were unimaginable only a half a century ago. But many parts of the world, these gains have resulted in enormous consequences for the natural resource base and ecosystems that we all depend on. Groundwater reserves in many parts of Asia, and particularly parts of India, are running out; soils have become seriously degraded; rivers have become polluted and in some cases have completely run dry.

With the world population expected to reach 9 billion by 2050, these probiems are likely to become increasingly severe.

I am very pleased to support the efforts of the soil Conservation Society of India in jointly organizing the 4th International Conference on **Soil and Water Resources Management for Climate Smart Agriculture and Global Food and Livelihood Security** during November 5-9, 2019 at New Delhi.

I hope that the deliberations and discussions during the conference will culminate in meaningful strategies for the sustainable use our precious natural resources to alleviate hunger, improve the quality of life, and safeguard the environment.

I extend my best wishes to the organizers and participants for a successful conference.

(GAJENDRA SINGH SHEKHAWAT)

जल शक्ति अभियान
संचय जल, बेहतर कल

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M S Swaminathan Research Foundation
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Chennai - 600 113

Prof (Dr) M S Swaminathan
Chief Patron, SCSI

Message

Long ago Aristotle said that soil is a stomach of the plant. Soil conservation and sustainable use holds the key to successful agriculture and sustainable food security. I am therefore very happy that the Soil Conservation Society of India is organizing an International Conference to develop a strategy for soil health care. I wish the Conference great success.

M S Swaminathan
Founder Chairman, MSSRF

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Prof Li. Rui
President,
World Association of Soil and Water Conservation (WASWAC)

Message

I am very pleased to welcome all of you to participate in the Joint International Conference of WASWAC 4th World Conference, ISCO 20th Conference and SCSI 4th International Conference on behalf of the World Association of Soil and Water Conservation (WASWAC). The World Association of Soil and Water Conservation was founded in 1983 and its main mission is to promote soil and water resources being better used in the world. It has thousands of members from more than 120 countries. WASWAC is playing an increasingly important role in soil and water conservation of the world.

Soil erosion is the most predominant form of soil degradation. While the severity of soil degradation and its adverse economic and ecological effects are widely recognized. Global estimates of land area affected by degradation range from 1 Gha (Gha =104 km^2) to 6 Gha. An estimated 1.3 to 1.5 billion people worldwide are affected by land degradation. In recent years the earth is facing more and more challengers and pressures, such as climate change, population explosion, environment pollution, ecological degradation and economic / energy crises. Soil and water loss has become one of the most severe environmental problems to threaten the safety of human living and developing in the world. On the other hand, the people who live in the soil eroded areas have gained a lot of achievements and accumulated many successful experiences. Many countries in the world have taken corresponding countermeasures and actions to control the serious soil erosion, and have achieved good results.

This joint conference will be focused on soil and water resource management for climate smart agriculture, global food and livelihood security. This joint conference is one of the biggest events of soil and water conservation of the world in 2019. During the conference it is expected to discuss the new challenges to soil and water resources, Land degradation processes and mechanism, new technologies, and other important issues related to soil and water conservation. All participants will exchange and share their research achievements and experiments from each other. I believe this conference will play an important role to promote soil and water conservation in the world.

In the past more than 2 years the organization committee and working team from Soil Conservation Society of India have done a lot of hard work for the conference. Also many organizations, co-sponsors have made a great support and contributions to the conference. Here I would like to express sincere thanks to all those who have been involved in organizing the conference.

I wish the joint conference will be successful and everyone will have a good time in New Delhi!

Li Rui

क. अलगुसुन्दरम
उप महानिदेशक (अभियांत्रिकी)
K. Alagusundaram
Deputy Director General (Engineering)
&
I/c Deputy Director General (NRM)

भारतीय कृषि अनुसंधान परिषद
कृषि अनुसंधान भवन–II,
पूसा, नई दिल्ली–110 012
INDIAN COUNCIL OF AGRICULTURAL RESEARCH
KRISHI ANUSANDHAN BHAVAN-II,
PUSA, NEW DELHI-110 012

Dated: 21.10.2019

Message

Soil and water conservation technologies have been the major driving force for increasing agricultural productivity and development of nations. Hydrological behavior of water domains are getting changed due to climate change which will play crucial role in managing water resources. Recent trends in rainfall pattern its distribution and changes in hydrological regimes have presented complication in efficient planning and management of water resources. In the past, the choice of technologies and their adoption was to reduce the soil erosion, rehabilitating degraded lands and enhance the soil moisture retention and subsequent enhancement in yield. Hence, developing an interface among academicians, researchers, government departments, policy makers, farmers, industry and other stake holders will be useful to prepare the road map for developing farmer's friendly soil and water conservation technologies for mitigating climate change impact on soil and water resources. In this context, International Conference on Soil and Water Resources Management for Climate Smart Agriculture and Global Food and Livelihood Security which is organized from 5-9 November, 2019 at New Delhi is timely and praiseworthy.

It is hoped that the deliberations and discussions during the Conference will come out with concrete recommendations that will be useful in developing strategies, demand-driven research programmes and an action oriented road map.

I extend my warm wishes for the success of the International Conference.

21/10/19

(**K. Alagusundaram**)

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International Union of Soil Sciences

Prof. Rattan Lal
Past President, IUSS

10th September, 2019

Message

I commend the Organizing Committee for planning, conceptualizing, and bringing to fruition the International Conference on a timely theme of global significance. Sustainable management of soil and water for climate – smart agriculture and global food and livelihood security is an urgent issue. I also extend a warm welcome to all participants, and wish you productive and professionally rewarding deliberations.

Accelerated soil erosion has plagued agricultural land ever since the onset of settled agriculture 10 to 12 millennia ago. The problem of accelerated erosion (caused by water, wind, gravity, tillage, stream flow, and coastal waves) is exacerbated by the predominantly extractive farming systems widely practiced by resource-poor farmers and small landholders, and inappropriate landuse and management for quick economic returns by large and commercial farms.

Notable among the extractive farming practices are removal and/or in-field burning of crop residues, uncontrolled grazing, little or unbalanced use of chemical fertilizers (i.e., more nitrogen and less phosphorus, potassium, and micro-nutrients), little or no use of compost or green manure, continuous cropping with grain-based rotations without incorporation of legumes as cover crops or forages scalping of top soil for brick making, and flood-based irrigation. Examples of inappropriate practices by large-scale commercial farms are excessive plowing, monocropping, indiscriminate use of agricultural chemicals, heavy machinery traffic, among others. Prevalence of these practices has exacerbated vulnerability to erosional processes, depletion of soil's organic carbon concentration and stock, loss of plant nutrients, negative soil budgets of nutrients and carbon, depletion and contamination of water, pollution of air, and the downward spiral of the quality and health of fragile and finite soil resources. In addition to scalping for brick making, widely practiced in South Asia and North Africa , the loss of topsoil is also serious under rapid urban encroachment, and development of infrastructure, and conversion to other non-agriculture uses.

Thus, there is a strong need for development of appropriate soil policy and enaction of legislation in support of the "Rights-of-Soil." Being a living entity and source of all terrestrial life, soil has a right to be protected, restored, used judicially, and thrive for both human well-being and also nature conservancy. Enhancing and sustaining soil health is also critical to advancing the Sustainable Development Goals (SDGS) or the Agenda 2030 of the U.N., specifically with regard to #2 (Zero Hunger), #13 (Climate Action), and #15 (Life on Land).

In this context, India must undertake appropriate steps to promote the followings:

1. Adoption of conservation agriculture (CA) based on no-till, residue retention as mulch, cover-cropping, and use of integrated nutrient management based on a combination of organic manure supplemented by chemical amendments,
2. Use of drip sub-fertigation (DSF) so that water and nutrients are applied directly to plant roots as and when needed,
3. Adoption of improved plant varieties which have built-in resistance to pests and pathogens, and creation of disease-suppressive soils to minimalize the need for inputs of pesticides,
4. Adoption of the "4 per Thousand" program of COP 21, inaugurated in Paris in 2015, to sequester soil organic carbon for adaptation and mitigation of climate change,
5. Incentivize farmers ,through payments for ecosystem services, for adoption of CA and DSF to sequester SOC, save water, avoid eutrophication, and purify air by avoiding the in-field burning of crop residues, and save land for nature,
6. Identification of alternate sources of clay for brick making (i.e., mine subsoil at key locations in each district, use rice husk, fly ash, and cement blocks) so that the finite and precious topsoil is protected,
7. Demarcation, zoning and protection of agricultural soils against non-agricultural uses, and adopting the policy of land degradation neutrality by restoring degraded soils and reducing risks of new land/soil degradation,
8. Assessment and publication of the "State of the Soil Health" report of India every five years beginning with 2020,
9. Reduction of food waste by improving storage, increasing shelf-life, and enhancing value addition by food processing, and
10. Develop National Soil Restoration Act, and Rights-of-Soil Act for protecting, restoring, and sustaining soil health.

I wish you all the best deliberations for the international conference on "Soil and Water Resource Management for Climate Smart Agriculture and Global Food and Livelihood Security," from the 5th to the 9th of November 2019 at the NASC Complex in Pusa, New Delhi.

Rattan Lal
The Ohio State University
Columbus, OH, USA

10th September, 2019

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Message

Soil and water conservation technologies have been one of the driving forces for increasing agricultural productivity, and such impacts are particularly evident in India. Choice of technologies and their adoption were targeted to reduce soil erosion, rehabilitate degraded lands, enhance groundwater recharge, enhance soil moisture retention, all of which resulted in productivity enhancement and crop intensification.

ICRISAT and consortia partners have developed, tested and implemented a number of soil and water conservation technologies specific to different rainfall and agro-ecological regions. These technologies are helpful in terms of enhancing soil moisture availability, enhancing groundwater recharge and crop intensification in upstream areas while controlling soil erosion and flooding on downstream locations. This knowledge was scaled up through various research and government-funded initiatives in semi-arid regions by developing sites of learning. ICRISAT and its partners have contributed towards understanding impact of soil and water conservation measures at different scales (field, watershed and national scale) which has helped development practitioners and policy makers to formulate appropriate policy guidelines on soil and water conservation measures.

Soil and water conservation technologies need to be strengthened to mitigate climate change and to build system resilience. The interface among academia, researchers, Government departments, policy makers, farmers, industry and other stakeholders prepares the road maps for developing farmer-friendly, innovative and low cost soil and water conservation technologies.

I applaud the joint efforts of the Soil Conservation Society of India, WASWAC and ISCO to organize the International Conference on **Soil and Water Resources Management for Climate Smart Agriculture and Global Food and Livelihood Security**. The conference will delve into the links between sustainable agriculture and management of natural resources to create sustainable, resilient and nutritious food systems for the present and future.

I extend my good wishes to the delegates and the organizing team.

Peter Carberry

सत्यमेव जयते

त्रिलोचन महापात्र, पीएच.डी.
एफ एन ए, एफ एन ए एस सी, एफ एन ए ए एस
सचिव एवं महानिदेशक

TRILOCHAN MOHAPATRA, Ph.D.
FNA, FNASc, FNAAS
SECRETARY & DIRECTOR GENERAL

भारत सरकार
कृषि अनुसंधान और शिक्षा विभाग एवं
भारतीय कृषि अनुसंधान परिषद
कृषि एवं किसान कल्याण मंत्रालय, कृषि भवन, नई दिल्ली 110 001

GOVERNMENT OF INDIA
DEPARTMENT OF AGRICULTURAL RESEARCH & EDUCATION
AND
INDIAN COUNCIL OF AGRICULTURAL RESEARCH
MINISTRY OF AGRICULTURE AND FARMERS WELFARE
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Message

I am pleased to know that a joint International Conference on **Soil and Water Resources Management for Climate Smart Agriculture and Global Food and Livelihood Security** is being organized jointly by the Soil Conservation Society of India, World Association of Soil and Water Conservation and International Soil Conservation Organization from 5-9 November 2019 at New Delhi, India. The conference supported by Indian Council of Agricultural Research (ICAR), National Biodiversity Authority and other organizations is very timely and commendable.

Natural resources are critically important components of life support system, the efficient conservation and management of which are vital for achieving food and livelihood security with economic growth and rural development. With increasing demand from land, mainly due to increasing population, life style changes, urbanization, industrialization and other non-farm uses, diversion is taking place not only from wastelands but also from agriculturally and ecologically significant areas such as forest and pasture lands. The soil and water conservation technologies play a major role in mitigating the impact of climate change on yield of various crops. The degradation of our natural resources, soil and water has become a matter of serious concern for the farmers, researchers, academicians, scientists and policy makers, as these in turn affect issues like upliftment of rural people, food security and livelihood.

It is expected that the deliberations during the Conference will culminate in developing strategies and an action-oriented road map to promote conservation of natural resources and strategies for combating the adverse effect of climate change.

I convey my best wishes for the success of the International Conference.

(T. MOHAPATRA)

Dated the 4th October, 2019
New Delhi

SOIL CONSERVATION SOCIETY OF INDIA, NEW DELHI

Dr. Suraj Bhan
President, SCSI

Message

I am happy that **World Association for Soil and Water Conservation** (WASWAC), Beijing, China & **International Soil Conservation Organisation** (ISCO), USA are jointly organizing the 4th International Conference on ***"Soil and Water Resources Management for Climate Smart Agriculture, Global Food and Livelihood Security"*** with **Soil Conservation society of India**, during November 5th-9th, 2019 at 'National Agricultural Science Centre' (NASC) Complex, Pusa, New Delhi, India

I consider that the Soil and water management under the changing climate for agricultural, food, environmental, energy and livelihood security is a pre-requisite for sustainable agricultural production. The socio- economic, environmental, energy and livelihood impacts are significant to achieve sustained agricultural growth. Natural resources are critically important components of life support system, the efficient conservation and management of which are vital for achieving food and livelihood security with economic growth and rural development.

The organization of International conference on such an important topic is timely and I appreciate the concern of not only Indian but international agencies, scientists and other stake holders. The deliberations at the conference will bring out the current status and the technologies for moving forward. The recommendations coming out the five days in interact discussion will help in achieving efficient management of our Natural Resources with a view of improving the livelihood security of farming community under changing climatic scenario. I am sure that the organizing committee and the members of the society will ensure a successful conduct of the conference

01-11-2019
New Delhi

(Suraj Bhan)

PROCEEDINGS OF THE

4th International Conference at New Delhi

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

The 4th International Conference of SCSI on "Soil and Water Resources Management for Climate Smart Agriculture, Global Food and Livelihood Security" was jointly organized by Soil Conservation Society of India (SCSI) with World Association of Soil and Water Conservation (WASWAC) and International Soil Conservation Organization (ISCO) on the important theme during November 5-9, 2019 at New Delhi.

The conference Chief Guest Dr. Trilochan Mohapatra, Secretary DARE and Director General, ICAR inaugurated the International Conference on 5th November 2019. Highlighting the recent trends in the climate change in the country and the world as a whole, the Director General expressed his concerns about the degradation of soil and water resources that is a threat to production and sustainable agriculture. Dr. Mohapatra elaborated that the ever-rising climatic temperature is a matter of great concern as it is affecting the human life drastically. He urged to adopt various means to minimize the

The Director General accentuated on the food security that is a serious concern not only in the country, but round the globe too. Dr. Mohapatra also briefed about the Government of India's initiatives for enhancing the food and agricultural production efficiencies in the country. He outlined the Hon'ble Prime Minister, Shri Narendra Modi's vision of doubling the farmers' income by the Year 2022.

The Guest of Honor, Prof. Li Rui, President, WASWAC, China applauded the SCSI's initiative in organizing the International Conference to discuss on such serious issues of soil and water conservation. Prof. Rui express his concern on the overexploitation of soil and water which is one of the most serious issue need an immediate attention.

Dr. Suraj Bhan, President, SCSI and Chairman, Organizing Committee emphasized that the ever-increasing population which has led to overexploitation of natural resources. He briefed about the Government of India's initiatives to conserve the natural resources and to provide safe drinking water through the pipeline to every household. He stressed on the huge potential for water conservation through the rain water harvesting in the country.

Dr. Sanjay Arora, Convener and Organizing Secretary of the Conference expressed gratitude to Dr. Mohapatra for sparing his valuable time from his busy schedule to inaugurate the conference and presented vote of thanks to the dignitaries, sponsors, co-sponsors and the participants. Prof. Ildefonso Pla Sentis, President, ISCO was the guest of honour during the occasion.

On this occasion the Special Issue of 'Indian Farming' published by the ICAR along with 'Souvenir' and 'Abstract Book' meant for the Conference was released by the dignitaries. The Soil Conservation Society of India (SCSI) Awards - 2019 was also presented to the various members, scientists and students in recognition of their contributions in the respective fields of researches.


International Confe
on
and Water Resources M
Agriculture, Global F
November 05-09, 201


Climate
HAPATRA


Climate
Dr. SUR

During the 4th International Conference of SCSI on Soil and Water Resources Management for Climate Smart Agriculture, Global Food and Livelihood Security, ten technical sessions and two plenary sessions on concerning issues were organized.

Technical Session I: Soil Degradation Assessment and Remediation

The session was chaired by Prof. Jose L. Rubio and co-chaired by Dr Pengfei Du. Dr. M. J. Singh and Dr. S. K. Dubey were the conveners of the session. The Keynote speaker Prof. Li Rui explained various efforts done at global level on soil erosion assessment. The other Keynote speaker Prof. Miodrag D. Zlatic discussed the strategies, lessons and experiences on the sustainable soil management. Dr Priyabrata Santra in his lead presentation gave information Aryato control wind erosion. There were 9 oral presentations made by Dr Pengfei Du, Mr Li Min, Dr Ding Xinhui, Mr Bin Wang, Mr Jiahui Yang, Dr Jitendra Kumar, Mr Gao Xiaofeng, Mr Jiapan Xu and Mr Jin Wen Xia on different aspects as per the session theme.

Technical Session II: Water Resources conservation and Management

The session was chaired by Dr. T.B.S. Rajput and Dr. Ning Duihu co-chaired the session. The conveners of the session were Dr. Atul K. Singh and Dr. Ranu Rani Sethi. Water conservation methods and different management options in India and China were presented and discussed. In his lead presentation, Dr. T.B.S. Rajput emphasized on trends in agricultural water management and advocated laser land levelling for efficient surface irrigation. Dr. Neelam Patel presented lead paper and stressed automated wireless sensor based irrigation scheduling to save irrigation water. Dr Anshuman Kohli presented lead paper on possible scientific interventions in revival of traditional village ponds. There were 15 oral presentations made on approaches of water conservation and management by Dr. B.K. Rao, Dr. Liu H.Q., Dr. P. K. Shrivastava, Dr. Ashok K Nayak, Dr. C.L. Verma, Dr. M. H. Fadadu, Dr. T. Meshram, Dr. Ananta Vashisth, Dr. K.S. Reddy, Dr. Vijayakumar, P., Dr. Ramadhar Singh, Dr. Ranu Rani Sethi, Dr. D.S. Gurjar and Dr. K. Zhang.

Technical Session III: Climate Smart Techniques for Sustainable Agriculture

The technical session was chaired by Shri. Shamsher Singh and co-chaired by Dr. Jana Podhrazska. The session was convened by Dr. Ajay Bhardwaj and Dr. Vivak M. Arya. The Keynote video presentation by Prof. Rattan Lal, emphasized that the country must urgently follow recycling, conservation agriculture, urbanization only on waste lands, paying farmers for ecosystem services, preaching land ethics and increasing dialogue with farmers. Another Keynote presentation was by Prof Jose L. Rubio who gave an overview on how soil degradation and conservation has played role in the rise and fall of civilizations since ages. The Lead presentations were made by Dr. T.J. Purakayastha about carbon neutral farming to mitigate climate change. Dr. AVR Prasad presented on role of NABARD as national implementing agency for adaptation projects. Lead presenters Dr. Duihu NING, Dr. K.S. Reddy, Dr. A.K. Bhardwaj, Dr. C. L. Verma, Dr. H.C. Hombe Gowda, Dr. S.K. Gupta, Dr. Diyendu Chatterjee and Mr. Navneet Sharma discussed on the theme.

Technical Session IV: Land Use Planning and Management for Food and Livelihood Security

The technical session was chaired by Prof. Ildefons Pla Sentis and co-chaired by Prof. Liqin QU. Dr. Neelam Patel and Dr. A.S. Yadav were the two conveners of the session. In the session, a lead presentation was made by Dr. N.S. Abeysingha who highlighted approaches for management of land based agricultural water pollution. The oral presentations made by Dr Chuanxiao LIU, Dr. Munish Kumar, Dr. Hardev Ram, Dr. S.K. Dubey, Dr. Sanjay Swami, Dr. P. Jakhar and Ms. Shachi Pandey highlighted different issues and options on land use management in diverse regions.

Technical Session V: Biodiversity Conservation and Strategic Soil and Water Management

The session was chaired by Dr. P.R. Ojasvi and co-Chaired by Prof. Dr. Ing. BořivojŠarapatka. Dr. Sanjay Swami and Dr. Jitendra Sinha were the conveners. At the outset the Chairman highlighted the importance of biodiversity and calls for its conservation and also the strategy for soil and water management. Dr. R. Saha, Dr Namita Das Saha, Dr. P. K. Shrivastav, Dr Santosh Birman, Dr. Harsh Mehta highlighted strategies and options through their studies presented as oral presentations.

Technical Session VI: Socio Economic Issues in Resources Management for livelihood security

The session was chaired by Prof. Miodrag Zlatić and co-chaired by Dr. Mahmoud A. Abdelfattah. Dr. A.K. Dixit and Dr. Mukesh Kumar were the conveners of the session. In the lead presentation, Prof. Miodrag Zlatić highlighted the socio-economic issues of sustainable soil management in hilly areas of Serbia. Dr. Anil K. Srivastva expressed his views on enterprise profitability and social equality through NRM based sustainable farming vis-à-vis climate resilience. In oral presentations by Dr. A.K. Dixit, Dr. R. Sudha, Dr. Prabhat Kishore, Dr. R.L. Bhardwaj and Dr. O.P. Aishwath elaborated on the different approaches for livelihood security.

Technical Session VII: Policy interventions in soil and water management for global food security

The session was chaired by Prof S.H.R. Sadeghi and co-chaired by Dr. Ye Suigao. The two conveners of the session were Dr Susama Sudhishri and Dr. R. Saha. Prof. Li Rui talked about relationship between humans and environmental factors affecting soil erosion rates in China. In lead presentation, Dr. O.P. Choudhary discussed about the potential use of brackish saline and alkali water. Dr. B.P. Singh, presented findings on legacy and economical effects of remaining residues on organic matter mineralization and nutrients supply in different soils of Australia. Oral presentations made by Dr. Sarapatka, Dr. Abdelfattah, Dr. Houcai, Dr. Ashok Kumar, Dr. Eazhilkrishana, Dr. Suigao, Mr Suresh Kumar and Mr Pani discussed issues and policies for soil and water management.

Technical Session VIII: Bio-industrial Approaches to Watershed for Food and Livelihood Security

The session was chaired by Shri. V.W. Ambekar, co-chaired by Shri. B. Rath and Dr. S. Manivannan, Dr. O.P. Aishwath were the conveners. Prof. Seyed Hamidreza Sadeghi presented lead paper on spatial representativeness analysis for policy-making with a case study of the Gavkhouni Watershed, Central Iran. Another lead paper on water harvesting based integrated farming to boost farmer's income was presented by Dr. Jitendra Sinha. The oral presentations were made by Dr M.L. Gaur, Dr. Susama Sudhishri, Dr Amrut S. Morade, Prof. S.H R. Sadeghi, Dr. D.V. Singh, Dr. S. Manivannan and Dr Praveen Jakhar.

Technical Session IX: Geospatial Techniques and Simulation Modelling for Soil and Water Management

The session was chaired by Prof. Jolanta Kwiatkowska-Malina and co-chaired by Dr. P.K. Mandal. Dr. R.P. Sharma and Dr. Ajay Mishra were the conveners. A lead presentation by Prof. M.J Singh, was made wherein he deliberated on interlinking EROSION 3D model with remote sensing that has an advantage for precise decision. In oral presentation by Dr Liqin Qu, V. Nunchhani, Dr. R.P Sharma, Dr. Marek Bedner and Dr. S. Pradhan presented their work in the session.

Technical Session X: New Paradigms in Soil Health and Nutrient Management

The technical session was chaired by Dr. Anil K. Srivastava and Dr. Zachary G. Mainuri acted as co-chairman. Dr Nilay Borah and Dr. Rajan Bhatt were the conveners of the session. Dr. Zachary G. Mainuri in lead presentation discussed the impact of agricultural practices on soil cover and soil quality in the middle river Njoro sub watershed in Kenya. Dr. Sanjay Arora, in his lead paper comprehensively discussed use of halophilic bacteria for crop residue degradation, nutrient recycling and their effectiveness in residue management to avoid burning. Dr. R.S. Yadav presented the status and management of phosphorous in agriculture. Oral presenters, Dr Raghavendra M., Dr Surajit Mondal, Dr. Rajan Bhatt, Dr. Anil Sharma, Dr Nirmalendu Basak, Ms Smita Jaiswal, Dr R.S. Yadav, Dr. A.S. Yadav, Dr. Nayan Ahmed and Dr. Madhulika Bhagat presented different techniques and approaches for soil health and plant nutrient management

Plenary Session I: Land Degradation under New Worldwide Extensive Industrial Agricultural Developments: Causes and Consequences

The session was chaired by Prof. Li Rui and Dr. Sanjay Arora was Co-Chairman. The two conveners of the session were Dr. P.K. Rai and Ms. Mayuko Seki. The Keynote speaker Prof. Ildefons Pla Sentis was of the view that land degradation has a wider scope than both soil erosion and soil degradation in that it covers all negative changes in the capacity of the ecosystem to provide goods and services. He stressed that the processes of soil degradation are closely linked through unfavourable alterations in the hydrological processes determining the soil water balance and the soil water regime, which are conditioned by the climatic conditions and by the land use and management. Prof Pla concluded that more attention has to be given to the permanent, not so apparent at short term, effects on soil and water resources and their consequences on future food production, hydrology, climate change and natural disasters. In lead presentation by Prof Vikas Sharma, he elaborated that land degradation process in foothill region is governed by natural and anthropogenic factors resulting in low crop productivity and concluded that low input, easy to adopt and use technologies need to be introduced at farmer's level. Land Consolidation is essentially needed.

Plenary Session II: Next Generation Nutrient and Water Management in Agriculture

The special session of IRRI was chaired by Dr. Bijay Singh and co-chaired by Dr. P. Dey. Dr. Sheetal Sharma and Dr. Anshuman Kohli were the conveners of the session. In his Keynote presentations, Dr. Bijay Singh emphasized to improve NUE and highlighted the importance of site-specific nutrient management to cater high variability among farms of smallholder farmers. Dr. P. Dey highlighted around 7 strategies that can be used to improve the nutrient use efficiencies. Dr. Upendra Singh laid emphasis on 4Rs for better nutrient management and shared details on new and better sources of fertilizers including slow and controlled release fertilizers, nano-fertilizers etc. Dr. Sachiko Hayashida, touched a very important project 'AAKASH'. Dr. Jon Hillen provided a perspective of using a multi-prong approach for adaptation to climate change. Dr. Warshi S. Dandeniya gave an overview of the very low NUE across Sri Lanka and various measures being taken to improve it. Lead presentation by Dr. Sheetal Sharma where in she shared a case study from Odisha on using various pathways for the dissemination of an ICT based tool- Rice crop manager (RCM). Mr Ajay Mishra presented a study on improving zinc use in rice-based systems. Dr. Shiveshwar presented work on using Nutrient Expert for improving fertilizer use efficiency. Dr. Rajeev Padbhushan gave an overview of strategic research for improving the recommendations in RCM.

There were two panel discussion sessions and ten poster sessions apart from the technical and plenary sessions during the conference where large number of participants deliberated and discussed on different issues.

Valedictory Session

The valedictory session of the 4th International Conference was held on 9th November 2019. Dr. Ashok Dalwai, CEO NRAA was the Chief Guest of the session. The session started with the welcome address by Dr. Suraj Bhan, President SCSI. Prof Pla Sentis gave an overview of ISCO and its future strategies. The session wise report and general recommendations were presented by Dr. Sanjay Arora, Convener & Organizing Secretary. The session wise awards for poster and best paper presentations were announced and distributed by the Chief Guest. Dr. Ashok Dalwai, conveyed his congratulated the three national and international organizations viz SCSI, WASWAC and ISCO for coming forward to deal with important resources. He emphasized that soil and water are two critical resources to deal with life not only for perspective of agriculture but also in perspective of human civilization. Without water there would have been no life as evolution of life took place from water and fauna and flora is not possible without water. Soil could nurture the plant and sustain life forms, this reflects the organic linkage among soil and water resources. World in a global village especially for soil and water as we all are organically linked and the artificial constructs of national boundaries are meaningless as soil and water can travel anywhere and the nature has created beautiful landscapes and different formats of eco formations. Biological produce or bioproduction has capacity to sustain life for future and we need renewable energy. We have mined our soils and polluted our waters and since water and soil are organically linked with human, we need to manage these resources properly. Agronomist, soil scientists, water managers, engineers and social scientist should concentrate to retain soil health that is directly linked to human health. We should not only restrict to soil and water conservation but using cognitive power and by exchange of knowledge, information, technologies and possible doable things we should manage these resources to serve the society. He was of the view that this conference will draw an action plan to be easily understood for implementation by policy makers. On the occasion, Shri. Jagatveer Singh, Secretary SCSI presented vote of thanks on behalf of SCSI and Prof. Dr. Duihu NING extended vote of thanks on behalf of WASWAC.

The pre- and post-conference technical tours to ICAR-IISWC, RC, Agra and ICAR-CSSRI, Karnal as well as half day site seeing in New Delhi was organized for the participants.

General Recommendations of International Conference

- Land consolidation policy with proper guidelines involving all stake holders for better adoption of climate resilient practices. It is important where land holdings are extremely small.
- Adopting location specific in situ moisture conservation practices coupled with rainwater harvesting structures should be made mandatory.
- There is urgent need to bring out land use and management policy at country level. Land lease policy to be brought out for efficient land utilization in India.
- Mechanism to be derived for drainage network treatment and maintenance at watershed level.
- Limitation in application of climate change models to be examined and regional scale modes should be used for prediction of climate change impact.
- Suitable straw management practices should be developed for reduced carbon emissions.
- Focus on bio- and phyto-remediation to reclaim degraded lands including salt affected soils through efficient microbes and useful plant species.
- Need for sustainable use of natural resources and respecting the projects and programs not only from experts but also from stakeholders.
- Diversion of agricultural land for nonagricultural purposes including land utilization for infrastructure development has to be controlled.
- Need to manage the increasing population, over exploitation of soil, nutrient depletion and soil sickness for increasing production and profitability.
- Rainwater harvesting has to be apriority
- Soil carbon management has to be apriority to manage the challenges and issues related to soil and water conservation and climate change
- Soil erosion has to be seen along with its interrelations with various hydrological processes, climatic change, runoff and sedimentation.
- Application of smart and precision watershed management has to be economically, environmentally and scientifically justified
- Both indigenous knowledge and new technologies have to be equally valued and used for introducing any developmental plans in such a way to fulfill maximum level of different stakeholders' demands sustainably.

International Conference on

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

5-9 November, 2019 at NASC Complex, Pusa, New Delhi, India

DAY 1	Tuesday, November 5, 2019
	Venue: ***A.P. Shinde Symposium Hall***
12:00-13:30	***Panel Discussion*** **Soil and Water Conservation under changing climate scenario: Issues and Challenges** ***Moderator***: Dr. T.B.S. Rajput ***Convener***: Dr. N.K. Pareek
	Panelist: 1. Prof. Li Rui, Institute of Soil and Water Conservation, Beijing 2. Prof. Miodrag D. Zlatic, Faculty of Forestry, Belgrade University, Serbia 3. Dr. Samir A El-Swaify, ISCO Coordinator 4. Sh. V.W. Ambekar, Ex-Director, Agriculture 5. Dr. Jose L. Rubio, Universitat de Valencia, Valenciana 6. Dr. C.P. Reddy, MoRD, GoI, New Delhi 7. Dr. Suraj Bhan, Presdient, SCSI 8. Prof. Mohammad H. Golabi, University of Guam, USA 9. Representative NABARD 10. NBA Representative
13:30-14:30	**LUNCH**

International Conference on
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DAY 1	Tuesday, November 5, 2019
14:30-17:00	**Technical Session I: Soil Degradation Assessment and Remediation** ***Venue: A.P. Shinde Symposium Hall***
	Chairman: Prof. Jose L. Rubio **Co-chairman**: Dr. Pengfei Du **Conveners**: Dr. M.J. Singh, Dr. S.K. Dubey
	Topic : Preliminary progress on global soil erosion assessment **Keynote speaker:** *Prof. Li Rui* ***Topic :*** Strategies, lessons and experiences on the sustainable soil management **Keynote speaker:** *Prof. Miodrag D. Zlatic*
	Lead Presentations
	Management of soil resources for sustained production *Jagdish Prasad*
	Soil conservation measures in hot arid region of India to control wind erosion *Priyabrata Santra*
	Oral Presentations
	Gully development and erosion environment evaluation in a small watershed located in the transitional area from plateau to plain in northern China *Pengfei DU, Jingjing XU and Wenlong SONG*
	Corrosion mechanical properties of topsoil in 4 different vegetation communities *GE Rile, HAO Xuting, SU Rina and HUANG Jing*
	Preliminary study on soil and water loss and its control measures in Tibet *Shi Zhe, REN Fei-peng and SUN Bao-yang*
	Study on the change of soil erosion and its influencing mechanism in the loess plateau of the middle reaches of the Yellow river in different periods since the middle of the 20th century *Li Min and Zhang Li*
	Soil erosion and sedimentation research in selected countries *Liu Xiaoying, Ding Xinhui, Yu Qiyang and Chen Jianlong*
	Causes analysis and control technologies of soil and water loss of economic forestland in northern earth-rock mountainous areas, China *Xinhui Ding, Xiaoying Liu, Guangquan Liu, Duihu Ning, Yongsheng Xie, Xiaodong Hao and Wei Zhou*
	Preparation of erosion susceptibility map of Dhaman Khadi sub-watershed in eastern Gujarat *A. P. Lakkad, K. N. Sondarva and P. K. Shrivastava*
	Improved interrill erosion prediction by considering the impact of the near-surface hydraulic gradient *Chenfeng Wang, Bin Wang, Yunqi Wang, Yujie Wang and Wenlong Zhang*
	Effect of gypsum, crop residue mulch and manure on resource conservation and soybean productivity in table land of Chambal ravines *I.Rashmi, Shakir Ali, B.L.Mina, Kuldeep Kumar, Ashok Kumar and R.K. Singh*
	Study of soil and water conservation measures in Chilkadabetta-1 micro watershed in Chamarajanagar district in Karnataka, India *Rajendra Hegde, M. B. Mahendra Kumar, K. V. Niranjana, G. Bardhan, G. M. Arpitha , S. P. Chaitra , T. N. Somashekar and S.K. Singh*
	Effect of straw incorporation into cultivated layer of farmland on surface runoff process under heavy rainfall events *Jiahui Yang, Huaqing Liu and Tingwu Lei*
	Assessment of runoff and soil loss under different grassland system in sloping land *Jitendra Kumar, R.P. Yadav, Shyam Nath, V.S.Meena, J.K. Bisht and A.Pattanayak*
	Effect of plant root and shoot characteristics on runoff and sediment yield under simulated rainfall conditions

	Sushma Tamta and Akhilesh Kumar
	New assessment of erosive soil losses on arable land of the European Russia *K.A.Maltsev and O.P.Yermolaev*
	Rainfall erosion of partially-thawed slope of organic soil of Qinghai-Tibet plateau *Gao Xiaofeng, Hi Xiaonan, Lei Tingwu, Liu Huaqing and Yang Jiahui*
17:00-17:15	**TEA/COFFEE BREAK**

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DAY 2	Wednesday, November 6, 2019
9:00-10:30 **HALL-1**	**Plenary Session I:** **Chairman**: Prof. Li Rui **Co-Chairman**: Dr. Sanjay Arora **Conveners**: Dr. P.K. Rai, Ms. Mayuko Seki ***Topic :*** Land Degradation under New Worldwide Extensive Industrial Agricultural Developments: Causes and Consequences **Keynote Speaker:** *Prof. Ildefons Pla Sentis* **Lead presentations** Land degradation in the foothills of Jammu and strategies for its mitigation *Vikas Sharma and Vivak M. Arya* Quantitative assessment of land degradation processes using Model-builder in GIS environment *Mohamed A.E. AbdelRahman, Ahmed Abdelfattah Afifi and Noura Bakr* **Oral Presentation** Land degradation drives the influence of ventilation and pressure tides in the CO_2 exchange: A case study in two semi-arid grasslands *María Rosario Moya Jiménez, Enrique P. Sanchez-Cañete, Andrew S. Kowalski, Penélope Serrano-Ortiz, Ana López-Ballesteros, Cecilio Oyonarte and Francisco Domingo*
10:30-10:45	**TEA/COFFEE BREAK**

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DAY 2	Wednesday, November 6, 2019
10:45-13:15 HALL-2	**Technical Session II: Water Resource Conservation and Management**
	Chairman: Dr. T.B.S. Rajput **Co-chairman**: Dr. NING Duihu **Conveners**: Dr. Atul K. Singh, Dr. Ranu Rani Sethi
	Lead Presentations
	Concept of Zero Ground Water Exploitation – Potential and Challenges *R.C. Srivastava*
	Recent trends in Agricultural Water Management for Climate Smart Agriculture *T.B.S. Rajput and Neelam Patel*
	Integrated Irrigation Management for Higher Water Productivity of Rice-wheat System in Northwest India *S.S. Kukal*
	Reliability and implementation of automated wireless sensor for irrigation system *Neelam Patel, Amrit Sharma and Chandni Pandey*
	Revival of village ponds in Bihar with common sense based scientific interventions *Anshuman Kohli, Ved Prakash, Raj Kishore Kumar, B.K. Vimal and Satish Kumar*
	Oral Presentations
	Baseline studies and irrigation Innovations for higher water productivity of medium irrigations projects of Telangana state of southern India *B. Krishna Rao, P. Shyam Sundar and K.Yella Reddy*
	The hydrodynamic mechanism of rainfall runoff from loess slope mixed with straw *Huaqing Liu, Jiahui Yang and Tingwu Lei*
	Alternate use of freshwater at early growth stage and saline canal water at reproductive stage can minimize the yield loss of maize under coastal saline region of Bangladesh *Akbar Hossain, Khandakar Faisal Ibn Murad and Jagadish Timsina*
	Effects of automatic drip irrigation on yield and water productivity in banana *P. Panigrah, S. Raychaudhuri, A. K. Thakur, A. K. Nayak, P. Sahu and S. K. Ambast*
	Enhancing water use efficiency through improved microbial jute retting technique *B. Majumdar, S. Sarkar, A. R. Saha, S. P. Mazumdar, R. Saha, S. K. Sarkar and S. K. Jha*
	Soil wetting pattern and water-front advance study under subsurface drip irrigation in Vertisol *A. Gupta and K.V.R. Rao*
	Integrated rainwater resource management (iRaM) model for coastal South Gujarat *P. K. Shrivastava, Dileswar Nayak, D. P. Patel, S.V. Viyol, H. S. Thakare and D. K. Dwivedi*
	Effect of irrigation and mulch regime on pigeonpea *M. A. Solanki, M. H. Fadadu, A.L. Chalodia and P.V. Dabhi*
	Drainage technologies for enhancing productivity of temporary waterlogged Vertisols in Central India *Ramadhar Singh, K.V. Ramana Rao and Satish Kumar Singh*
	Study on characteristics of soil and water loss in the Yangtze river basin and benefits of comprehensive treatment *Zhao Jian, Qian Jianjun and Yu Feng*
	Development and evaluation of solar powered micro irrigation using floating submersible pumpset in on farm reservoirs for improving water productivity in small farm holdings of rainfed areas *K. S. Reddy, V. Maruthi, P. K. Pankaj, A. Amarender Reddy, T. Saikrishna and G. R. Chary*
	Development of expert system for agricultural water management *Ashok K. Nayak, Pramod K. Panda, Rajeeb K. Mohanty and Sunil K. Ambast*
	Application of CCME water quality index for assessment of groundwater contamination in rural environment of the Great Hungarian plain *Tamás Mester, Dániel Balla and György Szabó*
	Single auger hole method for seepage estimation of canal under waterlogged conditions

	Chhedi Lal Verma, A.K. Singh, Sanjay Arora, S.K. Jha, Y. P. Singh, T. Damodaran, V.K. Mishra and Rohit Ojha
	Developing relationship for transforming water table heights of horizontal subsurface drainage of flat land to sloping conditions *Chhedi Lal Verma and Gyan Singh*
	Comparison of water removal by biodrainage belt and interceptor drain *S. K. Singh and Chhedi Lal Verma*
	Effects of long-term saline water irrigation on soil water- stable aggregates in cotton fields *Yuqing Wu, Kejiang Li, Jingsheng Sun, Hongkai Dang, Abbas E. Rahma, Junpeng Zhang and Chunlian Zheng*
	Comparative evaluation of various radiation and mass-transfer based reference evapotranspiration models *Yadvendra Pal Singh, H.K. Mittal and Vikas Sharma*
	Evaluation of the relative effective of construction of different types of rainwater harvesting structures on augmenting groundwater resources in the Upper Ganga river catchment *A. K. Mishra, S. Sudhisri and Man Singh*
	Development and evaluation of soil moisture sensor for an automated drip irrigation system: An approach for water smart agriculture *Navneet Sharma, Atul Kumar Singh and V. M. Abdul Hakkim*
	Impact of groundwater recharge from rainwater harvesting structures in hard rock areas of Odisha *Ranu Rani Sethi, Madhumita Das, B. Panda and S.K. Ambast*
	Effect of various mulch practices on moisture retention and fruit plant establishment in Bundelkhand region *Rajeev Ranjan, Monalisha Pramanik, Dinesh Kumar and R.S. Yadav*
	Effectiveness of recharge filter for ground water recharge structure for alluvial plains of North Bihar *Ravish Chandra, R. C. Srivastava, S. K. Jain, A. K. Singh and Ram Suresh*
	Efficacy of drip irrigation on summer sesame grown in Narmada district of Gujarat *M. H. Fadadu and P. K. Shrivastava*
	Status of distance learning programmes in water sector offered by IGNOU *Mukesh Kumar and P. Vijayakumar*
	Effect of in situ rainwater conservation practices in sorghum [*Sorghum bicolor* (L.) Moench] under rainfed condition *R.P. Singh and A.K. Verma*
	Sensor based real time automatic irrigation system *A. P. Bowlekar, S. T. Patil, U. S. Kadam, M. S. Mane, S. B. Nandgude and N. K. Palte*
	Predicting soil moisture under indirect subsurface drip irrigation for contrasting soils *Mingtao Yu and Kefeng Zhang*
	Designing rainwater harvesting system for college and hostel buildings at Pantnagar, Uttarakhand *Anil Kumar*
	Prediction of soil water content at field capacity using artificial intelligence based machine learning approaches *Priya Bhattacharya, P. Pramanik Maity, M. Ray, P. Krishnan, S. Das and P. Aggarwal*
	Crop water requirement for wheat under different conservation practices in the semi arid region of India *Rekha Kumari Meena, Ananta Vashisth and T.K. Das*
	Effect of water management on soil nutrient status of nectarine (*Prunus persica* Batsch var.nucipersica) *Jagriti Thakur, Rana Vishal and Mohit*
	Water saving technologies for irrigated plains of Jammu *Vijay Bharti, A.K. Raina, Abhijit Samanta and Anuradha Saha*
	Effect of different irrigation methods and schedules on water productivity of wheat *P. Suryavanshi and G.S Buttar*
	Influence of varied wastewater-groundwater irrigation regimes on nutrients and heavy metals accumulation in spike and bulb of tuberose (*Polianthes tuberosa* L.) *D.S. Gurjar, R. Kaur, K.P. Singh and R. Singh*
	Conservation of water through pressurized irrigation system in rice-wheat cropping system: Scope and limitations *Ranbir Singh, S.K Chaudhari, D.K. Sharma, P. Dey, A.K. Rai and Satyendra Kumar*
	Studies on effect of drip irrigation system on growth parameters and yield of cluster bean (*Cyamopsis tetragonoloba* L.) under Raichur agro-climatic conditions *M. Veena, M. Nemichandrappa, B. Maheshwarababu, G.V. Srinivasareddy, D. Krishnamurthy and Y. Pampanna*
	Response of soil cover and irrigation level in pomegranate (*Punica granatum* L.) cv. Bhagwa. *D.T. Meshram, K. Dinesh Babu and S.S. Wadne*

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DAY 2	Wednesday, November 6, 2019
10:45-13:15 HALL-1	**Technical Session III(Concurrent): Climate Smart Techniques for Sustainable Agriculture**
	Chairman: Dr. Praveen Rao **Co-chair**: Dr (Mrs) Jana Podhrázská **Conveners**: Dr. Ajay Bhardwaj, Dr. Anil Sharma
	Topic: Adaptation and mitigation of climate change in India by soil conservation and restoration **Keyonte Speaker:** *Prof. Rattan Lal* ***Topic:*** Soil and water conservation role in the raise and fall of civilizations **Keyonte Speaker:** *Prof Jose L. Rubio*
	Lead Presentations
	Water harvesting for climate change adaptation in rainfed regions *B. Venkateswarlu*
	Development and management of land - water resources to tackle climate change effects *D.C. Das*
	Can carbon neutral farming be an option to mitigate climate change? *T.J. Purakayastha*
	Interventions of NABARD for climate change and climate smart agriculture *A. V. R. Prasad*, AGM, Climate Change Division, NABARD,Mumbai
	Oral Presentations
	Classification of disturbed land and estimation of soil loss in such land during engineering construction *Duihu NING, Pengfei DU and Liqin QU*
	Modelling based climate change adaptation strategies for a semi-arid river basin of India *Sujeet Desai, D. K. Singh, Adlul Islam and A. Sarangi*
	Farm ponds – A tool in climate smart agriculture for increasing productivity of agricultural crops *K. Manjappa and A. G. Koppad*
	Climate smart rainwater management technology with IFS models for water, food and nutritional security in rainfed regions *K. S. Reddy, V. Maruthi, P. K. Pankaj, A Amarender Reddy, Pushpanjali, T. Sai Krishna and G. Ravindra Chary*
	Carbon sequestration efficiency of different organic manures in long term fertilizer experiment *V. Thulasi, P. Sudhamani and P.P. Moossa*
	Sustainable intensification strategies for rice-wheat systems for climate change mitigation and adaptation *Ajay Kumar Bhardwaj and Ranbir Singh*
	Estimating aboveground and belowground respiration from eddy covariance and chamber measurements *Xiuping Liu*
	Pond based integrated farming system (PBIFS): A climate smart agriculture for restoring waterlogged sodic soil for regional livelihood security *Chhedi Lal Verma, Y.P. Singh, A.K. Singh, S.K. Jha, Sanjay Arora, T. Damodaran, V.K. Mishra and Rohit P Ojha*
	Underground transfer of flood for Irrigation as a component of climate smart agriculture in the state of Uttar Pradesh, India *Navneet Sharma, Faiz Alam, Alok Sikka and V. K. Mishra*
	Carbon stock management under agro-silviculture system in north-east India *Hubert Jones Shullai and Sanjay-Swami*
	Status of soil organic carbon recovery under different fallow periods of shifting cultivated sites in Central Eastern Ghats, India *H. C. Hombegowda, Praveen Jakhar, Karma Beer and M. Madhu*
	Strip intercropping is a way forward for adaptation to climate change

	V. Maruthi, K.S. Reddy, K. Srinivas and P.K. Pankaj
	Impact of future climate variability and potential adaptation strategies on yield of kharif rice in Eastern India *Debjani Halder*
	Sustaining rice production in rainfed lowland areas of eastern India using contrasting rice varieties under climate change *Sanjeev Kumar Gupta, Anshuman Kohli, Mainak Ghosh and Y. K. Singh*
	Depth function of stored and sequestered organic carbon in cotton growing soils of south Gujarat *S. M. Bambhaneeya, A. Das and V.P. Usadadia*
	Agricultural land-uses affecting sequestration of carbon and its distribution in different pools in the soils of semi-arid India (south-western Punjab) *Agniva Mandal, A. S. Toor and S. S. Dhaliwal*
	Carbon balance and energy balance closure in tropical lowland rice-rice ecosystem *Dibyendu Chatterjee, A.K. Nayak, P. Bihari, C.K. Swain, S. Mohanty, S. Chatterjee and H. Pathak*
	Soil and water conservation techniques for enhancing the land & water productivity and mitigating climate change impact in rainfed regions *B. Krishna Rao, P.R. Bhatnagar, V.C.Pande, R.S. Kurothe and P. Shyam Sunder*
13:30-14:30	**LUNCH**

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DAY 2	Wednesday, November 6, 2019
14:30-17:00 HALL-1	**Technical Session IV: Land Use Planning and Management for Food and Livelihood Security**
	Chairman: Prof. Ildefons Pla Sentis **Co-Chairman**: Prof. Liqin QU **Conveners**: Dr. Neelam Patel, Dr. A.S. Yadav
	Lead Presentations
	Two decades retrospect and prospect of water and soil conservation plan for production and construction projects in China *SUN Hou-cai and SUN Kun*
	Effect of land use on soil organic carbon and soil physical characteristics in north-western tract of India *M.S. Hadda, Gurwant Singh and Sumita Chandel*
	Land based agricultural water pollution –A study under participatory rural appraisal approach in Thirappane Cascade tank system, Anuradhapura, Sri Lanka *N.S. Abeysingha, S. Sumanaweera, S.S.K. De Silva, N.I. Wickremasighe and M.I. Madusanka*
	Oral Presentations
	Construction and engineering application of salt discharge model for clay saline-alkali soil in Yellow river delta *Chuanxiao LIU, Depeng MA, Kesheng LI, Yuhan GENG and Quanxin LI*
	Pigeonpea based intercropping systems under rainfed ecosystem *S.K. Uttam, Munish Kumar, Jitendra Kumar and Durgesh Kumar*
	Phytoremediation potential of sunflower and asparagus for coal mined heavy metal polluted soil of Jaintia hills, Meghalaya *Euwanrida Adleen Shylla Lyngdoh and Sanjay-Swami*
	Effect of resources conservation techniques on production potential of baby corn *Hardev Ram, Rakesh Kumar, R.K. Meena and Uttam kumar*
	Resource conservation, productivity, economics and soil fertility under rain-fed pearl millet crop at varying slopes of Yamuna ravine *R.K. Dubey, S.K. Dubey, A.K. Singh, K.K. Sharma, Rama Pal and A.K. Nitant*
	Location specific traditional practices vis-a-vis soil and water conservation in north-eastern region of India *Sanjay-Swami*
	Paddy based strip cropping for sustainable productivity on uplands of southern Odisha *Praveen Jakhar, P.P.Adhikary, B. S. Naik, D. Barman, D.C. Sahoo and M.Madhu*
	Study of sustainable coastal zone management strategies for the western ghats of Karnataka, India *K.V. Ramesh, P.J. Malini and C. Dhananjay Kumar*
	Effect of nitrogen, phosphorus and zinc on nutrient uptake, yield and quality of ber (*Zizyphus mauritiana* Lamk.) cv. Umran *D.K. Sarolia and S. Mukherjee*
	Effect of integrated nutrient management on quality of pomegranate (*Punica granatum* L.) cv. Ganesh *C.L. Meena, R.K. Meena, D.K. Sarolia and L.K. Dashora*
	Analysis of the effects of soil and water conservation measurements in typical urban production and construction projects- taking Shenzhen City as an example *Xu Wensheng, Sun Jinwei, Wang Qian, You Hao, Zhang Wenjie*
	Land resource inventory for integrated watershed development in 11 selected Sujala- III districts in Karnataka, India *Rajendra Hegde, P.C. Ray, K. V. Niranjana, B. A. Danorkar, S Srinivas, and M.S. Lalitha*
	Study on the nature, distribution and management of sodic soils in Yadgir district of northern Karnataka, India *Rajendra Hegde, G.M. Arpitha, S.P. Chaitra, T.N. Somashekar, M.B Mahendra Kumar, G. Bardhan, B.A. Dhanorkar and S.K Singh*
	Assessing contribution of land use in soil erosion vulnerability in lesser Himalayan region using multi criteria decision method *Shachi Pandey, Parmanand Kumar and Vijender Pal Panwar*

International Conference on

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

5-9 November, 2019 at NASC Complex, Pusa, New Delhi, India

DAY 2	Wednesday, November 6, 2019
14:30-17:00 HALL-2	**Technical Session V (Concurrent): Biodiversity Conservation and Strategic Soil and Water Management**
	Chairman: Dr. P.R. Ojasvi **Co-Chairman**: Prof. Dr. Ing. Bořivoj Šarapatka **Conveners**: Dr. Sanjay Swami, Dr. Jitendra Sinha
	Lead Presentations
	Review and prospect of protection forest system construction in the Yangtze river basin in the past 30 years *QIN Qingfeng and HUANG Zhengqiu*
	Ecological restoration of mangrove forest in southern east coast of Andhra Pradesh, India *S.K.M. Basha and Indira Priydarsini*
	Oral Presentations
	Resource conservation technology for Jute based cropping systems: Issues and prospects in Indo-Gangetic plains *R. Saha, B. Majumdar, Alka Paswan, M.S. Behera, D. Barman, Laxmi Sharma and S. Sarkar*
	Response surface modeling (RSM) and optimization of Lead (Pb^{2+}) removal from spiked aqueous solution using immobilized biomass of lead resistant bacteria *Namita Das Saha, Ravinder Kaur, Arpan Bhowmik, Eldho Vargese, Archana Sharma, Preeti Singh, S. D. Singh and S.K. Bandyopadhyay*
	Study on flexural mechanical properties of 6 plant shoots during non-growth period *HAO Xuting, GE Rile, SU Rina and HUANG Jing*
	Species functional strategies modify biotic interactions in response to increased precipitation and N deposition in a desert ecosystem *Bin Wu*
	An overview of mangroves for protection of coastal areas *Swati Shedage and P. K. Shrivastava*
	Soil remediation by native flora grown in metal contaminated soils *Santosh Birman*
	Impact of conservation tillage and intensifying crop rotations in enhancing soil carbon, microbial cycling and aggregation in semiarid agro-ecosystems: A Review *S.S. Dhaliwal, R.K. Naresh, Raj K. Gupta, S.K. Malhotra, Ashok Kumar, Arvind Kumar, Bijendra Singh, Yogesh Kumar, Satya Prakash and N.C. Mahajan*
	Effective utilization of biofertilizers to minimize climate change impact *Pradeep K. Rai, Vishal Gupta, Akash Sharma, Balbir Dhotra and G.K. Rai*
	Minor millets based agroforestry of multipurpose tree species of Bhimal (*Grewia optiva* Drummond J.R. ex Burret) and Mulberry (*Morus alba*) for resource conservation and production in North Western Himalayas - 10 year study *Harsh Mehta, J.M.S. Tomar, D. Mandal, A.C. Rathore, R. Kaushal, S.K. Sharma and P.R. Ojasvi*
17:00-17:15	**TEA/COFFEE BREAK**

International Conference on

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

5-9 November, 2019 at NASC Complex, Pusa, New Delhi, India

DAY 3	Thursday, November 7, 2019
9:00-10:30 **HALL-1**	**Panel Discussion** **Future Strategies for resource conservation to mitigate climate change** ***Moderator:*** Dr. S. Manivannan ***Convener***: Dr. Vikas Sharma
	Panelist: Prof. Ildefons Pla Sentis, Universitat de Lleida, Lleida (España), Spain Prof. Dr. Ing. Bořivoj Šarapatka, Czech Society of Soil Science Dr. Pradip Dey, PC, STCR, IISS, Bhopal Prof. Jolanta Kwiatkowska-Malina, Warsaw University of Technology, Poland Dr (Mrs) Jana Konecna, Czech Republic Prof Mahmoud Ali Abdelfattah, Fayoum University, Fayoum, Egypt Shri Shamsher Singh, New Delhi, India Dr. B.S. Negi, Ex-Director, Horticulture Shri. B. Rath, NRAA, New Delhi Shri C.M. Pandey, New Delhi, India Dr. A. V. R. Prasad, AGM, Climate Change Division, NABARD,Mumbai

International Conference on

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

5-9 November, 2019 at NASC Complex, Pusa, New Delhi, India

DAY 3	Thursday, November 7, 2019
10:30-13:00 HALL-1	**Plenary Session II: Next Generation Nutrient and Water Management in Agriculture**
	Chairman: Dr. Bijay Singh **Co-Chairman**: Dr. Pradip Dey **Conveners**: Dr. Sheetal Sharma, Dr. Anshuman Kohli
	Topic: Precision fertilizer nitrogen management for maintaining soil health in smallholder farms in developing countries **Keynote speaker:** *Dr. Bijay Singh*
	Topic: Plant nutrient management strategies in agriculture – Current approaches and future strategies **Keynote speaker:** *Dr. Pradip Dey*
	Topic: Smart Fertilizers and Technologies for Next-Generation Nutrient and Water Management **Keynote speaker:** *Dr. U. Singh*
	Topic: Aakash Project : Challenge toward Clean Air, Public Health and Sustainable Agriculture **Keynote speaker:** *Prof. Sachiko Hayashida*
	Topic: Eco-friendly farming technologies for reducing reliance on chemical fertilizers for rice farming **Keynote speaker:** *Dr. Warshi S. Dandeniya*
	Lead Presentations
	Using ICT for natural resource management for smallholder farmers: What works and what doesn't!! *Sheetal Sharma*
	Interactive effects of organic amendments, mineral fertilizers and gypsum on microbial use efficiency, soil structure, and carbon priming in a dispersive (sodic) subsoil *Bhupinder Pal Singh, Yunying Fang and Ehsan Tavakkoli*
	Climate smart agriculture in india and livelihood security: minimizing tradeoffs and maximizing tradeoffs and maximizing synergies. *Jon Hellin*
	Oral Presentations
	Evaluation and refinement of zinc management options for site-specific nutrient management in Eastern India *Ajay Kumar Mishra, Rajeev Padbhushan and Sheetal Sharma*
	Impact of split application of potassium fertilization on partitioning and availability of potassium at different growth stages of rice in calcareous soil *Mani Mesha Nand, Shiveshwar Pratap Singh, S.S. Prasad, S. Jha and S. Dutta*
	Performance Evaluation of AquaCrop Model for Rice Crop Grown Under Surface and Subsurface Drip Irrigation in Tarai Region of Uttarakhand *Vikas Sharma, P.K Singh and P.K Singh*
	Field specific nutrient management in rice using crop manager: An aid to improve economic status of Indian farmers *Rajeev Padbhushan, Sheetal Sharma and Ajay Kumar Mishra*
11:30-11:45	**TEA/COFFEE BREAK**
13:00-14:00	**LUNCH**

International Conference on

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

5-9 November, 2019 at NASC Complex, Pusa, New Delhi, India

DAY 3	Thursday, November 7, 2019
14:00-16:30 HALL-2	**Technical Session VI: Socio Economic Issues in Resources Management for livelihood security**
	Chairman: Prof. Miodrag Zlatić **Co-Chairman**: Dr. Mahmoud A. Abdelfattah **Conveners**: Dr. Mukesh Kumar, Dr.A.K. Dixit
	Lead Presentations
	Socio-Economic dimensions in soil and water conservation *S.V. Sonune and Lakhan Singh*
	Socio-economic issues of sustainable soil management - hilly area of Serbia *Miodrag D. Zlatić*
	Towards climate resilience, enterprise profitability and social equality through NRM based sustainable farming *Anil K. Srivastva*
	Oral Presentations
	Efficient resource management for sustainable forage - food production in Bundelkhand region of India *A.K. Dixit, Mukesh Choudhary and S.K. Rai*
	Evaluation of the environmental, economic, and social impacts of the grain for green project on loess plateau of northern Shaanxi province in China-taking Mizhi county case study *LiuSan Cheng*
	Socio-economic factors influencing on soil conservation technologies adoption in western hills of Tamil Nadu *R. Sudha and C. Sekar*
	Effect of water resources development and technology interventions on livelihood of farmers in Eastern India *S. Mohanty, S. K. Rautaray, K. G. Mandal, R. K. Mohanty, S. Ghosh and S. K. Ambast*
	Natural resources management based on delineation of farming situations of Narharpur Block of Kanker district *Dhiraj Khalkho, Vijay Kumar and M. P. Tripathi*
	Women empowerment, rehabilitation, environment protection, employment generation, energy utilization, soil solarization, hill cultivation, micro flora and fauna *Arijit Bhattacharya*
	Assessment of micro irrigation potential for extending its coverage in India *Prabhat Kishore and Subhash Chand*
	Spices, medicinal and aromatic plants an alternate remunerative option under edapho climatic stresses *O.P. Aishwath and G. Lal*
	Techno economic study of summer sesame crop grown in Saurashtra region of Gujarat *K.N. Sondarva, P.S. Jayswal and A.P. Lakkad*
	Assessment the impact of technology dissemination of fennel primary processing on income and employment opportunities for tribal women *R.L. Bhardwaj*
	Resource conservation by on-farm use of manual paddy drum seeder in Unnao district *R. C. Maurya, Ratna Sahay and Archana Singh*
	Role of INM in increasing oilseed production and improving rural livelihood in Bundelkhand region of India *Jagannath Pathak and U.S. Gautam*
	Assessment of interventions in Agri-horti systems under rainfed conditions *Meenakshi Gupta, Sarabdeep Kour and Vikas Gupta*

International Conference on

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

5-9 November, 2019 at NASC Complex, Pusa, New Delhi, India

DAY 3	Thursday, November 7, 2019
14:00-16:30 HALL-1	**Technical Session VII (Concurrent): Policy Interventions in Soil and Water Management for Global Food Security**
	Chairman: Prof. S.H.R. Sedeghi **Co-Chairman**: Dr. Ye Suigao **Conveners**: Dr Susama Sudhishri, Dr. R. Saha
	Lead Presentations
	Soil and water conservation policy and its relating to human–environment context in the Yellow River basin since 1949 *Fei Wang and Rui Li*
	Sustaining crop production using poor quality waters - Challenges and opportunities *O.P. Choudhary and M.S. Mavi*
	Understanding the legacy effect of different tillage farming systems with crop residue input on carbon mineralisation and available nutrient supply in contrasting soils *Bhupinder Pal Singh, Jharna Rani Sarker, Yunying Fang and Annette L. Cowie*
	Oral Presentations
	Can anti-erosion measures be proposed in such a way as to also increase the biodiversity of the countryside? *Bořivoj Šarapatka and Marek Bednář*
	Soils of arid and semiarid environments: Major challenges and potential opportunities *Mahmoud A. Abdelfattah*
	The twenty years retrospect and prospect of water and soil conservation plan for production and construction projects in China *SUN Houcai*
	The tradeoff between soil erosion protection and water consumption in revegetation: evaluation of new indicators and influencing factors *Xining Zhao, Daili Pan, Xiaodong Gao and Pute Wu*
	Artificial intelligence- boon for future agriculture *V.K. Bharti, Suraj Bhan and Sandeep*
	Aspects of a legislative and policy framework to manage soil carbon sequestration *Ian Hannam*
	Artificial intelligence in relation to agriculture *M.S. Hadda and Sumita Chandel*
	Irrigation Planning with Conjunctive Use of Surface and Groundwater Using Linear Programming

	K. Kishan and H.V. Hema Kumar
	Guiding the ecological construction of soil and water conservation with Jinping Xi's ecological civilization thought *Wencong Zhang*
	Assessing farmers' perception, vulnerability and coping strategies to climate change in hot semi-arid eco-region of Rajasthan, India *Ashok Kumar, H.R. Meena, I. Rashmi, Kuldeep Kumar and R.K. Singh*
	Water productivity in rainfed agriculture: Status, challenges and paradigm shift *Eazhilkrishna. N., B. Rath and Tarun Maggo*
	The urgent need for a global agreement for sustainable food and farming *Emma Slawinski*
	Conservation measures for resource conservation and sustainable production in Central India *Dev Narayan*
	On ecological water-soil science *Wenzhao Liu*
	Natural resource conservation planning education: Engaging the next generation *Carl I. Evensen*
	Conservation agriculture: A tool for saving natural resources with food and livelihood security in Bangladesh *Ilias Hossain, T.P. Tiwary, M. K. Gathala, NCD Barma and M. A. Hakim*
	Collaborative purification technology of Field-ditch-wetland system for non-point source pollutant from paddy rice irrigation area *ZhengShizong and Ye Suigao*
	Community participation in water resource management: a case study of local water storage structures in Gujarat state of India *V. C. Pande, P. R. Bhatnagar, D. R. Sena and G. L. Bagdi*
	Determinants of adoption of soil and water conservation measures: A systematic review for policy makers' perspective *Suresh Kumar, D.R. Singh, H. Biswas and A.S. Morade*
	Need for water resources management at micro level and necessity for an alternative legal frame work with specific reference to agriculture *N. C. Pani*
16:30-16:45	**TEA/COFFEE BREAK**
19:30-20:30	**DINNER**

International Conference on

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

5-9 November, 2019 at NASC Complex, Pusa, New Delhi, India

DAY 4	Friday, November 08, 2019
9:30-13:00 HALL-1	**Technical Session VIII: Bio-industrial Approaches to Watershed for Food and Livelihood Security**
	Chairman: Sh. V.W. Ambekar **Co-chairman**: Sh. B. Rath **Conveners**: Dr. S. Manivannan, Dr. O.P. Aishwath
	Topic: Bio-industrial watershed for sustainable bio-economy through innovative bio-industrial crop– coconut palm (*Cocos nucifera* L) **Keynote Speaker:** *Dr. C.J. Thampi*
	Lead Presentations
	Spatial representativeness analysis for policy-making of the Gavkhouni Watershed, Central Iran *Seyed Hamidreza Sadeghi, Somayeh Kazemi Kia, Zeinab Hazbavi, Mahdi Erfanian and Seyed Mohammad Sadegh Movahed*
	Water harvesting based integrated farming to boost farmer's income *R. K. Sahu, Jitendra Sinha and M. P. Tripathi*
	Oral Presentations
	Achieving smarter watershed management with ensured presences of environmental and other technological constituents *Murari Lal Gaur*
	Evaluation of water harvesting structures and their re-utilization plan for enhancing productivity in Nuh block, Haryana *Susama Sudhishri, Anchal Dass, S.S. Kukal, Sakshi Saraf, Arockia Anushty and Love Kumar*
	The Yangtze river basin soil erosion and soil and water conservation comprehensive control effect *Zhao Jian*
	Factors affecting sustainability of community led watershed management projects in rainfed agro-ecosystem of Northwest Himalayas *Madan Singh, Rajesh Bishnoi, Bankey Bihari, N.M. Alam and Indu Rawat*
	Issues pertaining to horticultural component in watershed Management *Amrut S. Morade, H. Biswas, Suresh Kumar and D. M. Kadam*
	Spring flow behavior in lesser Himalayan region of Uttarakhand (India) *Vinay K. Rathi, Shobha Ram, Avinash Agarwal and R. K. Nema*
	Acceptance of land resource inventory-based planning in watersheds of Karnataka *S.L. Patil, H. Biswas, B.S. Naik, P.R. Ojasvi, A. Raizada, A.S. Morade, Ravi Dupdal, M. Prabhavathi, Suresh Kumar, Ravi K.N., S.S. Shrimali and Pradeep Dogra*
	Change detection of land use and land cover of a watershed using remote sensing and GIS *Abhigna, Fathima .F.I. Khan, Puja T., ManojKumar. G, Saikumar. R and Prakash*
	Land Resource Inventory (LRI) for sustainable watershed development -A case study of Bisarahalli-1 micro-watershed, Koppal district in Karnataka, India *K.V. Niranjana, B.A.Dhanorkar, Rajendra Hegde, S. Srinivas, Bheemaraya, Tirupati Meti and S.K. Singh*
	Converging agronomic innovations for sustainable productivity of watersheds *Praveen Jakhar, D.C. Sahoo, P.P. Adhikary, Karma Beer and M. Madhu*
	Development and management of integrated water resources under integrated farming system for livelihood security at North-Eastern hilly region

	B.K. Sethy, D. Chakraborty, H.Dayananda Singh, Naseeb Singh, P.R. Ojasvi and S.K. Ambast
	Impact of nutrient movement in agricultural watersheds on surface water resources of Nilgiris District, Tamil nadu *V. Kasthuri Thilagam, S. Manivannan and O.P.S. Khola*
	Inter watershed water transfer through gravity fed HDPE pipeline can pave way for doubling farmers' income in NW Himalayas *D.V. Singh, S. Patra, N.K. Sharma, D.M. Kadam and P. R. Ojasvi*
	Energy saving solar pump combined with micro-irrigation for economic use of harvested runoff in semi-arid region of Karnataka *B.S. Naik, S.L. Patil, H. Biswas, P.R. Ojasvi, Ravi K.N and K.K. Reddy*
	Multiple use of harvested rainwater: An economically viable system for small farmers of Hilly regions *S. Manivannan, O. P. S. Khola, V. Kasthuri Thilagam and Suresh Kumar*
	Field efficiency assessment of pressure-state- response (PSR) model for watershed health characterization (Case Study: Shazand Watershed-Iran) *Zeinab Hazbavi, Seyed Hamidreza Sadeghi and Mehdi Gholamalifard*
	Rain water use efficiency and relationship between rainfall, runoff, soil loss and productivity in Kandhamal district of Odisha *C.R.Subudhi, S.C.Senapati and Rageswari Subudhi*
	Land and water resources management in the high Cauca river watersheds *Jiménez Escobar Henry*

International Conference on

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

5-9 November, 2019 at NASC Complex, Pusa, New Delhi, India

DAY 4	Friday, November 08, 2019
9:30-13:00 HALL-2	**Technical Session IX (Concurrent): Geospatial Techniques and Simulation Modeling for Soil and Water Management**
	Chairman: Prof. Jolanta Kwiatkowska-Malina **Co-chairman**: Dr. P.K. Mandal **Conveners**: Dr. R.P. Sharma, Dr. Ajay Mishra
	Lead Presentations
	Applicability of erosion 3D model to simulate runoff and soil loss in lower Shivaliks of Punjab, India *M.J. Singh, Harpreet-Singh, A. Yousuf, Hartsch K. and Michael A.*
	Soil quality assessment in mountainous agro-ecosystem using geospatial approach *Suresh Kumar, Suman Roy and Justin George K.*
	Oral Presentations
	Estimation of suspended sediment concentrations in the Yellow River using Landsat ETM+: Application of a Spectral Mixing Algorithm *Liqin Qua, Tingwu Lei, Duihu Ning and Xiusheng Yang*
	A method of assessing the regional potential soil erosion change based on remote sensing and GIS *Jun Huang, Pingwei Jin, Qing Kang and Xuebing Jiang*
	Orthogonal numerical simulation of influencing factors on soil erosion induced by underground mining *Depeng Ma, Chuanxiao Liu, Guangtan Cheng, Junpeng Zhang and Jian Zhang*
	Micro-watersheds prioritization using of ArcGIS interface for effective soil conservation planning of sub-watershed *A. P. Lakkad, K. N. Sondarva and P. K. Shrivastava*
	GeoSpatial interpolation for mapping the qualitative soil properties using GIS *Mohamed A.E. AbdelRahman, Yasser M. Zakarya and Mohamed M. Metwaly*
	Prioritization of Mago basin based on erodibility through morphometric analysis using GIS technique: a PCA- based approach *V. Nunchhani, T. Golom, L. Nirin, A. Bandyopadhyay and A. Bhadra*
	Spatial variability assessment of soil fertility in black soils of Central India using geostatistical modelling *R. P. Sharma, S. Chattaraj, D. Vasu, K. Kartikeyan, P. Tiwary, R. K. Naitam, B. Dash, G. Tiwary, A. Jangir, A. Daripa, S. K. Singh, S. G. Anantwar and A. M. Nimkar*
	The role of elevation's data accuracy in erosion-accumulation modelling particularly in relation to crop yields *Marek Bednář, Bořivoj Šarapatka and Patrik Netopil*
	Rainfall Runoff Simulation modeling using Remote Sensing, GIS and HEC-HMS Model *Love Kumar, V.K. Pandey, M. P. Tripathi, Dhiraj Khalkho and Jitendra Sinha*
	Soil fertility evaluation of Kotihalli micro-watershed, Tumkur district, Karnataka using geospatial technique *Arun Kumar, J. S., Anilkumar, S. N., Chikkaramappa, T., Kadalli, G. G. and Nithin, G. P.*
	Mapping of soil organic carbon status and its spatial distribution pattern in Achattipura sub-watershed, Chamarajanagar district, Karnataka using geospatial techniques *Prakash, S. S., Chikkaramappa, T., Chaithra, M. C., Kadalli G.G., Anil Kumar, S. N. and Shruti, Y.*
	Estimation of leaf chlorophyll content in wheat using hyper-spectral vegetation indices under irrigation, residue mulch and nitrogen management practices *S. Pradhan and K.K. Bandyopadhyay*
	Modelling of snowmelt runoff in Lidder river catchment of Himalayan region *Rohitashw Kumar and Saika Manzoor*
	Investigation on soil fertility constraints for site specific recommendations in Hanumali Sub-watershed, Davangere district, Karnataka by using Geo-spatial techniques *K. T. Gurumurthy, Ravikumar D, Priyanka A V, Anantakumar Patil, Sindhu H. S., Raghu A N, Rudresh M. D., Raghavendra S. and Vasanthkumar K. M.*
10:45-11:00	**TEA/COFFEE BREAK**
13:00-13:30	**LUNCH**
20:00-21:00	**DINNER**

International Conference on

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

5-9 November, 2019 at NASC Complex, Pusa, New Delhi, India

DAY 5	Saturday, November 9, 2019
9:30-12:00 HALL 1	**Technical Session X: New Paradigms in Soil Health and Nutrient Management**
	Chairman: Dr. Anil K. Srivastava **Co-chairman**: Dr. Zachary Gichuru Mainuri **Conveners**: Dr. Nilay Borah, Dr. Rajan Bhatt
	Topic: Integrated soil management strategies for enhancing soil quality in resilient agriculture for southern Guam **Keynote Speaker:** *Dr. Mohammad H. Golabi*
	Lead Presentations
	The impacts of agricultural practices on land cover and soil quality in the middle river Njoro sub watershed in Kenya *Zachary Gichuru Mainuri, John M. Mironga and Samuel M. Mwonga*
	Microbial interventions for crop residue degradation for enhancing crop productivity and improving health of salt affected soils *Sanjay Arora, Y.P. Singh and A.K. Singh*
	Soil phosphorus status and management in agriculture: Prospects and retrospect *R.S. Yadav, Mahesh Kumar and P. Santra*
	Oral Presentations
	Crop residue and potassium management practices to improve soil quality and water use efficiency under zero tillage maize-wheat cropping system at Indo-Gangetic Plains of India *Raghavendra M., Y.V. Singh, M.C. Meena, T. K. Das and R. K. Verma*
	Effect of forest degradation on hydrodynamic soil quality and carbon storage in semi-arid Mediterranean climate *Hafida Zaher, Hassan Benjelloun, Mohamed Sabir and Doré Menine*
	Impact of conservation agriculture on soil physical condition, organic carbon content and plant root response – A global meta-analysis *Surajit Mondal, Debashis Chakraborty, Akram Ahmed and B.P. Bhatt*
	Importance of potash for sugarcane cultivation in Punjab, India *Rajan Bhatt, Paramjit Singh and Surinder Kumar Bansal*
	Deficit saline irrigation and mulching improve biological health of soil cultivated with fodder sorghum -wheat sequence in salt-affected soils of Northwest India *Nirmalendu Basak, Arvind K. Rai, Pooja Gupta Soni, Parul Sundha, Bhaskar Narjary, Gajender, Satyendra Kumar, Rajender K. Yadav and Parmodh Chander Sharma*
	Reducing nitrogen losses accountable for environmental pollution by altering its mode of application in saffron growing soils *Anil Sharma, J. I. Mir, O. C. Sharma and D. B. Singh*
	Marine Gypsum: An effective alternative ameliorant to mineral gypsum for the management of degraded sodic soils *S.K. Jha, V.K. Mishra, T. Damodaran and Y.P. Singh*
	Decentralised approach of wastewater treatment and its impact on soil and potato crop quality *Sumit Pal, Neelam Patel, Anushree Malik, D.K. Singh and Gaurav Singh*
	Estimation of critical dry spell in Shipra basin for enhancing crop productivity *Smita Jaiswal, Ravi Galkate, Prashant Singh and V.K. Chandola*

	Short-term impacts of conservation and traditional agriculture on natural resources and corn yield *Ocaña Reyes J.A., Zelarayán Muñoz O. and Albertengo J.*
	The residual effect of the modified white CKD on peas plants grown in sandy soil *M. A. Morsy, G. M. El-Dawwy, H. A. Hassan and K. H. Mohammed*
	Study of no-tillage and straw turnover of sweet corn in Guangdong Province of South China *Hu Jianguang, Ou Yinggang, Gao Lei, Yang Dantong, Hu Xueying and Ren Xiaoping*
	Soil quality assessment of river flood-plain in Savannah agro-ecological zone of Nigeria, West Africa *A. M. Tahir, J. N. Briska and B. Usman*
	Impact of irrigated agriculture on soil properties of arable land in Jhunjhunu district of Rajasthan *R. S. Yadav, Mahesh Kumar and P. Santra*
	Assessment of nutrient ratios of sugarcane under various soil quality zones to maximize the productivity in Theni district,Tamil Nadu *B.Bhakiyathu Saliha and K. Jeevika*
	Use of agro-industrial wastes for improvement in soil health and sustainable farming system *A. S. Yadav, Sanjeev Kumar and Bijendra Singh*
	Assessment of soil-humus stability in a long term integrated nutrient management experiment *Nayan Ahmed, T.J. Purakaystha, Ruma Das, S.C. Datta and Sunanda Biswas*
	Effect of diverse re-usable organic materials on bioavailability of cadmium, lead and zinc – the pot scale experiment *Collins Amoah-Antwi, Jolanta Kwiatkowska-Malina, Ewa Szara, Steve Thornton and Owen Fenton*
	Restoration of soil functions by cyanobacterial inoculation of surface: Building strategies to overcome the current practical challenges under field conditions *Yolanda Canton, Raúl Román, Beatriz Roncero-Ramos, Emilio Rodríguez-Caballero, Borja Rodríguez-Lozano, Emilio Rodríguez-Caballero and Sonia Chamizo*
	Influence of zinc oxide nanoparticles on saffron yield and nutrient composition in north west Himalayas *Rythem Anand, Madhulika Bhagat and Anil Sharma*
10:45-11:00	**TEA/COFFEE BREAK**
13:00-14:00	**LUNCH**
14:30-16:00 HALL-1	**VALEDICTORY FUNCTION**
16:00-16:30	**TEA/COFFEE BREAK**

International Conference on

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

5-9 November, 2019 at NASC Complex, Pusa, New Delhi, India

POSTER SESSION

PROGRAMME SCHEDULE

POSTER SESSION I: Soil Degradation Assessment and Remediation

Session Code: SD

November 5, 2019 (16:00-17:30)

Venue: Basement (A.P. Shinde Symposium Hall, NASC complex)

	Title and Authors	Poster No
1.	Long term impact of soil and water conservation measures on physical, chemical and biological properties of laterite soils of west coast of India *Sujeet Desai, Gopal Ramdas Mahajan and S. Manivannan*	SD-01
2.	Agriculture Resource Inventory' a subset of Natural Resource Inventory *Mukul Singla, Sanyogita Andreas, Chirag Parikh, Nikhil Toshniwal, Sudhir Silwal, Gaurav Singh, Abhinav Prakash, Ankit Gupta, Arnav Puri and Vijai Kurian Mathew*	SD-02
3.	Research on the Source of Sediment Using 137 Cs Tracing Method—A case study for the Yangou Basin Jiangxi, China *Xiang Zou*	SD-03
4.	Land use classification of micro watersheds near Dediapada in Narmada district using remote sensing and GIS *M.H. Fadadu, D. K. Dwivedi and P.K. Shrivastava*	SD-04
5.	The influence of meteorological conditions in winter period on the soil erodibility and wind erosion vulnerability *Jana Podhrázská, Josef Kučera, Petr Karásek, Jana Konečná and Hana Středová*	SD-05
6.	Estimation of runoff using rational method from the characterized micro-watersheds in the Navsari Agricultural University campus *Nilam Surve and P. K. Shrivastava*	SD-06
7.	Transport of matters evoked with erosion in a small agricultural catchment *Jana Konečná, Petr Karásek, Josef Kučera and Jana Podhrázská*	SD-07
8.	Soil Erosion estimation using Universal Soil Loss Equation and Geographic Information Systems of Yarehalli Micro-watershed in Channagiri taluk Davanagere District, Karnataka *Aruna, K. T., Rajashekarappa, K. S., Chikkaramappa, T., Ashok H.G. and Kadalli, G. G.*	SD-08
9.	Conservation practices for checking soil erosion and improving crop productivity under *jhum* cultivation in north eastern hill region of India *Narang Ampi and Sanjay-Swami*	SD-09
10.	Determination of soil erodibility index for Ri-bhoi district of Meghalaya *Manish Olaniya, P.K. Bora and Sanjay-Swami*	SD-10
11.	Influence of lime on soil physico-chemical properties in acid soils of upper Brahmaputra valley zone of Assam *Lekhika Borgohain and Danish Tamuly*	SD-11
12.	Extent, causes and restoration of land degradation *S. Firdous, T. Parthasarathi, V. Meenakshi and B. K. Agarwal*	SD-12
13.	GIS aided identification of arsenic vulnerable zones for possible mitigation using biochar in rice ecosystem of Central Brahmaputra Valley Zone of Assam, India *Prarthana Priyom Hazarika, I.H.Thakuria and B.K.Medhi*	SD-13
14.	Photocatalytic activity of methylene blue using zinc nanoparticles synthesized from Eucalyptus	SD-14

International Conference on

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

5-9 November, 2019 at NASC Complex, Pusa, New Delhi, India

POSTER SESSION

PROGRAMME SCHEDULE

POSTER SESSION II: Water Resource Conservation and Management

Session Code: WM

November 6, 2019 (10:30-13:30)

Venue: Ground Floor, NAAS, NASC complex

	Title and Authors	Poster No
1.	Selection of water harvesting structures with suitable sites in Yarehalli Micro-watershed of Davanagere district using GIS and RS applications *Shivaraj, S. Rajashekarappa, K. S. Rajesh kumar, Ashoka, H. G. Chikkaramappa, T. and Nithin, G. P.*	WM-01
2.	Instataneous measurement of soil moisture for scheduling irrigation *Atul Kumar Singh, Ajay K. Bhardwaj, C. L. Verma, V. K. Mishra, S.K. Agarwal, Anju K Singh, Sanjay Arora and Rohit Ojha*	WM-02
3.	Pyrolysed biomass reduces the adverse effects of saline water irrigation on crop yield and soil functions *Manpreet S. Mavi, Gurpreet Singh and O.P. Choudhary*	WM-03
4.	Response of irrigation and nitrogen level on yield, water productivity and profitability of Cluster bean (*Cyamopsis tetragonoloba*) *Rakesh Kumar, N.K. Pareek, V.S. Rathore and Vinay Nangiya*	WM-04
5.	Influence of sowing time on productivity and thermal utilization of mustard (*Brassica juncea*) varieties in arid region *N.K. Pareek, Anand Kumar and Sitaram Kumawat*	WM-05
6.	Daily Reference Evapotranspiration Estimation Using Artificial Neural Networks *Annu Rani, Sushma Tamta, Dheeraj Kumar*	WM-06
7.	Spring Water Management for Fulfill Drinking and Irrigation Requirement in North East, India *Prem Ranjan, Pankaj Kumar Pandey, Pema Tshering Lepcha*	WM-07
8.	Identification of rainfall probability distribution for Navsari, Gujarat *D. K. Dwivedi, P. K. Shrivastava and M. H. Fadadu*	WM-08
9.	Water harvesting in kharif fallow for augmenting ground water recharge *M. K. Awasthi and Deepak Patle*	WM-09
10.	Trend analysis of precipitation data and its utilization for water harvesting strategies *Pargat Singh, Pooja Gupta Soni, Anamika Sharma and A.K. Mishra*	WM-10
11.	Impact of Fertigation on Soil Nutrient Dynamics in *Dalbergia sissoo* tree plantations *R.K.Kaleeswari ,Pema Yoden Bhutia and A.Balasubramanian*	WM-11
12.	Enhancement in water use efficiency and economic feasibility of reusable plastic bags mulching roll for growing rabi onion under drip system of irrigation *Chandrakali Banjare, Jitendra Sinha and Khomendra Sahu*	WM-12
13.	Effect of different soil and water conservation practices on soil and water quality in the adopted village ponds of north - western Himalayas *Vivak M. Arya, Vikas Sharma, Ajay Thakur and P.K. Rai*	WM-13
14.	Extreme weather associated sediment load and its influences on water quality of water storage reservoir in northeastern China: a case study *Mingzhong Hu and Xiaoyu Wang*	WM-14
15.	Effect of moisture conservation and irrigation scheduling on WUE and NUE of linseed under varying fertility levels	WM-15

International Conference on

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

5-9 November, 2019 at NASC Complex, Pusa, New Delhi, India

POSTER SESSION

PROGRAMME SCHEDULE

POSTER SESSION III: Climate Smart Techniques for Sustainable Agriculture

Session Code: CS

November 6, 2019 (10:30-13:30)

Venue: Ground Floor, NAAS, NASC complex

	Title and Authors	Poster No
1.	Conservation tillage potential for reducing CO_2 emission in paddy and increasing soil organic carbon in acidic soil of Meghalaya *Muddana Sri Sai Charan Satya and Sanjay-Swami*	CS-01
2.	Integrated Nutrient Management as a stable practice for improving crop productivity and sequestering soil organic carbon in the context of rising temperature scenario *S. Sumayya, V. Thulasi, Sandeep and P.P. Moossa*	CS-02
3.	Development of a new protocol to estimate phosphorus under organic production system for adapting climate change *Buddhadev Sarkar and Niharendu Saha*	CS-03
4.	Soil Organic Carbon Variability in the Foothill Himalayas *Vikas Sharma, Vivak M. Arya, Tejbir S. Buttar and Puja Gupta*	CS-04
5.	Nitrogen mineralization and chemical properties in soil as influenced by rice stubble management *Suravi Nandi, R. Barua, M. Saikia, H. Saikia, P. Kakati, A. Das and Nilay Borah*	CS-05
6.	The three principle of conservation agriculture vis a vis Soil organic carbon: Evidence from Western Indo-Gangetic Plains of India *Hari Sankar Nayak, C. M. Parihar, S. L. Jat, M. L. Jat, B. Rana, K. Patra and V. K. Singh*	CS-06
7.	Carbon sequestration potential of six major nutrient management systems for rice-wheat in Indo-Gangetic plain *Ajay Kumar Bhardwaj, Deepika Rajwar, Sharif Ahamad and Bhumija Kaphaliya*	CS-07
8.	Yield capacity, water use efficiency, root development and economics of linseed by varieties and fertility under rainfed condition *U.D. Awasthi, P.N. Yadav, K.K. Maurya, Rahul Ranjan, Rohit Kumar and P.K. Mishra*	CS-08
9.	Performance Evaluation Of Biomass In Combustor For Turmeric Drying *Pankaj Dabhi, Mayank Fadadu and D.K. Vyas*	CS-09
10.	Effect of biochar application on soil carbon dynamics and crop productivity in a dry tropical cropland of south India *Mayuko Seki, Soh Sugihara, Hidetoshi Miyazaki, Muniandi Jegadeesan and Haruo Tanaka*	CS-10
11.	Assessment of Climate Change Impact on Crop Water Requirements in Narsinghpur in 2060 using CROPWAT Model *Vinay Kumar Gautam and Mahesh Kothari*	CS-11
12.	Enhance the achievement of national food security by climate smart agriculture *Uzma Rashid, Sheikh Muzaffar Ahmad, Hilal Malik and Aoufa Mushtaq*	CS-12
13.	Carbon sequestration under various rice based cropping systems in rainfed rice ecologies under fertigation *Suman Lata and Anshuman Kohli*	CS-13
14.	Effort to mitigate climate change through legume intercrops in sisal plantation for the drier plateau region of Odisha	CS-14

International Conference on

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

5-9 November, 2019 at NASC Complex, Pusa, New Delhi, India

POSTER SESSION

PROGRAMME SCHEDULE

POSTER SESSION IV: Land Use Planning and Management for Food and Livelihood Security

Session Code: LU

November 06, 2019 (16:00 to 17:30)

Venue: Ground Floor, NAAS, NASC complex

	Title and Authors	Poster No
1.	Soil Chemical Properties In Irrigated And Rainfed Cotton Growing Belt Of South Gujarat *S. M. Bambhaneeya, A. Das and V.P.Usadadia*	LU-01
2.	Soil Test and Target Yield Based Integrated Nutrient Management on Jute Fibre Yield, Agronomic Efficiency and Soil Properties in Gangetic Alluvium Soil of West Bengal *A.R. Saha, B. Majumdar, S.P. Majumdar, Mukesh Kumar and Alka Paswan*	LU-02
3.	Studies on Agricultural Soil of District Saharanpur U.P. *Satya Prakash and Ashok Singh*	LU-03
4.	Pea (*Pisum sativum* L.) performance with residual phosphorus in coal mined heavy metal polluted soil of Jaintia hills, Meghalaya *Vanlalmalsawmi Sailo and Sanjay-Swami*	LU-04
5.	Inventorization of land resources in South Telangana Plateau (Rayalseema) and Eastern Ghat, hot, dry semi-arid eco-sub region, India *M. Chandrakala, R. Srinivasan, B.P. Bhaskar K. Sujatha, Rajendra Hegde and S. K. Singh*	LU-05
6.	Vertical distribution of available and total micronutrients and their relationship with soil properties in different land management units of Kanginhal sub-watershed in Northern dry zone of Karnataka *Ragini S. Patil and P. L. Patil*	LU-06
7.	Fractal characteristics of soil particle composition in different parent material types *Xu Jiapan,Cai Chongfa,WeiYujie,Wu Xinliang and Yang Bangge*	LU-07
8.	Studies on soil organic carbon as affected by different land uses in Eritrea *Makda Tesfay Nuguse, Balwan Singh and Woldeselassie Ogbazghi*	LU-08
9.	Assessment of soil fertility constraints of Tamil Nadu uplands for sustainable soil management *B. Kalaiselvi, M. Lalitha, R. Srinivasan, S. Dharumarajan, Rajendra Hegde, Anil Kumar, K. S. and S.K. Singh*	LU-09
10.	Rain water harvesting and recycling for sustainable crop production in Kandhamal district of Odisha, India *Ch.Rajendra Subudhi, Sagara Chandra Senapati and Rageswari Subudhi*	LU-10
11.	Mapping of Soil Physico-chemical properties in the Transition Zone of North Western Himalayas of J&K *Vishaw Vikas, K.R. Sharma, Vikas Sharma and P.K. Rai*	LU-11
12.	Mapping of K-pools variability in Soils of North Bihar: A Case Study *Sneh Prabha, S. S. Prasad, S. P. Singh, S. Jha, V. Bharati and Brijesh Kumar*	LU-12
13.	Effect of household waste based vermicompost and fertilizer on major nutrient availability, rice crop yield, nutrient uptake and nutrient use efficiency *Alpana Kusum, Shankar Jha, S. S. Prasad and S. P. Singh*	LU-13
14.	Comparable research of lake water quality and land use in urban and rural areas of Chennai, India *S. Sheik Niyas and S. Dhanasekar*	LU-14
15.	Land Suitability Potentials for Barley Cultivation in The Northern of Syria Using Sys Model	LU-15

International Conference on

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

5-9 November, 2019 at NASC Complex, Pusa, New Delhi, India

POSTER SESSION

PROGRAMME SCHEDULE

POSTER SESSION V: Biodiversity Conservation and Strategic Soil and Water Management

Session Code: BC

November 07, 2019 (11:00 to 13:00PM)

Venue: Ground Floor, NAAS, NASC complex

	Title and Authors	Poster No
1.	Performance of Halophilic Azotobacter and Phosphate Solubilizing Bacterial isolates on wheat crop grown in sodic soil *Ratna Sahay, A. K. Singh, S. Arora, R. C. Maurya, Archana Singh, D. K. Tiwari and Sunil Singh*	BC-01
2.	Microbes mediated salt tolerance management in sugarcane and plant growth promotion *Divya Sahni, Rajesh K. Tiwari, Sangeeta Srivastava, Sanjay Arora and A. D. Pathak*	BC-02
3.	Soil microbial population is the mirror of soil health *Trilok Nath Rai*	BC-03
4.	Nutrient dynamics and enzyme activities during enriched composting with low grade rock phosphate and native nutrient solubilising microbes *N.R. Panwar, R.C. Kasana, M. Saritha, Praveen Kumar and Uday Burman*	BC-04
5.	Reclamation of cement dust contaminated soil using an exotic earthworm species *Eisinia fetida* under laboratory condition *Manjil Sangeeta DungDung and Iswar Baitharu*	BC-05
6.	Resistance and resilience of soil microbial groups in long-term fertilizer experiment against moisture stress *Vishwanath, Sarvendra K., T.J. Purakayastha, S.P. Datta, S.K. Sinha, K.G. Rosin and P. Mahapatra*	BC-06
7.	A Brief Inventory on the Soil of Orchha Wildlife Sanctuary, Madhya Pradesh *Shreya Tripathi and P.L. Uniyal*	BC-07
8.	Study on the hydrological characteristics of biological soil crusts in different desertification ecosystems *Bai Li, Changqing Zuo, Yang Yu, Wei Qin, Zhijie Shan, Zhe Yin and Qiankun Guo*	BC-08
9.	Role of Plant Extracts in Sustainable Agriculture: A Brief Review *Aadil Gulzar, Imran Khan, Azra N. Kamili and Mohammad Aneesul Mehmood*	BC-09
10.	Impact of climate change on biodiversity *Aadil Gulzar and Gouisa Majeed*	BC-10
11.	Assessment of climate smart agricultural practices in north east India *Mayanglambam Victoria Devi and Rajkumar Josmee Singh*	BC-11
12.	Persistance of pretilachlor and pendimethalin residues in rice – mustard – sesbania sequence under Conservation Agriculture System *K. Mahanta, J. Chaudhury, R.K. Parit and J. Deka*	BC-12
13.	Enhancement of Productivity in Rice-Wheat Cropping System through Climate Smart Agriculture *S. K. Singh, R. C. Srivastava, N. K. Singh, Nilanjaya, A. Sattar, V. Kumar and R. Kumar*	BC-13
14.	Sustainable Agriculture For Natural Resource Management and Bio-diversity Conservation *Oyem Taki and Sanjay-Swami*	BC-14
15.	The bio-computational models in flowering plants of agricultural applications towards sustenance *Prakriti Das and Debabrata Das*	BC-15
16.	Floral diversity in the Nongpok Ningthou Chingu Panganba Sacred groves of Andro, Imphal East,	BC-16

International Conference on

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

5-9 November, 2019 at NASC Complex, Pusa, New Delhi, India

POSTER SESSION

PROGRAMME SCHEDULE

POSTER SESSION VI: Socio Economic Issues in Resources Management for livelihood Security

Session Code: SE

November 7, 2019 (11:00 to 13:00)

Venue: Ground Floor, NAAS, NASC complex

	Title and Authors	Poster No
1.	A survey on Socio-economic status and awareness on soil fertility, soil and water conservation practices in Lakya sub-watershed of Chikkamagaluru district of Karnataka *B. Yashodhara, K.T. Gurumurthy, Y.S. Ramesha and K.L. Vasudev*	SE-01
2.	Managing Soil without Fertilizers for Rainfed Agriculture in 3 Rural Farming Villages of the Jos-Plateau, Nigeria: Implication for Sustainable Soil Resources of the Area *Kamoli Makanjuola Kazeem*	SE-02
3.	Kinnow Cultivation: Economic Evaluation under Different Irrigation Systems in Rajasthan *N.K. Meena, Sanjay-Swami, R. Bajia, Bazilla Gayas and S. K. Nagar*	SE-03
4.	Integrated Farming System in sisal plantation for enhancing farm income and sustainable production *M.S. Behera, D. K. Kundu, S. Sarkar and A.K. Jha*	SE-04
5.	Effect of establishment of Vermicompost units and training on soil fertility, productivity and socio-economic status of small and marginal farmers of district Sirohi Rajasthan *R.L. Bhardwaj, L. Vyas and M. P. Verma*	SE-05
6.	Impact and constraints analysis of tribal farm women adoption of nutritional kitchen gardening *V.K. Poshiya, M.V.Tiwari and P. B. Khodifad*	SE-06
7.	Socio- economics constraints of soil and water conservation in Mustariwadi Micro watershed, Raipalli sub watershed in North Karnataka *Ganeshagouda I. Patil, Praveenkumar B. Naikodi, Praveen Jholgiker and Ashok Alur*	SE-07
8.	Preferences and social values for ecosystem services in local ecological management: A case in Karst Basin Yunnan province, China *Wu Xiuqin*	SE-08
9.	Bio-Physical , Environmental and Socio-economic impact of Integrated Watershed Management Programme in Karma micro watershed of Balarampur : A Case Study from eastern plateau (Purulia district) of India *Harisankar Koiri and R. Ray*	SE-09
10.	Optimization of Land and Water Resources for Maximizing Farm Income for Central Narmada Valley *Vinay Kumar Gautam and M.K. Awasthi*	SE-10
11.	Role of women in environmental protection and sustainability of natural resources *Sasmita Tripathy*	SE-11
12.	Fertilizers use status and performance of improved technologies in relation to socio – economic situation of farmers in waterlogged sodic soil of UP *C. S. Singh, V. K. Mishra, C. L. Verma, T. Damodaran and S. K. Jha*	SE-12

International Conference on

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

5-9 November, 2019 at NASC Complex, Pusa, New Delhi, India

POSTER SESSION

PROGRAMME SCHEDULE

POSTER SESSION VII: Policy Interventions in Soil and Water Management for Global Food Security

Session Code: PI

November 7, 2019 (15:00 to 17:30)

Venue: Ground Floor, NAAS, NASC complex

	Title and Authors	Poster No
1.	Level Evaluation Method Study on Design Unit of Soil and Water Conservation Plan for Production and Construction Projects *Lijian Ding and Ruhua Song*	PI-01
2.	Combating Land Degradation by Land Levelling; Implications in Semi-Arid Chambal, India *Padmini Pani*	PI-02
3.	Role of residue farm machinery in maintaining soil health and ecological balance *Vishnu Ji Awasthi, Manpreet Singh, Rajesh Goyal, Rajat Mishra, Rahul Chaudhary, Indrapal Singh, Dilwar Singh Parihar and Mirtunjay Pandey*	PI-03
4.	Assessment of Soil Health Card scheme with a participatory approach – A case study of Palaskhel Village, Maharashtra, India *Swapnil Labade, Shraddha Vekhande, Nilesh Vadgave and Bakul Rao*	PI-04
5.	Sustainable natural resource management through organic agriculture in north-east region of India: Scope and constraints *Sultana Jerifa Ullah and Sanjay-Swami*	PI-05
6.	Study and Application on Conservation Tillage Technology of Rice (*Oryza sativa* L.) Southern China *Tan Xiangru, Ou Yinggang, Yang Dantong, Hu Xueying and Ren Xiaoping*	PI-06
7.	Intercropping in sugarcane a profitable venture among farmers *T.N. Rai, K.N. Rai, Anjali and S.K. Rai*	PI-07
8.	An underutilised space: Role of Gram Sabha in Watershed Development *Saba Ishaq*	PI-08
9.	Entrepreneurship Development through Irrigation System Development –A Case Study of Runni Saidpur Block of Sitamarhi district of North Bihar *S.K. Jain, Ravish Chandra, S. P. Gupta, A.K. Singh and Vinod Kumar*	PI-09
10.	Open and Distance Learning (ODL) in Agriculture *S. K. Yadav and Mukesh Kumar*	PI-10
11.	Grain yield of maize as influenced by irrigation levels and maize genotypes *H.T. Sujatha and S. S. Angadi*	PI-11
12.	Global policy framework for ensuring food, energy and livelihood security *Sachin Singh*	PI-12

International Conference on

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

5-9 November, 2019 at NASC Complex, Pusa, New Delhi, India

POSTER SESSION

PROGRAMME SCHEDULE

POSTER SESSION VIII: Bio-industrial Approaches to Watershed for Food and Livelihood Security

Session Code: BI

November 7, 2019 (15:00 to 17:30)

Venue: Ground Floor, NAAS, NASC complex

	Title and Authors	Poster No
1.	Preparation of preserve from different varieties of aonla (*Emblica officinalis* gaertn.) and their physico-nutritional changes during storage *N.S. Rathore, L.K. Dashora and D.K. Sarolia*	BI-01
2.	Response of organic inputs on nutrient status of soil in potato and turmeric cropping sequence *Anjali Verma, Uday Sharma and Sunil Kumar*	BI-02
3.	Comparative efficacy of FYM and vermicompost on soil physico-chemical and biological properties under cauliflower-tomato production in mid hills of Northwestern Himalayas *Ankush Mogta, J. C. Sharma and Ridham Kakkar*	BI-03
4.	Design and construction of soil conservation structures using wastage materials *B. L Sinha and R. K. Sahu*	BI-04
5.	Watershed development planning through socio-economic survey of Ariyur micro-watershed in Tumkur *Y. M. Gopala, K.P. Naveena, V. Govinda Gowda and T. Chikkaramappa*	BI-05
6.	Soil moisture balance based crop planning in Achathipura sub watersheds of southern Karnataka *N.K.Rajesh kumar, Rajashekarappa, K. S., Shivaraj, S., Ashok, H. G. Chikkaramappa, T.*	BI-06
7.	Water resources scenario of India under climate change *G. N. Gurjar and Sanjay Swami*	BI-07
8.	Assessment of Hypsometric Idiosyncrasy of Small Watersheds in the Upper Ramganga Catchment *Pankaj Kumar*	BI-08
9.	Land and Water Management plan in Dorika watershed *Arunima Gogoi, M.C. Talukdar, A. Basumatary and U. Baruah*	BI-09
10.	Hydrological response to a rainfed agroforestry system with different water conservation practices *Raghav Maurya, Susama Sudhishri, Man Singh, Anchal Dass, Khajanchi Lal, O.P. Awasthi, V.K. Sharma and Archana Suman*	BI-10
11.	Effect of gravity based drip fertigation on growth, yield and quality of okra *P.K. Jamrey, R.C. Purohit and S.S. Lakhawat*	BI-11
12.	Lignocellulose degradation and production of lignin modifying enzymes in solid-state fermentation by *Mucor circinelloides* GL1 *P.A Geethanjali and M. Jayashankar*	BI-12
13.	*Azadirachta indica* (Neem) based agroforestry System in Red and Laterite Zone of West Bengal *Subodh Hansda*	BI-13
14.	Aonla Based Agroforestry System for Western Himalayan Sub Tropics *Sandeep Sehgal and Stanzin Landol*	BI-14
15.	Livelihood diversification through fruit based agroforestry in red and laterite zone of West Bengal *S. Murmu, P. Das, S. Panda and P.K. Dhara*	BI-15
16.	Quantification of soil biological activities vis-a-vis productivity in 206 mango orchards of Maal region in Lucknow, Uttar Pradesh, India for food and livelihood security *Tarun Adak and G. Pandey*	BI-16
17.	Value Addition of Ash Gourd for Doubling the Farmers Income	BI-17

International Conference on

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

5-9 November, 2019 at NASC Complex, Pusa, New Delhi, India

POSTER SESSION

PROGRAMME SCHEDULE

POSTER SESSION IX: Geospatial Techniques and Simulation Modeling for Soil and Water Management

Session Code: GT

November 8, 2019 (10:30 to 12:00)

Venue: Ground Floor, NAAS, NASC complex

	Title and Authors	Poster No
1.	Remote Sensing and GIS based approach for Assessment of Groundwater Vulnerability Zone to pollution in Kharun Watershed *Gaurav Kant Nigam, M.P. Tripathi, S.K. Ambast, J. Sinha and R.K. Mahobia*	GT-01
2.	Estimating roof rainwater harvesting potential using remote sensing and GIS in Onjal, Macchad and Dandi village of Navsari district *D. K. Dwivedi, P. K. Shrivastava, B. N. Bhanderi and Dileswar Nayak*	GT-02
3.	Constitutive model of single root system`s resistance to tensile stress *Lihua Chen*	GT-03
4.	Analysis of historical droughts for Tarikere Taluk, Chikkamagaluru district of Karnataka using Standard Precipitation Index *Basamma Aladakatti, K. T. Gurumurthy and Rajashekar D. Barker*	GT-04
5.	Geospatial Approach for Nutrient Management and enhanced crop production Using Remote Sensing and GIS in Chikka Begur Micro-watershed, Chamarajanagar District *Shruti, Y., Chikkaramappa, T., Prakash. S. S., Kadalli, G. G. and Ranjitha, S. N.*	GT-05
6.	Mapping of major and micro nutrients of Haradanahalli micro watershed, Chamarajanagar district using GIS and GPS *Anilkumar, S. N., Prakash. S. S., Arun Kumar, J. S., Vinod kumar H. M. and Dixith, H. V.*	GT-06
7.	Application of RS and GIS in identification of soil fertility constraints of Ballapura micro-watershed, Tumkur district, Karnataka *Arun Kumar, J. S., Anilkumar, S. N., Kadalli, G. G., Chikkaramappa, T. and Shambavi, S.*	GT-07
8.	Analysis of land cover changes and assessment of Drought by using Remote Sensing and GIS- A case study from Anantapur District of Andhra Pradesh *R. Srinivasan, Rajendra Hegde, B.P. Bhaskar, S. Srinivas, K.V. Niranjana, M, Chandrakala, K.S. Karthika, Amar Suputhra and S. K. Singh*	GT-08
9.	Application of remote sensing and GIS tools in land resource inventory for watershed planning in lateritic soils of North Karnataka *Praveenkumar B. Naikodi, Praveen Jholgiker, Ganeshagouda I. Patil and Ashok Alur*	GT-09
10.	GIS and remote sensing approach in identifying ground water recharge zones of Cherial watershed *B. Meghana, Ch. Rakesh, P. Karthik, D. Girish and Ch. Radha Srivalli*	GT-10
11.	Soil erosion mapping Alandur block, Perambalur district, Tamilnadu using to Landsat-8 satellite data *Nithya Selvaraju and Selvaprakash Ramalingam*	GT-11
12.	Comparison of Evapotranspiration Estimates from Satellite Remote Sensing and Fao-56 Approach *Atul Kumar Pal, Kapadiya Janaki C., Karangiya Bhavisha A. and H. V. Parmar*	GT-12
13.	Mapping flood affected area of BudhiGandak river in Bihar with optical and SAR data of Sentinel satellites *Vikas Kr Rai, R. C. Srivastava and S.K.Jain*	GT-13

International Conference on

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

5-9 November, 2019 at NASC Complex, Pusa, New Delhi, India

POSTER SESSION

PROGRAMME SCHEDULE

POSTER SESSION X: New Paradigms in Soil Health and Nutrient Management

Session Code: SH

November 9, 2019 (10:00 to 11:30)

Venue: Ground Floor, NAAS, NASC complex

	Title and Authors	Poster No
1.	Monitoring of soil quality of pandoga sub watershed Catchment area implemented on Swan river (Una), Himachal Pradesh, India *Bindu Sharma*	SH-01
2.	Adoption of saline soils management practices by the farmers *Shivananda P. Yarazari and S. V. Halakatti*	SH-02
3.	Correlates of Saline Soil Management by the Farmers of Belagavi District *Shivananda P. Yarazari and S. V. Halakatti*	SH-03
4.	Use of urban compost, sewage sludge, poultry manure in brinjal -cauliflower cropping system *Saikumar Rondla and Jeevanrao Kalvakuntla*	SH-04
5.	Bio-char potential for improving crop productivity under acidic soil of north eastern region *Oguboyana Srikanth Yadav and Sanjay-Swami*	SH-05
6.	Soil Fertility Status of Regional Research Station, Kapurthala, Punjab, India *Rajan Bhatt and Paramjit Singh*	SH-06
7.	Phosphorus adsorption-desorption characteristics of different layers of weathered granite and effects of different soil properties on phosphorus sorption *Sun Tianyu, Fei Kai, Deng Longzhou and Zhang Liping*	SH-07
8.	Variation in soil organic carbon of red and black soils in Kopal District of Northern Karnataka, India *Rajendra Hegde, G. Bardhan, K. V. Niranjana , M. B. Mahendra Kumar, G. M. Arpitha, S. P. Chaitra, T. N. Somashekar and S. K. Singh*	SH-08
9.	Dynamics of soil nitrogen and phosphorus vis-à-vis nutrient regimes in lowland rice cultivation *Shilpi Gupta*	SH-09
10.	Integrated Nutrient Management in Groundnut (*Arachis hypogaea* L.) in NEH region *Sushree Panda*	SH-10
11.	Attribution of organic carbon fractions and soil aggregating elements in soil aggregation under different land uses in acid soils of Meghalaya, India *P. Helena Chanu, P.K. Bora and Sanjay-Swami*	SH-11
12.	Impact of deforestation on soil fertility and quality *Thokchom Dorenchand Singh and Sanjay-Swami*	SH-12
13.	Direct and residual effect of organic source of nitrogen on rice based cropping system *Tonya G. Momin and Sanjay-Swami*	SH-13
14.	Effect of integrated nitrogen management on fertility status of soil in acid Inceptisol *Sowjanya T. V. , Naorem Janaki Singh and Oguboyana Srikanth Yadav*	SH-14
15.	Multi-nutrient mixtures Sampoorna KAU Multi mix developed for foliar application in rice, banana and vegetables *Thulasi, V., Moossa, P.P., Sureshkumar, P. and Narayanankutty, MC*	SH-015
16.	Ferti-fortification for enrichment of wheat and rice grains with zinc and iron	SH-16

International Conference on

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

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