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International Decade of Soils 2015-2024

FROM THE PRESIDENT'S DESK

The Food and Agriculture Organization (FAO) launched the Global Map of Salt-Affected Soils in 2021, a key tool for halting salinization and boosting its productivity. The map estimates that there are more than 833 million hectares of salt-affected soils around the globe (8.7% of the planet). Most of them can be found in naturally arid or semi-arid environments in Africa, Asia and Latin America. However, the map also shows that 20 to 50 percent of irrigated soils in all continents are too salty, meaning over 1.5 billion people worldwide face significant challenges in growing food due to soil degradation. It is projected that by the end of 2050 more than 50% of arable land will be salt affected. On one side, cultivated land around the world is expected to decrease due to increasing salinity and sodicity and on the other side, the population is increasing. By 2050, the world population will reach 9.1 billion, more than 34% of the present population. To meet the food requirement of growing population, about 70% more food grain production will be required. In salt-affected soils, plant growth and nutrient availability is subdued due to low osmotic potential of soil solution, toxicity, and imbalance of ions. In such soils, the salt load also reduces soil microbial activities as well as microbial biomass. Of the 329 million ha geographical area of India, 6.73 million ha is salt-affected soil having excess amounts of soluble salts, which gravely affect crop growth and yield. Out of the total salt-affected soils, 2.8 million ha is sodic land suffering from low hydraulic conductivity caused by dispersion. It is estimated that if these soils are not managed properly and faulty agricultural practices are continued, by 2050, the extent of salt affected soils may increase to 11 million hectares in the country.

Both physical and chemical methods for reclamation of salt affected soils are not cost-effective. Thus, the focus is more on alternative eco-friendly approach of bio-remediation of salt affected soils to optimize crop production in these potential lands. Scientists from ICAR-CSSRI has developed liquid bioformulations of halophilic plant growth promoting microbes to bio-ameliorate soil and enhance production of crops under salt stress conditions. It is cheap and adaptable technology and has

been commercialized recently for mass scale production for widespread adoption. The innovative approach developed by the scientists has been recognized by the International Union of Soil Sciences (IUSS) and honoured the lead soil scientist, who is also actively involved in SCSI activities, by electing as the Vice-Chair of Commission 3.6 Salt Affected Soils, Control, Remediation and Reclamation. The society appreciates the scientific contributions of its members in addressing the land degradation issues to meet the future food demands of the nation.

Dr. Suraj Bhan
President SCSI

Hydroponics: A Resource Conservation Technology

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As water becomes scarce and important as a resource, the use of hydroponics and other water saving technologies for crop production is poised to popularize in time. Hydroponics uses substantially less water as compared to the traditional farming, where most of the water that we supply to the plants percolates deep into the soil and is unavailable to the plants roots. However, in hydroponics, plant roots are either submerged in water or a film of nutrients mixed in water is constantly encompassing the root zone, keeping it hydrated and nourished. Hydroponics technique is very useful for the areas where environmental stress (cold, heat, dessert etc) is a major problem. Today, hydroponics is an established branch of agronomy as well as soil science. There are two chief merits in hydroponics. First, hydroponics may potentially produce much higher crop yields. Secondly, hydroponics can be used in places where in-ground agriculture or gardening is not possible. It is possible by Hydroponic techniques to achieve better than normal farm production, immune to natural weather variations, as well as organic and more nutritive, with just about 5% of the space & 5% of the irrigation water. The problem of pest and disease can be controlled easily while weeds are practically non-existent. In the present scenario, soil less cultivation might be commenced successfully and considered as alternative option for growing healthy food plants, fodder crops and vegetables.

In Hydroponics, green fodder and vegetables are being regularly produced in greenhouses under the controlled environment. Water is not wasted in this process, as it gets recovered, filtered, replenished and recycled. Waste nutrient solution can be used as an alternate water resource for crop cultivation under hydroponic system. It is possible to effectively grow good quality green fodder and vegetables under controlled hydroponic conditions using 85 to 90% less water than traditional production. Different types of hydroponic structures viz. drip, deep water culture and Nutrient Film Technique (NFT) system; their operations; benefits and limitations; performance of different crops like- tomato, cucumber, pepper and leafy vegetables, water conservation and time management we can plan easily. Commercially NFT technique has been used throughout the world for successful production of leafy as well as other vegetables with 80 to 90% savings of water. Leading countries in hydroponic technology are Netherlands, Australia, France, England, Israel, Canada and USA. For successful implementation of commercial hydroponic technology, it is important to develop low cost techniques which are easy to operate and maintain; require less labour and lower overall setup and operational cost.

What is Hydroponic Technology?

The term Hydroponics was derived from the Greek words 'hydro' meaning water and 'ponos' meaning labour and literally means water work. The word hydroponics was coined by Professor William Gericke in the early 1930s to describe the growing of plants with their roots suspended in water containing mineral nutrients. Hydroponics is a technique of growing plants in nutrient solutions with or without the use of an inert medium such as gravel, vermiculite, rockwool, peat moss, saw dust, coir dust, coconut fibre, etc. to provide mechanical support. Hydroponics green fodder and vegetables are being regularly produced in greenhouses under the controlled environment. Various commercial and fodder crops and vegetables can be grown using hydroponics including leafy vegetables, tomatoes, cucumbers, peppers, strawberries, and many more.

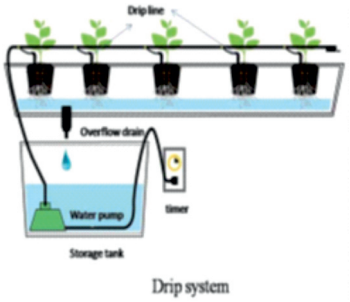
Green fodder production using hydroponics

Hydroponics green fodder is being regularly produced in greenhouses under the controlled environment. For seeds of crops such as maize, oats and barley-seeds, soaking time of 6-8 hours is sufficient. Hydroponics green-fodder looks-like a mat, consisting of roots, seeds and plants. About 6.5 kg and 8.5 kg hydroponics green-fodder was produced from each kg of seed (yellow maize and white maize) respectively. Hydroponics green-fodder contained more crude protein (14.6 vs. 10.7%) and less crude fibres (14.1 vs. 25.9%). Dry matter digestibility of the hydroponics green-fodder maize based ration was higher than the conventional

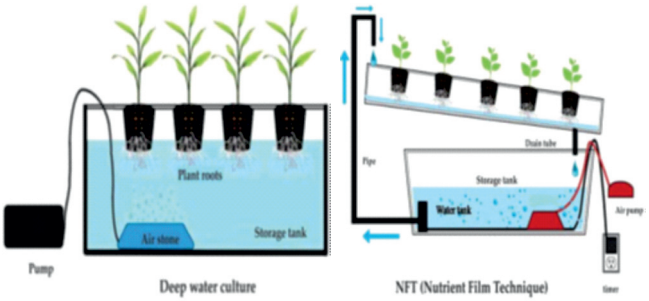
green-fodder. Before using the seeds of maize, barley and wheat are considered the seed of choice for production of hydroponic fodder.

Production of vegetables using hydroponics

Hydroponic system are customised and modified according to recycling and reuse of nutrient solution and supporting media. Commonly used systems are drip, deep water culture and nutrient film technique (NFT).



Drip system



Deep water culture NFT (Nutrient Film Technique)

Benefits of hydroponics technology

Hydroponic technique is becoming popular because this is clean and relatively easy method and there is no chance of soil-borne diseases, insect or pest infection to the crops thereby reducing or eliminating use of pesticides and their resulting toxicity. Besides, plants require less growing time as compared to crops grown in field and growth of plant is faster as there is no mechanical hindrance to the roots and the entire nutrients are readily available for plants. Although soil-less cultivation is an advantageous technique but some limitations are significant. Some salient benefits are listed below-

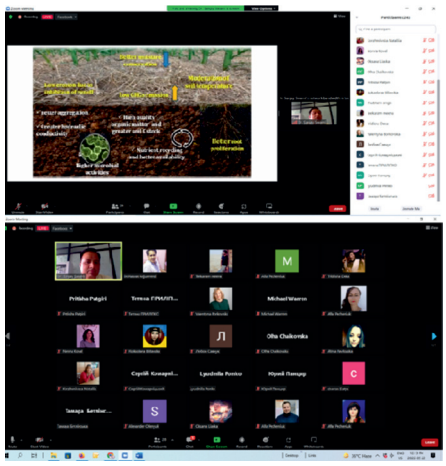
- Hydroponics saves large amount of water as irrigation and other kind of sprays are not needed and water logging never occurs. Hydroponics can reduce irrigation water usage by 80 % to 90 % by recycling the run-off water.
- This technique is very useful for the areas where environmental stress (cold, heat, dessert etc) is a major problem. Crops in hydroponic system are not influenced by climate change, therefore, can be cultivated year-round and considered as off season.
- Further, commercial hydroponic systems are automatically operated and expected to reduce labour and several traditional agricultural practices can be eliminated, such as weeding, spraying, irrigation and tillage that makes this environment friendly.

These benefits illustrate the importance of hydroponics as a promising resource conservation technology worthy of wide scale adoption and experimentation.

Meghalaya Chapter Observed International Day for Biological Diversity

International Day for Biological Diversity for observed by the Meghalaya Chapter of Soil Conservation Society of India on 22nd May, 2022 as a means to focus attention on the importance of soil biological diversity by delivering a virtual lecture by Dr. Sanjay Swami, Professor (Soils) & Chairman of the SCSI-Meghalaya Chapter. During his deliberations, he emphasized that soils are central to supporting natural systems and human well-being, yet to date soil biodiversity, the diversity of life in soil which drives ecosystems, sustains life above ground, and maintains healthy landscapes, has remained largely overlooked in the hilly regions. Soil-dwelling organisms, including bacteria, fungi, nematodes, earthworms, moles, and even plant roots, contribute the majority of living biomass on earth and represent more than 25 percent of all described species, not to mention the genetic diversity represented within these species. He further added "the evidences demonstrate that multiple sustainability goals can be simultaneously addressed when soil biota are put at the centre of land management assessments", this is because the activity and interactions of soil organisms are intimately tied to multiple processes that ecosystems and society rely on. The activity and complex interactions of soil organisms provides the backbone for many ecosystem functions, including nutrient cycling and retention, pollution remediation, pathogen control, water infiltration, foundations to food webs, climate regulation, and supporting agro-ecosystems.

If we keep soil biodiversity at the centre of our sustainability programs, we will be able to more efficiently and holistically achieve the Sustainable Development Goals. Therefore, this years' theme of biological diversity day is kept as "Building a shared future for all life!" He stressed that the significance of celebrating the 'World Soil Day' lies in our re-affirmation to preserve the soils and to create healthy soils for a healthier and more sustainable life of humanity. He urged the gathering to lend a hand to save soils and make everyday 'Soil Day.'



The lecture was attended by all the members of Meghalaya Chapter and students of College of Post Graduate Studies in Agricultural Sciences, Barapani along with some overseas participants. At the end, Ms. Pritisha Patgiri, an active member of the Meghalaya Chapter proposed vote of thanks.

Meghalaya Chapter Observed World Environment Day

The Meghalaya Chapter of Soil Conservation Society of India observed 'World Environment Day' on 5th June, 2022 in befitting manner at Kendriya Vidyalaya, NEPA, Barapani by organizing series of lectures and plantation drive. At the outset, the principal of KV, Mr. Rakesh Kumar welcomed the members of SCSI and appreciated for selecting the KV, NEPA, Barapani for celebrating this important day as it will create awareness among the students for protecting the environment. Dr. Sanjay Swami, Professor (Soils) & Chairman of the SCSI-Meghalaya Chapter, while addressing the students informed that the initiative to celebrate World Environment Day was taken by United Nations in 1974 to spread awareness among the people and encourage them to take some actions to protect the environment. Since its inception, this day is celebrated every year on 5th June. The occasion provides an opportunity to broaden the "basis for an enlightened opinion and responsible conduct by individuals, enterprises and communities in preserving and enhancing the environment." Every year, the campaign is raised around a theme in order to draw attention towards pressing environmental issues. This year's theme is #OnlyOneEarth with the focus on "Living Sustainably with the Harmony of Nature" to reflect on

our association with nature. Thereafter, Ms. Pritisha Patgiri highlighted about various issues of environment degradation and urged the student to follow simple and easy to adopt actions from their home or school to restore it. Continuing the series of lectures, other active members of the Meghalaya Chapter, Mr. Shubham Singh, Ms. Tridisha Deka and Ms. Ventina Yumnam elaborated about the issues of soil pollution, water pollution and air

pollution, respectively with the message that we have the only one liveable planet i.e. planet earth, and it is urgent to adopt transformative actions to reset the balance between people and the natural world to create a better future for all.

A plantation drive was also initiated by the members of SCSI-Meghalaya Chapter in the Kendriya Vidyalaya, NEPA, Barapani campus. Around 150 fruit and ornamental plant sapling were planted in and around the campus. Member also took pledge to save the resources and reconnect with nature. Dr. S.V. Ngachan, former director of ICAR Research Complex for NEH Region, Barapani congratulated the SCSI-Meghalaya Chapter team for organizing such a wonderful programme involving students and teachers of Kendriya Vidyalaya.

Newly formed Gujarat Chapter of Soil Conservation Society of India

With the approval by the President of Society Dr Sujraj Bhan, (Ref. : File No 1-20/SCSI/GSC/2021-22 dated 13.04.2022) Gujarat Chapter of Soil Conservation Society of Gujarat was formed under the Chairmanship of Dr. P. K. Shrivastava, Dean, College of Forestry, Navsari Agricultural University, Navsari. The Adhoc-committee members for running the state chapter are as follows:

The seeds for the formation of Gujarat Chapter were laid by the President of Soil Conservation Society of India, Dr Suraj Bhan in the 27th National Seminar, from Oct. 25 – 27, 2018, Organized by Soil Conservation Society of India in collaboration with Assam Agricultural University, Jorhat. Later, it was again pursed by him, during the International Conference at New Delhi, 5-9 November, 2019 in which Dr. P. K. Shrivastava, and Dr. D. K. Dwivedi, Research Associate, participated from the College of Forestry, Navsari Agricultural University. Although, few members must have registered earlier, from Gujarat, but the membership of the society was negligible at Navsari Agricultural University. Later, due to Covid pandemic in 2020 & 2021, only essential academic activities were being done in the campuses of university, most of education was in online mode. The regular offline education started in the first quarter of 2022 and academic atmosphere picked up since then and the membership drive began.

Initially, Dr P K Shrivastava coaxed his students and faculty members of Natural Resource Management Department, College of Forestry to become the member of nationally acclaimed society working on soil and water conservation and send papers for publication in the 5.20 NAAS rated journal. It was advocated that the society responds and accepts the quality scientific and applied research work on natural resource conservation from diverse specialized fields i.e., Soil & Water Conservation Engineering, Soil Science and Agriculture Chemistry, Forestry, Irrigation & Drainage, Agronomy, Agricultural Meteorology and Fruit Science. The membership drive gained momentum when the faculty members from College of Forestry, College of Agricultural Engineering & Technology, N M College of Agriculture and ASPEE College of Horticulture joined the Gujarat chapter. The main convincing points intimated to the faculty members were the regularity in publications of Journal and Newsletter, prompt response from Dr Sanjay Arora, The Chief Editor, Journal of Soil & Water Conservation, regularity in holding the national/International Conferences each year and networking with multi-disciplinary scientific community of the nation. Currently the strength of membership from the Chapter is 30+, the strength is likely to increase during the conference when faculty members and students of different colleges

S. No.	Name & Designation	Gujarat Chapter
1	Dr. P. K. Shrivastava, Dean, College of Forestry, NAU, Navsari	Chairman
2	Dr K. G. Patel, Professor, Soil Sci., NM College of Agriculture, NAU	Vice Chairman
3	Dr J M Patel, Research Scientist, Soil & Water Management Research Unit, NAU	Secretary
4	Dr. Sonal Tripathi, Assoc. Prof. Dept. of Soil Science &Agril. Chemistry, NM College of Agriculture, NAU	Joint Secretary
5	Dr. M. B. Tandel, Asstt. Prof. Dept. of Silviculture and Agroforestry, College of Forestry, NAU, Navsari	Joint Secretary
6	Dr. Dileswar Nayak, Asstt. Prof., Dept. of Forest Resource Management, College of Forestry	Treasurer
7	Dr. Arun Lakkad, Asstt. Prof., Dept. of Soil & water Conservation, College of Agriculture Engineering and Technology, NAU, Dediapada	Member
8	Dr. Vallabh J. Zinzala, Assoc. Prof., Dept. of Soil Science, NM College of Agriculture, NAU	Member
9	Dr. A. R. Kaswala, Assoc. Prof.,Dept. of Natural Resource Management, ASPEE College of Horticulture	Member
10	Dr. Vipul Shinde, Asstt. Prof., Dept. of Agriculture Engineering, NM College of Agriculture, NAU	Member
11	Dr. P.K. Dubey, Asstt. Prof. (Agronomy), Dept. of Natural Resource Management, ASPEE College of Horticulture	Member
12	Dr. Narendra Singh, Asstt. Prof.,Dept. of Soil Science, NM College of Agriculture, NAU	Member

of SAU's of Gujarat come for participation in the 31st National Conference from October13 to 15, 2022 at Navsari.

The Gujarat Chapter of SCSI, at NAU, Navsari has taken up the challenging task of organizing the National Conference in the year of its inception, under the patronage from Dr Z P Patel, Hon. Vice Chancellor, NAU and the enthusiastic young faculty. The title of Conference is "Innovative resource management approaches for coastal and inland ecosystems to sustain productivity and climate resilience". The aim of the conference is to host professionals working in the field of Agriculture, Soil Science, Soil & Water Conservation Engineering, Forestry, Horticulture and allied agricultural sciences. UG/PG Students, Research Scholars, Faculties and Scientists from academic institutions and R&D and Non-government organizations to participate and present their work on sustaining productivity in the era of climate change, while managing the scarce natural resources. The papers in the conference are invited on innovative ideas and approaches under six major themes covering current topics on soil and water conservation, land use systems, coastal ecosystem, natural farming, traditional farming systems and its socio-economic impact on the farming community. The Conference will be held at College of Forestry, Navsari Agricultural University, Navsari, Gujarat which is well connected by air, rail and road. The Surat Airport (STV), Surat Railway station and Navsari Railway station are respectively 40 Km, 45 Km and 2 Km from the venue. **The academia working for conservation of natural resources are warmly welcome to Navsari Agricultural University, Navsari in South Gujarat, to attend the Conference and have glimpses of tourist spots in the vicinity before or after the meeting.**

Sukhna to Sukhomajri: A Story of Challenges and Success

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Mob: +91-94176-55612

Those who planned and designed Sukhna Lake as a tourist destination in Chandigarh somehow ignored to integrate measures against the risks of its siltation. They forgot that barren Shivalik hills feeding the lake with rainwater are comprised of mud hills susceptible to soil erosion and mass wasting under intense monsoon rains. Paradoxically, in sixteen years of its life, sixty percent of its storage capacity was lost and Jaspal Bhati started playing cricket on its bed to symbolize that the lake is almost dead. Sukomajri project undertaken by the Chandigarh based Soil Conservation Research Center of ICAR, was the first attempt to control its siltation from top most areas close to Sukhomajri village. Resource-poor people belonging to village Sukhomajri, Dhamala, Lohgarh and Jattanmajri located at the top of Sukhna lake catchment recklessly devastated the forest from the adjoining vulnerable hill slopes. Their need and greed removed trees for fuel wood; grasses were browsed by herds of cattle and bushes by flocks of goats they maintained as livelihood support.

The upper catchment area of 82 hectare close to Sukhomajri was taken up by the Research Center in 1976 for restoration of the degraded area adopting soil conservation measures under a Ford Foundation funded project. People of Sukhomajri were happy to get gainful employment next door. However, the problem of fuel wood cutting and grazing could not come under control because no alternative to support their livelihoods was provided. Fortunately, a remedy in the form of construction of earthen dams for rainwater harvesting and use of stored water for irrigating the rain-fed lands of these poor farmers emerged from this project which increased crop and milk production to the extent that their dependence on forests was eliminated. This became the first step of Sukhna lake catchment restoration. How the concept of rainwater harvesting for irrigation through earthen dams emerged from Sukhomajri project makes an interesting story.

After clearing Agriculture Research Service exam in 1977, the author was posted as Scientist at the ICAR Central Soil and Water Conservation Research and Training Institute Dehradun. Dr. D.R. Bhumla, the Deputy Director General of ICAR knew the work of the author as he was earlier posted in his native area of Hoshiarpur. Due to his previous work in Shhivaliks, Dr. Bhumbla got him transferred to Chandigarh Centre of the Institute to work on the Sukhomajri Project. The day he joined the Centre, the same evening he along with Mr. P.R. Misha the officer in charge of the center left for Sukhomajri to plan a visit of Dr. M.S Swaminathan (then DG ICAR) and Dr D.R. Bhumbla who were to visit Sukhomajri on their way to Shimla to attend the ICAR Directors Conference. The first stop selected for inspection was a five- meters high earthen embankment constructed against a deep gully which diverted the runoff to the village pond. The gully was damaging the farmlands located along its banks. A pool of runoff water was there in the small reservoir of this embankment. Mr. P.K. Mishra, explained that runoff from the five hectares forest land was causing severe gully erosion and the same has been checked by this embankment and the problem of gully erosion has been solved.

The author could not control his temptation and politely said, "Sir, this is the end of October. The wheat crop sowing season would start shortly. Can we use this water for pre-sowing irrigation to the land located down below?" Mr. Mishra paused for a while as if some great idea had struck his mind and said "Will you be able to do that?" The author politely said "Yes, Sir". His experience, confidence and courage supported from within at this critical point of time. "*Agar kerde to Gulam ho jaunga*" (If you do it, I will be your slave) Mishra Ji said. "Sir, I will bring sprinkler set and an engine and lift this water and irrigate these parcels of land" author said with confidence. The sprinkler irrigation was unheard in this area till 1977. The challenge was accepted but there were only four days to show the worth at the place of new posting.

Earlier, the author was in charge of a Soil Conservation Institute at Hoshiarpur where he had purchased a sprinkler set for demonstration. He requested his colleague in-charge to loan him sprinkler set for couple of days. On receiving positive response author went to Hoshiarpur next morning, loaded the sprinkler set on bus top by paying extra to the conductor. A tractor trolley was called at Sector-17 Chandigarh Bus Stand and by evening the sprinkler set reached Sukhomajri. Next day, an old Peter engine was loaded in a trailer of Jeep and taken to dam site. Boys tried to start it but it was not responding. Jeep was immediately sent to Mani Majra motor market and an experienced motor mechanic was brought. He struggled for about an hour and succeeded to start the engine. The foot valve was put in the water body. As the engine started, a jet of water came out of the delivery pipe. Our joy knew no bounds as the second battle was successfully fought.

Next day, we started assembling sprinkler pipes. As the ground was uneven, there was lot of bends at joints and pipes started leaking profusely. Author went to Madanjit and Company Sector 7 Chandigarh dealing with sprinklers and brought their mechanic with bag of accessories. The mechanic installed fresh jackets and tried to straighten the pipeline by putting supports from down below. After a long struggle, the pipeline with 11 nozzles started working by late evening.

The fourth day morning all the eleven nozzles were operated. The children of the village started enjoying showers with drenched clothes. The women were seen standing at house tops to watch the never seen rotating streams of water. The villagers gathered around the system and had no word for praise. Dr. Swaminathan came walking to the site and could see the signs of hope on the faces of poor farmers and was really impressed with this innovation. He said, "Water was never considered a product of the forest watershed. The rainwater carrying tons of silt to the lake when harvested and used for irrigation would not only save Sukhna from siltation but also save Sukhomajri farmers from droughts and improve their crop production. The future of Himalayas is hidden in Sukhomajri". This was a historic statement. He shared this experiment with Directors at Shimla Conference and advised them to visit Sukhomajri and replicate this model.

Daulat Ram, the village head told Dr. Bhumbla that this is too small a dam. There is a very good site for a bigger dam which if constructed can provide irrigation to the land of the whole village. Dr. Bhumbla directed author to go to the site and report about its feasibility. The site was too good for an earthen dam and Dr. Bhumbla asked author to start survey and send the proposal for approval. He instructed that dam should be ready before coming monsoon. This was another challenge. As per his directions, a 12 meter high dam was constructed before the monsoon of 1978. An underground pipeline was laid to gravity irrigate 16 hectares of farm lands.

Puran, an adamant farmer refused to allow pipeline through his field. He had to be detained at Pinjore Police Station for a day and released only when pipeline was laid and earth filled. Three more dams were constructed across other gullies. People stopped going to the forest area. Goats and cattle were replaced by buffaloes as green fodder became available from irrigated farm lands. The idea of construction of earthen dams for rainwater harvesting and limited irrigation emerged from Sukhomajri. More than 500 such dams were constructed in the Shivalik region of Haryana, Punjab and Himachal Pradesh. No project received such recognition where IAS classes from Missorie Academy started visiting Sukhomajri. The author accepted the challenge and like Sukhomajri, hundreds of Shivalik villages were put on a trajectory of growth.

SCSI Member elected as Vice-Chair in IUSS Commission

Dr. Sanjay Arora, Principal Scientist (Soil Science) at ICAR-CSSRI, Regional Research Station, Lucknow having additional charge as Officer-in-Charge, KVK Hardoi-II has been elected as the Vice-Chair of Commission 3.6 Salt Affected Soils, Control, Remediation and Reclamation of the International Union of Soil Sciences for 2022-2026. For being elected as an IUSS Official it is not only a great honour but also means a strong commitment to Soil Science. Dr. Arora is also actively involved in activities of ISCO, WASWAC and SCSI and presently Chief Editor of Journal of Soil and Water Conservation. The Soil Conservation Society of India congratulates him for the achievement and wish him for successful tenure.

31st National Conference

on

Innovative approaches for management of costal ecosystem and climate resilience

October 13–15, 2022

Organized by

Soil Conservation Society of India (SCSI), New Delhi

In collaboration with

Navsari Agricultural University, Navsari, Gujarat, India and
Gujarat State Chapter of SCSI, NAU, Navsari, Gujarat, India

THEMES OF THE CONFERENCE

1. **Conservation, management and reclamation of natural resources**
   - o Organic and natural farming for climate resilience
   - o Soil ecology and management
   - o Coastal and inland salt affected soils
   - o Bio engineering for soil and water conservation
2. **Technological interventions for sustainable agriculture**
   - o Precision agriculture for sustainable natural resource utilization
   - o Geospatial technologies in agriculture and watershed management
   - o Nano technologies for sustainable agriculture
   - o Molecular biology and biotechnological interventions for climate smart agriculture
   - o Uses of modelling in sustainable agriculture
   - o Information technology for sustainable agriculture
3. **Socio economic impacts of climate change**
   - o Supply chain management under variable climatic conditions
   - o Environmental quality incentive program
   - o Agricultural Best Management Practices
4. **Coastal ecosystem and aquaculture**
   - o Management of costal saline soil, crop production and ground water
   - o Climate resilience and sustainable agriculture in coastal region
   - o Biodiversity conservation in coastal ecosystem
5. **Biodiversity and land use system (Horticulture /Agroforestry) for nutritional and environmental security**
   - o Biodiversity conservation and management for environmental sustainability
   - o Land use system for nutrition and food security
6. **Resource Conservation through natural farming**
   - o Low input agricultural practices
   - o Traditional farming systems

CONFERENCE VENUE: Conference will be held at ASPEE College of Horticulture and Forestry, Navsari Agricultural University, Navsari, Gujarat, India. Navsari is well connected by air, rail and road. The Surat Airport (STV), Surat Railway station and Navsari Railway station are respectively 40 Km, 45 Km and 2Km from the venue.

CALL FOR PAPERS

Abstracts are invited on any of the above-mentioned themes. The abstracts should not exceed 500 words. A minimum of five key words should be given below the abstract in italics. The abstract and full paper should be prepared in M.S. Word, Times New Roman, 12 font size and single space leaving 1" margin on the left and right sides. The accepted papers and mode of presentation will be intimated to the authors based on the decision of the review committee. The abstracts / full papers by email (ncscsi2022@gmail.com) should reach to the convener/organizing secretary on or before the deadline given below. Registration form and further details are available at the website www.nau.in

IMPORTANT DATES	REGISTRATION FEE
Last date for receipt of abstract: August 20, 2022	SCSI Member : Rs. 4000/-
Intimation of acceptance of abstract: August 31, 2022	SCSI Non-member : Rs. 5000/-
Submission of full-length paper: September 30, 2022	Research Fellow / SRF : Rs. 2000/-
Last date for registration without late fee: October 05, 2022	PG/PhD Student : Rs. 1500/-
Last Date for Accommodation Request: October 05, 2022	Accompanying person : Rs. 2000/-
	Late fee of Rs. 500/- will be charged after the due date of registration.
	Account Name : Soil Conservation Society of India
	Account Number : 90292010019166
	Bank Name : Canara Bank, NASC, Pusa Campus, New Delhi-12
	IFS Code : CNRB0019153
	MICR code : 110015508

Confirm your registration by online registration via link: https://forms.gle/Q3wvN8kPWsrU8piWA

***Selected full length papers will be published as Book / E-Book by reputed National /International Publisher.**

All the correspondence related to the conference may be addressed to:

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Co – Convener : Dr Sanjay Arora, Pr Scientist ICAR- CSSRI-RRS, Lucknow
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