



IISWC News



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Harvesting Spring Water for Doubling Farmers Income

From The Director's Desk



The concept of Blue and Green water management is very important for rainfed regions in the context of soil & water conservation and water harvesting. The purpose is to popularize the soil and moisture conservation techniques for maximizing the benefit of the harvested blue water for productive use as green water. Rainwater is partitioned into three categories of water, i.e., green, blue, and grey waters. The water stored in the soil and root zone and available for plant growth is called green water. Blue water is the fresh water in streams, rivers, ponds, tanks, lakes and reservoirs and also groundwater below the plant root zone and in aquifers. Grey water is the water that flows into aquifers and rivers and has been polluted by anthropogenic actions.

In rain-fed regions, rainwater is the main source of water for agriculture but its use efficiency (blue to green water) for crop production is low and varies from 30-45%. In India, the rainfall occurs in 30-40 days during 3 to 4 months of monsoon period. The successful production of rainfed crops largely depends on how efficiently the harvested blue water is stored and recycled by way of irrigation for conversion to green water by evapo-transpiration through plant for producing leaf, flower, fruit etc. Some of the popular green water use techniques in the form of *in-situ* moisture conservation in rainfed areas are conservation furrow, broad bed and furrow, ridge and furrow, raised bed and furrow, vegetative filters/barriers, mulching, tillage practices (minimum tillage/ conservation tillage/ zero tillage), sub soiling, land levelling, contour bunding, trenching, micro catchment techniques etc. The most widely practiced blue water harvesting techniques are Jal kunds, dugout farm ponds, embankment type ponds, percolation tanks (community ponds/tanks), water harvesting check dams (earthen, stone, gabion, masonry, concrete, rubber and plastic check dams), groundwater recharge filters etc.

A study supported by DST was conducted at ICAR-Indian Institute of Soil and Water Conservation, Research Centre, Vasad, Gujarat during 2014-16 in the farmers' fields on efficient *in-situ* (green water) and *ex-situ* (blue water) water harvesting techniques to improve farm productivity of backward semi arid region of Panchmahal & Dahod districts of Gujarat. Conservation furrow, a green water harvesting technique for rain-fed crops has produced maximum green water (up to 80%) and minimum runoff and soil loss with increased crop (maize, pigeon pea and cotton) yields up to 30%. It was also observed that under limited water supply situations, alternate furrow method of irrigation with surge flow saved irrigation water up to 70% without affecting the crop yields. Further, the cost effective and innovative plastic check dams (head wall made of HDPE&PP) developed at Vasad centre for blue water harvesting are easier to construct in difficult terrain condition with three time reduction in cost of construction compared to masonry head wall. The recharge filters constructed by Vasad centre for ground water recharge could facilitate the conversion of blue water to green water by increasing crop production in the watershed. Such blue and green water techniques can be up-scaled through watershed development programmes, *Pradhan Mantri Krishi Sinchayi Yojana* (PMKSY), MGNREGA etc. taken up by line Departments and NGOs.

In the context of blue-green water, there is an urgent need to innovate upon cost effective and easily adoptable, location specific blue and green water harvesting/use techniques in rainfed regions of the country for bringing climate resiliency in agriculture and sustaining production.

NEW INITIATIVES

Externally Funded New Research Projects

- Land use Effect on Soil Carbon Stock and Soil Quality in Mahi Ravine Ecosystem of Semi-Arid Tropics [in collaboration with NBSSLUP].
- Study of Atmospheric and Soil Carbon Dioxide Fluxes in Temperate Mountainous Ecosystem of Western Ghats with reference to Climate Change Impact Assessment [NRSC-ISRO, Hyderabad funded].
- Promotion and Expansion of Lemon Grass (*Cymbopogon flexuosus*) Cultivation as an alternative Crop for Livelihood Security in SC/ST Communities in Dehra Dun District [DST funded].
- Up-scaling Research Assessment of Productivity, Hydrological behaviour, Resource Conservation and Intangible benefits of selected commercial bamboo species in Uttarakhand [in collaboration with INBAR China].
- Quantitative and Qualitative Assessment and Management Strategy for the Sustainable Development of the Ground Water Resources in Hardwar, District [in collaboration with Central Ground Water Board].

IMPORTANT EVENTS

Institute Conferred Sardar Patel Outstanding Institution Award

The IISWC was awarded the Sardar Patel outstanding ICAR institution Award, 2016 in the large Institute category on July 19, 2017. The Institute with primary mandate of conservation of natural resources and having over 60 years



of experience, has done pioneering work in developing a number of resource conserving technologies, both, for arable and non-arable lands, which have potential to check land degradation, minimise soil erosion, preserve soil's fertility, sustain productivity, conserve rainwater *in-situ*, harvest and recycle inevitable runoff, mitigate drought, moderate floods downstream, and ensure environmental security in different agro-ecological regions of India. The institute's biggest contribution has been to evolve, demonstrate and popularise the concept of participatory integrated watershed management encompassing biophysical and socio-economic aspects for food, environmental and livelihood security of local communities. It has successfully demonstrated a number of technologies in different agro-ecological regions in watershed mode. Institute has established networking and linkages with stakeholders, SAUs, State and Central Government agencies and International organisations through collaborative multi-disciplinary research and consultancy projects. Also it has continuously strived hard for effective development and management of country's precious soil and water resources through imparting technical skills as a nodal agency to manpower engaged in natural resource conservation and watershed management.

Hon'ble Cabinet Minister of Uttarakhand visited IISWC

Hon'ble Cabinet Minister for Tourism, Culture, Irrigation and Minor Irrigation for the State of Uttarakhand, Sh. Satpal Maharaj visited the Institute on August 22, 2017. He had a brief discussion with the scientists of the Institute and officials from Watershed Directorate, Dehra Dun and Minor Irrigation Department. He was highly pleased to see the work carried out by the Institute under Tribal Sub-Plan Programme, especially in villages Hattal and Sainj. Hon'ble



Cabinet Minister urged the research fraternity to reach out to local masses through media and Door Darshan so that the problem of water scarcity in the hills of Uttarakhand is resolved. On account of Tourism and Culture, he mooted the idea of development of Ecotourism or “Herbal tourism” in Uttarakhand, and suggested use of lemon grass and other medicinal plants for rehabilitation of degraded land. He also urged scientists to collectively address the issue of water scarcity in Neelang valley on way to Gangotri, and to introduce more fodder plants in the villages.

Institute Annual Day celebrated

The IISWC celebrated its 63rd Annual Day on April 7, 2017. Dr. Trilochan Mohapatra, Hon’ble Secretary, (DARE)&DG (ICAR), Ministry of Agriculture and Farmers Welfare, Government of India, graced the occasion as Chief Guest. On the occasion a group meeting to discuss issues related to “Doubling of Farmer’s Income” with members of the Uttarakhand State Coordination Committee and other stakeholders was also conducted. The meeting was attended by the committee members as well as experts as special invitees, including prominent NGOs. During the



deliberations, various aspects that need to be addressed in the Action Plan for achieving the objective of doubling farmers’ income in Uttarakhand by 2022 were discussed at length. The day’s celebrations concluded with a cultural programme conducted by the Institute staff and their family members.

Secretary (DARE) & DG (ICAR) visited Research Centre Datia.

Dr. Trilochan Mohapatra, Secretary (DARE) & DG (ICAR) accompanied by Dr. A.K. Singh, Vice Chancellor, RVSKVV, Gwalior, Dr. Arvind Kumar, Vice Chancellor, RLBCAU, Jhansi, Dr. P.K. Ghosh, Director, ICAR-IGFRI, Jhansi, Dr. O.P. Chaturvedi, Director, ICAR-CAFRI, Jhansi and Dr. Anupam Mishra, Director, ICAR-ATARI, Jabalpur visited Research Centre, Datia (Madhya Pradesh) on July 29, 2017. In his address to the staff members, Dr. Mohapatra, while appreciating the achievements of the Research Centre emphasised upon the need to replicate the applied research results in farmer’s field. He suggested that IISWC Research Centre, ICAR-CAFRI and KVK needs to work hand in hand to develop and implement watershed plan for Bundelkhand region.



Additional Secretary (DARE) visited Research Centre Datia

Shri Chhabilendra Roul, IAS, Additional Secretary (DARE) accompanied by Dr. Arvind Kumar, Vice Chancellor, RLBCAU, Jhansi, and Dr. Mukesh Srivastava, Registrar, RLBCAU, Jhansi visited Research Centre Datia on August 05, 2017. In his address to the staff members, Hon’ble Additional Secretary laid stress on the need to take the achievements of the Research Centre to the next level of requirement of the region by developing linkages with other ICAR institutes working in the region and State

Department of Agriculture. He further stressed on need to keep pace with R&D requirements of the farmers in the emerging challenge of climate change.

Dr. P.K. Mishra, conferred Dr. J. Venkateswarlu Award 2016

Dr. P.K. Mishra, Director, ICAR-IISWC, Dehra Dun was conferred the prestigious "Dr. J. Venkateswarlu Award for Excellence in Dryland Agriculture Research, 2016" by Indian Society of Dry land Agriculture (ISDA) at ICAR-CRIDA, Hyderabad on May 27, 2017. On the occasion, Dr. P. K. Mishra gave a presentation on his engagements in various activities of Dryland Agriculture and the way forward.



Director, IISWC visited Research Centre Vasad

Hon'ble Director of the institute Dr. P. K. Mishra visited Research Centre Vasad during August 19-20, 2017 to review the research works being carried out at the centre. He held a meeting with the staff members and laid stress upon bringing glory to the centre and the institute through perseverance and hard work. He also held meeting with



the officials of the Anand Agricultural University, Anand regarding conducting conference on "Farmers First" for soil and water conservation in Western India. During visit to research farm, he observed the details of the treatments in all the experiments being carried out and suggested improvements, wherever required.

Sankalp Se Siddhi -New India Manthan (2017-2022) Organised

On the occasion of 75th Anniversary of Quit India Movement, a function was jointly organised by IISWC Dehra Dun and KVK, Dhakrani, at Veer Shiromani Madho Singh Bhandari Kissan Bhawan, Dehra Dun on August 26, 2017 to launch "Sankalp Se Siddhi – New India Manthan". The Hon'ble Governor, Uttarakhand, Dr. K.K. Paul graced the function as Chief Guest. Shri Subodh Uniyal, Hon'ble Minister of Agriculture and Horticulture, Government of Uttarakhand was the Guest of Honour. Dr. P.K. Mishra, Director, IISWC welcomed the dignitaries and all the participants, and appraised about the assignments being undertaken by the IISWC and KVK under Mera Gaon Mera Gaurav, Tribal Sub Plan, PMKSY, Swachh Bharat Abhiyan etc. for development of agriculture and overall upliftment of farming community in the region. In the inaugural function, the Chief Guest administered the pledge for Sankalp Se Siddhi to the participants. The pledge was taken for clean India, poverty-free India, corruption-free India, terrorism-free India, communalism-free India and casteism-free India along with doubling farmers' income by 2022. In his address, the Chief Guest stressed upon coordination between scientists of various R&D organisations and State Government Departments for achieving the target of doubling farmer's income by 2022. While making a reference to the issue of migration from





hills, he suggested that this serious problem needs to be tackled by providing livelihood security through different Government schemes like PMKSY, Soil Health Card, and National Gokul Mission. In fact in spite of many new online interventions, the farmers are unable to draw proper benefits from these schemes. He also stressed on judicious use of water and cultivation of low volume high value cash crops at high altitudes. Hon'ble Minister of Agriculture and Horticulture urged the State Departments to adopt cluster approach with Panchayats for specialised agricultural production as per the prevalent farming system. On the occasion, the message of Hon'ble Prime Minister was also read out. In the Technical Session, a Kissan Goshti was organised in which a documentary film produced by Minister of Agriculture and Farmer's Welfare, Government of India was screened. Thereafter, scientists from IISWC and KVK interacted with the farmers, and provided solutions to their problems related to different sectors of agriculture.

The New India Manthan- Sankalp Se Siddhi programme was also organised by Research Centre, Chandigarh in collaboration with KVK, SAS Nagar (Mohali) Punjab on September 7, 2017. Sh. Prem Singh Chandumajra, Hon'ble Member of Parliament, Fatehgarh Sahib graced the occasion as Chief Guest. The Guest of Honour was Dr. H.K. Verma, Director of Extension Education, GADVASU, Ludhiana. About 200 farmers from the states of Punjab, Haryana and Himachal Pradesh along with officers attended the programme. On this occasion, participants were administered pledge for clean India, poverty-free India, corruption-free India, terrorism-free India, communalism-free India and castesim-free India. One short film comprising message from Hon'ble Prime

Minister was also screened to sensitize and inspire the farmers. In his inaugural address, the Chief Guest stressed upon coordination between scientists of various R&D organisations and State Government Departments for achieving the target of doubling farmer's income by 2022. He further emphasised on soil health card and urgent need to decrease cost of inputs in agricultural sector. Also, various organisations viz. Department of Horticulture (Punjab), Department of Agriculture (Punjab), Punjab Dairy Development Board, Punjab National Bank – Farmers Training Center (Fatehgarh), Krishi Vigyan Kendra-Taran Taran, ABS imported Semens, Virbac Ltd., Agriworld, Shivalik Agro. Engineers, Diplast, IISWC Research Centre (Chandigarh) and KVK (Mohali) displayed their products and activities for the benefit of farmers. During the Technical Session organised on the occasion, various issues like importance of horticulture for diversification and income generation, training in dairy management and availability of various schemes for benefit of farmers, including pension, insurance, *Jandhan Yojna* and loan at lower interest rates were discussed.

Research Centre Koraput, on the eve of Independence Day conducted one day programme to launch "Sankalp Se Siddhi". The focus of this programme was to touch the deprived members of the society. Under this programme, children of the Divyang School (school for deaf and dumb), Sunabeda were invited on the campus. Thirty-six divyang students accompanied by seven teachers participated. To inculcate interest and ensure enthusiastic participation among students, quiz contest focusing mainly on Quit India Movement, Independence Day and Drawing Competition were organised. Prizes were distributed to all the participating students.



Annual IRC Meeting, 2017 Held

The Institute Research Committee Meeting for the year 2017 was held at the Headquarters, DehraDun during May 1-6, 2017. During the meeting, reports on 80 ongoing projects (including five Core Projects and seventeen Externally Funded Projects) were presented and discussed. Also, eight observational trials approved for 2016-17 and twenty new project proposals agreed by the Research Advisory Committee (RAC), 2017 were discussed. Further, the detailed discussion on progress and achievements of the Institute during XII Five Year Plan, recommendations of RAC-2017, action taken report of IRC (2016), intangible benefits of NRM Interventions, Tribal Sub Plan (TSP), Transfer of Technology (ToT), Status of Hydrological Instruments and Performance Indicators etc. were also held.



IAC Meeting under Farmer FIRST Project Conducted

Institute Advisory Committee meeting under Farmer FIRST Project was held under the chairmanship of the Director, Dr. P.K. Mishra on August 29, 2017 at the Institute Head

Quarters Dehra Dun. The meeting was attended by all members of the Institute Advisory Committee of Farmer FIRST Project. A presentation was made by Dr. Bankey Bihari, PI, on Farmer FIRST Project about interventions proposed along with progress and achievements made so far under the project. Dr. P.K. Mishra and Programme Coordinator, KVK, Dhakrani, Dehra Dun, Chief Horticulture Officer, Dehra Dun suggested that this project should also have the focus on doubling farmers income by means of diversification and interventions related to processing and marketing. The members expressed satisfaction with regards to overall progress of the project.

IISWC Celebrated International Yoga Day

"3rd International Yoga Day" was celebrated at Head Quarters Dehra Dun and eight Research Centres-Agra, Bellary, Chandigarh, Datia, Kota, Koraput, Vasad and Udhagamandalam on June 21, 2017. On the occasion, the participants at respective Research Centres were sensitised about the importance of Yoga, Pranayam and Meditation in overall well being of the human body. The staff member's performed various asana under the supervision and able guidance of invited yoga experts.



Himalayan Day Celebrated

IISWC observed Himalayan Day on September 08, 2017 at Dehra Dun under the 'Save Himalaya' campaign. On the occasion, I/C Director, Dr. P.R. Ojasvi administered the oath "Conserve Soil and Water- Save Himalayas, Save Life" to the staff members. Speaking on the occasion, Dr. P.R. Ojasvi focussed on protection of Himalaya to save the natural ecosystem of the country. He emphasised that our Soil & Water Conservation Institute plays a great role in national resource management and thus it can also save the Himalaya.

Sadbhavana Diwas Observed

Research Centre Udhagamandalam observed Sadbhavana Diwas (Harmony Day) on August 18, 2017 at the conference hall of the Centre to commemorate the birth anniversary of the former Prime Minister, Late Shri Rajiv Gandhi. The day is celebrated every year to encourage National Integration, Peace, National Integrity, Love, Affection and Communal Harmony. On the occasion, Dr. O.P.S. Khola, Head administered the Sadbhavana Diwas Pledge to the staff members.

Van Mahotsava Organised

Van Mahotsav was organised at Research Farm - Mansadevi of Research Centre- Chandigarh on July 22, 2017. All staff members enthusiastically participated in the function and planted about 110 the saplings (*Eucalyptus Spp*). The plants were provided by the Department of Forestry, Government of Haryana.



Parthenium Awareness Week Observed

Parthenium weed ranks 25th in the list of harmful weeds. A single plant of Parthenium produces 1,500 – 25,000 seeds and it completes 3-4 life cycles in a year hence the grass needs to be uprooted before flowering. The grass can also be controlled with a spray of 20% salt solution. As the grass spreads rapidly, it does not let any other grass grow in the vicinity. Thus it causes scarcity of green fodder in the area and also has an adverse effect on biodiversity of the region. Parthenium Awareness Week was observed at Headquarters Dehra Dun and Research Centre Kota during August 16 -22, 2017. During the period, staff members conducted various activities like uprooting of parthenium and creating awareness about its ill-effects on human being.

Mera Gaon Mera Gaurav

A varied range of activities were organised at Institute Head Quarters as well as at its Research Centers under MGMT.

At institute Head Quarters training programmes were organised by Plant Science Division at Ranigaon, Kalsi Block and Chakmansha, Sahaspur Block from June 16 -17, 2017; and at Udpalta on August 17, 2017. A sensitisation programme for Boxa tribes at Shahpur Judli, Tehsil Vikasnagar was conducted on September 16, 2017.

Research Centre Agra conducted Kharif Gosthi in MGMT adopted village Manik Pura, Block Bah, Agra on August 17, 2017. Apart from experts from the Research Centre, veterinary doctor Dr Ravinder Dubey and Shri Vijay Pal, BTM also participated in the proceedings as Special Invitees. The scientists discussed various crop management practices for the *kharif* season crops, fruit crops, animal husbandry and soil and water conservation measures. The veterinary doctors discussed and tried to resolve the issues faced by the villagers.



Research Centre Bellary conducted five events under MGMG on different dates at various villages in Bellary and Chitradurg Districts. Awareness programmes with regards to Swachh Bharat Abhiyan were conducted. At the same time, other activities viz. soil sampling and distribution of soil health cards were also taken up. Research Centre conducted Swachh Bharat activities in the Primary School at Hanumapur, and discussed with farmers about the requirements of cotton, groundnut and red gram seeds and micronutrients.

Awareness programme was organised at Nolta village on July 21, 2017 at Johranpur on August 31, 2017 and at Kajiyana on September 16, 2017. During training cum awareness campaign was held on July 21, 2017 in village Nolta, Block Pinjore, District Panchkula. Both, farmers and farm women actively interacted with the experts and got technical know-how on various aspects. The interaction generated awareness among farmers regarding importance of weather, weather forecast and weather based advisories in Agriculture. The coriander, radish and lady-finger seeds, along with relevant literature were also distributed.



At Research Centre Datia twenty five farmers were selected from identified MGMG villages and were exposed to different technologies of ICAR-IGFRI, Jhansi and ICAR-CAFRI, Jhansi on May 08, 2017.

One day training programme on “Rainwater Conservation Techniques for Enhancing Crop Productivity” was organised at Jharaput village on August 19, 2017 in Semiliguda Block of Koraput District under MGMG. The farmers were explained various techniques of rainwater conservation through different extension aids. Also Training cum Demonstration programme was organised at Kokriguda village in Semiliguda Block of Koraput District under MGMG) on September 15, 2017 to create awareness about soil water conservation and rainwater harvesting. Various techniques of rainwater conservation were explained through technology charts. Apart from farmers, women and SHG group members, school teachers and children’s participated in the programme.

At Research Centre Kota water samples were collected from identified MGMG villages namely, Ardana, Chardana, Amla, Narsinghpura and Mandoli of the Baran District, and Kanhiheda, Jakhana, Delunda, Manditiya and Pipaliya of the Bundi District and analysed for water quality. The results of water quality analyses were communicated to Principal Secretary, PHED (Government of Rajasthan) with the request for installation of defloridation plants for supplying quality potable water in these MGMG villages. The crop calendars for the Kharif season were also distributed in the MGMG villages.



Swachh Bharat Abhiyan

ICAR-IISWC conducted a variety of activities under Swachh Bharat Abhiyan at institute Head Quarters Dehra Dun and its eight Research Centres (Agra, Bellary, Chandigarh,



Datia, Koraput, Kota, Udhagamandalam and Vasad). Staff members, apart from observing utmost cleanliness in office premises, took active part in creating awareness and cleaning surrounding localities.

Four Month's Regular Training Course Concluded

Four Month's Certificate Course on Soil & Water Conservation and Watershed Management (116th Batch) was successfully conducted at IISWC, Dehra Dun (April 22, 2017 to August 21, 2017). A total of 26 officers, representing nine states; namely, Punjab (2), Arunachal Pradesh (3), Nagaland (3), Kerala(1), Chhattisgarh (8), Madhya Pradesh (4), IISWC-Uttarakhand (3), Karnataka (1) and Gujarat (1) attended the course. Prof. Matthew Prasad, Vice Chancellor, University of Horticulture and Forestry, Bharasar, Uttarakhand graced the occasion as the Chief Guest. In his inaugural address, the Chief Guest urged the officer trainees to best utilise the four month time effectively in learning about the different aspects of soil and water conservation and watershed management. Dr. P.K. Mishra, Director, in his address emphasised the

importance of conservation of natural resources and how this training programme helps to percolate knowledge to different stake holders through trainees to all parts of the country. He insisted that the trainees should interact as much as possible with the faculty and acquire the desired level of expertise. The training module comprised of 47 % practical and 53% theory component. The participants acknowledged and appreciated the efforts made by the Institute for conducting the training programme. On completion of course the certificates were distributed to the participants in valedictory function on August 21, 2017. The over all merit certificate was begged by Smt. Shamla Rasheed from Kerala. Dr. P. K. Mishra, speaking on the occasion, as Chief Guest, emphasised on the managerial task of the officer trainees in water shed management programme. He urged the trainees to implement the techniques mastered during the training and disseminate the knowledge acquired, in the best possible manner, at every level. Dr. N.K. Sharma, Head, Division of SS&A, and Dr Bankey Bihari, Head (HRD&SS) also expressed their views on the occasion.

Capacity Building under INBAR Project

Training on “Allometric and Environmental Metrics in Bamboo” was organised under INBAR’s project on “South-South Knowledge Transfer Strategies” jointly co-financed by IFAD and the European Union (August 1-20, 2017). Dr. Rajesh Kaushal, PI and Dr. Ambrish Kumar, Co-PI of the project visited Injibara (Ethopia), Kibaha (Tanzania)) and Toamasina (Madagascar) to impart training. The training was imparted to over sixty two trainees from different academic, research and development institutions. The participants were involved in classroom and field exercises related to research design and methodologies for studying morphological, growth parameters, biomass estimation, root distribution, litter collection and diversity measurement.



One Month Trainings on Soil & Water Conservation and Watershed Management

Research Centre Bellary conducted one month (June 01 to 30, 2017) training programme. Twenty students from three Agricultural Engineering Colleges, namely, Raichur (Karnataka), Madakasira (Andhra Pradesh) and Dapoli (Maharashtra) participated.

Research Centre Chandigarh conducted one month (June 01-30, 2017) summer training on Soil & Water conservation and Watershed Management for B.Tech students (Agril. Eng.) from Dr. D.Y. Patil College of Agricultural Engineering & Technology Talsande, Distt. Kolhapur (Maharashtra)

Research Centre Kota organised one month (June 01-30, 2017) summer practical training on “Watershed Management” for 17 B.Tech (Ag.Engg.) students deputed by College of Engineering & Technology Jalgaon, Rahuri, Ratnagiri and Prabhani, Maharashtra.

Research Centre Udhagamandalam organised one month (July 19 to August 18, 2017) Institutional Training on Soil & Water Conservation for seven B.Tech students of RKDF University Bhopal. The trainees were given theoretical and practical oriented training on soil and water conservation structures, drainage line treatments, water harvesting and recharge structures, hydrology, integrated watershed management, watershed planning, agronomical and forestry measures, climate change impacts, application of GIS and remote sensing, soil analysis and community organization.



One month (June 01-30, 2017) Institutional Training for thirty-two B.Tech students from Anand, Navsari, Rahuri and Dapoli Agricultural Universities was organised at Research Centre Vasad. Experiments were conducted on design of micro irrigation system, impact of soil and water conservation technologies, and micro watershed planning at Research Farm. Also, field exposure to different research projects being conducted at the Research Farm was arranged.

Capacity Building Programme on Field Engineering Training

Research Centre Udhagamandalam organised twelve days (July 03 to 14, 2017) capacity building programme on “Field Engineering Training on Forest Watershed Management” for the Forest Range Officers at IISWC Regional Centre. The programme was inaugurated by Dr. A.G. Panwar, Director, ICAR – IIFSR, Modipuram Meerut Uttar Pradesh. The training module consisted of lectures on site selection and design of soil conservation structures, drainage line treatments, water harvesting and recharge structures, application of GIS in watershed management and benchmark survey for watershed planning. Thirty



ICAR - Indian Institute of Soil and Water Conservation
Research Centre, Fernhill Po, Udhagamandalam - 643 004
Field Engineering Training on Forest Watershed Management
(03rd June to 14th July 2017)



eight Forest Range Officers from Maharashtra, Gujarat and Karnataka participated in this training programme.

ICAR all India Entrance Examination Conducted

Research Centre Kota coordinated and conducted the 22nd ICAR All India Entrance Examination for the admission to undergraduate programme at eight examination centres in Kota city on June 10, 2017.

कृषि तकनीकी सप्ताह मनाया गया

अनुसंधान केन्द्र, कोटा पर दिनांक 28.08.2017 से 02.09.2017 के दौरान कृषि तकनीकी सप्ताह के अन्तर्गत विभिन्न कार्यक्रमों का आयोजन किया गया। इसी श्रृंखला में दिनांक 29 अगस्त, 2017 को हाडौती क्षेत्र में कृषक आय को दो गुना करने हेतु कृषि तकनीकियों की समीक्षा विषय पर कृषि संगोष्ठी का आयोजन किया गया। कार्यक्रम में कृषि विश्वविद्यालय कोटा, कृषि विज्ञान केन्द्र अन्ता के वैज्ञानिकों एवं कृषि विभाग के अधिकारियों ने भाग लिया। इस अवसर पर डा प्रताप सिंह धाकड़, निदेशक अनुसंधान, कृषि विश्वविद्यालय कोटा ने कृषि आय को बढ़ाने के लिये उन्नत तकनीकियों एवं कृषि विविधीकरण अपनाने पर जोर दिया। संगोष्ठी के दौरान उन्नत कृषि तकनीकियों पर गहन



विचार विमर्श किया गया तथा वर्तमान परीपेक्ष्य में कृषि समस्याओं के निदान हेतु आवश्यक अनुसंधान एवं तकनीकियों की रूपरेखा तैयार करने पर जोर दिया गया। दिनांक 30 अगस्त, 2017 को भुवनेश बाल विद्यालय कोटा के विज्ञान संकाय के कक्षा XI एवं XII के 42 विद्यार्थियों ने कृषि तकनीकी सप्ताह के तहत आयोजित कार्यक्रम में भाग लिया।

भारतीय मृदा एवं जल संरक्षण संस्थान, अनुसन्धान केन्द्र, दतिया ने अपना स्थापना दिवस मनाया

दिनांक 18/09/2017 को भारतीय मृदा एवं जल संरक्षण संस्थान, अनुसन्धान केन्द्र, दतिया ने अपना ३१ वा स्थापना दिवस मनाया। इस अवसर पर मुख्य अतिथि डॉ. आर. वी. कुमार, निदेशक, भारतीय चरागाह एवं चारा अनुसन्धान संस्थान, झाँसी ने केन्द्र के वैज्ञानिकों, अधिकारियों एवं कर्मचारियों को सम्बोधित करते हुए अनुसन्धान केन्द्र की मृदा एवं जल संचयन के किये गए कार्यों को सराहा। इस अवसर पर डॉ आर. के. तिवारी, प्रधान वैज्ञानिक, राष्ट्रीय कृषि वानिकी अनुसन्धान संस्थान, झाँसी ने केन्द्र को बधाई देते हुये कम पानी में फलदार वृक्षों को बचाने के लिए जल संरक्षण की आवश्यकता पर जोर दिया। इस अवसर पर अपराह्न में 'फार्म संसाधनों के सतत प्रबंधन के लिए कार्यपालन लिंकेज एवं योजनाओं के अभिसरण विकसित करना' विषय पर विचार मंथन बैठक आयोजित की गयी।



हिंदी दिवस समारोह एवं हिंदी पखवाड़ा

संस्थान मुख्यालय देहरादून में 'हिन्दी दिवस', 14 सितम्बर, 2017 को एवं 'हिन्दी सप्ताह' 14 से 20 सितम्बर, 2017 तक मनाया गया। सप्ताह का शुभारंभ संस्थान के निदेशक महोदय एवं विभागाध्यक्षों, मुख्य प्रशासनिक अधिकारी एवं वरिष्ठ वित्त एवं लेखा अधिकारी ने द्वीप प्रज्वलित कर व माँ सरस्वती को पुष्पाँजली अर्पित करके किया। विभिन्न वक्ताओं एवं निदेशक महोदय ने कार्यालय का दैनिक काम-काज हिन्दी में करने पर बल दिया। सप्ताह के दौरान संस्थान के सभी अधिकारियों एवं

कर्मचारियों ने आयोजित प्रतियोगिताओं में भाग लिया। गत वर्ष (सितम्बर 2016 से अगस्त 2017 तक) संस्थान के विभागों/प्रभागों में हिन्दी में किए गए कार्य का संक्षेप में ब्यौरा प्रभारी राजभाषा अधिकारी द्वारा प्रस्तुत किया गया। साथ ही कृषि एवं किसान कल्याण मंत्री एवं गृह मंत्री भारत सरकार के हिन्दी दिवस के अवसर पर जारी संदेश को पढ़ा गया। कार्यक्रम के समापन के अवसर पर मुख्य अतिथि डॉ. असीम शुक्ला, सेवानिवृत्त सम्पादक, नवभारत टाइम्स ने राजभाषा नीति एवं कार्यान्वयन व देवनागरी लिपि पर अपने विचार व्यक्त किये। इस अवसर पर मुख्य अतिथि द्वारा प्रतियोगिताओं के विजेताओं को पुरस्कार भी प्रदान किए।

भारतीय मृदा एवं जल संरक्षण संस्थान, अनुसन्धान केंद्र, कोरापुट ओडिशा पर हिंदी पखवाड़ा की शुभारम्भ हिंदी दिवस (14 सितम्बर 2017) से किया गया। कार्यक्रम में हिंदी से सम्बंधित गतिविधियों में निबंध लेखन, हिंदी वर्णमाला लेखन तथा हिंदी हस्ताक्षर को शामिल किया गया। हिंदी दिवस के कार्यक्रम में कोकरी गुड़ा स्कूल के विद्यार्थियों ने कार्यक्रम में बढ़ चढ़ कर हिस्सा लिया और

निबंध लेखन, हिंदी भाषण तथा हिंदी वाद-विवाद प्रतियोगिता में हिस्सा लिया। स्कूल के शिक्षको ने कार्यक्रम को सफल बनाने में पूरा सहयोग किया। प्रतियोगिता में प्रथम, द्वतीय व तृतीय पुरस्कार के अलावा सभी सहभागी के लिए सांत्वना पुरस्कार भी रखा गया था।

भारतीय मृदा एवं जल संरक्षण संस्थान, अनुसन्धान केंद्र, कोटा पर 14 सितम्बर, 2017 को हिन्दी दिवस मनाकर हिन्दी चेतना सप्ताह का शुभारम्भ किया गया। हिन्दी सप्ताह के समापन के अवसर पर दिनांक 20.09.2017 को हिन्दी काव्य गोष्ठी का आयोजन किया गया। अवसर पर चॉद शेरी, कवि गौरस प्रचण्ड, जनकवि रामनारायण मीणा हलधर, ने अपने मधुर कंठ से हिन्दी काव्य पाठ किया।



AWARDS AND RECOGNITIONS

Dr. Sharmistha Pal awarded Institute's Best Worker Award-2016 under Scientist Category.

Sh. K. Someswara Rao awarded Institute's Best Worker Award-2016 under Technical Category.

Dr. Vibha Singhal received best paper award in the National Conference on "Intervention of Climate Change in Sustainable Development of Agriculture, Food and Nutrition Security and its Amelioration" at Swami Vivekanand Subharti University, Meerut (UP).

Dr. D. Dinesh awarded Best Trainee in the short training course held at ICAR-IISS, Bhopal.

Sh. A. S. Morade and Sh. Rajesh Bishnoi awarded two Merit Certificates (each) in four months Certificate Course on Soil & Water Conservation and Watershed Management organised at IISWC, DehraDun.

Sh. Rajesh Bishnoi nominated as ATP and MGMG Nodal Officer of IISWC, Dehra Dun.



IMPORTANT PUBLICATIONS

Research Papers

- Bihari Bankey; Singh, Lakhan; Bishnoi, Rajesh and Kumar, Suresh (2017) Prioritisation of Training Needs and Constraints faced by Watershed Field Functionaries and Farmers. *Indian Journal of Agricultural Sciences* 87 (5): 597–602
- Chand, Lekh and Puniya, R (2017) Bio-efficacy of Alone and Mixture of Herbicides against Complex Weed Flora in Wheat (*Triticum aestivum*) under sub-tropical conditions. *Indian Journal of Agricultural Sciences* 87 (9): 1149–1154
- Ghosh J, Lohot VD, Ghosal S, Singhal V and Sinha NK (2017) Drought Resilient *Flemingia semialata* Roxb. for improving lac productivity in drought prone ecologies. *Indian Journal of Genetics and Plant Breeding* 77(1): 153-159
- Jakhar, Praveen; Dass, A; Adhikary, P.P; Sudhishri, S; Naik, B.S; Hombegowda, H.C; Madhu, M; Lenka, N.K; Chaudhary, P,R and Panda, R.K (2017) Multitier Agroforestry System for Integrated Resources Conservation on Uplands of Eastern Ghats region in India. *Agroforestry Systems* 91(4): 697–712
- Jana, C; Alam, N.M; Mandal, D; Shamim, M and Kaushal, R (2016) Spatio-temporal Rainfall Trends in the Twentieth Century for Bundelkhand region, India. *Journal of Water and Climate Change* doi: 10.2166/wcc.2017.120
- Pandey, A;Srivastava, R.K and Kaushal, R (2017) Model for Economical and Sustainable Bioenergy Production under Grey Water Irrigation Trial. *Current Science* 112 (8): 1743–1749
- Panwar, P; Chauhan, S; Kaushal, R; Das, D. K; Ajit, Arora G; Chaturvedi, O.P; Jain, A,K; Chaturvedi, S and Tiwari S (2017) Carbon sequestration potential of poplar-based agroforestry using the CO₂FIX model in the Indo - Gangetic Region of India. *Tropical Ecology* 58(2): 439–447
- Raja, P; Nilendu, Singh; Srinivas, C.V; Singhal, Mohit; Chauhan, Pankaj; Singh, Maharaj and Sinha, N.K (2017) Analysing Energy–Water Exchange Dynamics in the Thar Desert. *Climate Dynamics* doi: 10.1007/s00382-017-3804-9
- Sharma, N. K; Singh, Raman Jeet; Mandal D; Kumar Ambrish; Alam, N.M and Saskia Keesstra (2017) Increasing Farmer's Income and Reducing Soil Erosion using

Intercropping in Rain-fed Maize-Wheat Rotation of Himalaya, India. *Agriculture, Ecosystems & Environment* 247:43–53

- Singh, Raman Jeet; Ghosh, B.N; Sharma, N.K; Patra, S; Dadhwal, K.S; Meena, V.S; Deshwal, J.S and Mishra, P.K (2017) Effect of Seven years of Nutrient Supplementation through Organic and Inorganic Sources on Productivity, Soil and Water Conservation, and Soil Fertility Changes of Maize-Wheat Rotation in North-Western Indian Himalayas. *Agriculture, Ecosystems & Environment* 249: 177–186
- Surendran, U; Kumar, V; Ramasubramoniam, S and Raja, P (2017) Development of Drought Indices for Semi-Arid Region using DroughtI Calculator (DriC) – A case study from Madurai District, a Semi-Arid Region in India. *Water Resources Management* doi: 10.1007/s11269-017-1687-5; ISSN 0920-4741

Books

- Manivannan.S; Khola.O.P.S and Thilagam. Kasthuri. V (2017) Hand Book on Field Engineering Structures for Forest Watershed Management. Pp.185. ISBN: 978-81-924624-2-4
- Pathmanaban, G; Thangavelu, A.U; Saravanan, R; Rajan, K; Kalimuthu, N and Rajkumar, M (2017) *Nutritional and Physiological Disorders in Horticultural Crops*. Agrobios (India) Publisher, Jodhpur, India
- Raja, P (2017) Impacts of Neotectonics on Sedimentation in Purna Basin, Central India, Lambert Academic Publishing, pp.234. ISBN 978-3-330-08743-9.

Manual/Bulletin/Policy paper

- Panwar, P; Pal, S; Bhatt, V.K; Arya, S.L; Tiwari, A.K and Mishra, P.K (2017) Managing sloping lands: Status, Constraints, Opportunities and Strategies. Policy paper: PP-03/C/E-2017
- Sena, D.R; Jana, C; Mandal, U; Ojasvi, P.R; Mishra, P.K; Bishnoi, Rajesh and Bhatia, H.S (2017) Training Manual on Application of Remote Sensing and GIS in Natural Resource Management, Division of Hydrology and Engineering, ICAR-IISWC, DehraDun
- Singh, Charan; Dhyani, B.L; Bihari Bankey; Kumar, Ambrish; Muruganandam, M; Mandal, D; Dwivedi, V.K (2017) Enhance Fodder Production Through Plantation of Hybrid Napier on Field Bunds. No. EB-02/DD/E-2017. P 1-16.

Foreign Visits

Dr. P.K. Mishra, Director visited UN FAO Hqrs. Rome, Italy to attend 3rd meeting of Land Degradation and Restoration Assessment (LDRA) (deliverable 3bi) from 17-21 July, 2017.

Dr. Ambrish Kumar, Pr. Scientist (SWCE) and Dr. Rajesh Kaushal, Sr. Scientist (Forestry) visited Injibara (Ethopia), Kibaha (Tanzania)) and Toamasina (Madagascar) for imparting training on Allometric and Environmental Metrics in Bamboo for project partners under South-South institutional strengthening and capacity building programme from August 1-20, 2017.

WORKSHOPS/TRAININGS/VISITS/DAYS/WEEKS/ MEETS ORGANISED

Sewa Diwas celebrated at ICAR-IISWC, DehraDun and its eight Research Centre's on September 17, 2017.

Samagra Swachhta Diwas celebrated at ICAR-IISWC, DehraDun and its eight Research Centers on September 24, 2017.

Sarwatra Swachhta Diwas celebrated at ICAR-IISWC, DehraDun and its eight Research Centers on September 25, 2017.

Bellary

International yoga Day June 21, 2017 at Hanumapur village.

Swachhata hi Seva - a fortnight celebration of *Swachh Bharat* Mission from September 15 - 30, 2017.

Pledge of Sankalp se Siddhi was administered to all staff members at the IISWC Research Centre Bellary on August 9, 2017 on the eve of 75th year of Quit India Movement.

Sadbhavana Diwas on August 18, 2017.

Hindi Divas on September 14, 2017.

Chandigarh

Three training programmes on Integrated Watershed Management sponsored by DRDA, Solan, Kullu, Bilaspur.

Datia

Exhibited various SWC Technologies developed by the centre at ICAR-IGFRI, Jhansi on foundation day of ICAR-CAFRI, Jhansi on May 12, 2017.

Exhibited various SWC Technologies developed by the Centre in the *Kisan Mela* organised by District Agriculture Department, Datia on May 12, 2017.

Exposure Visit Cum Training for women farmers from Bhind District on May 30, 2017.

Hindi Saptah with different activities on promotion of Hindi language (Sept 15-19, 2017).

Hindi Workshop on September 15, 2017.

Foundation Day on September 18, 2017.

Dehra Dun

"Kisan Divas" was observed at village Sahia-Udapalta on April 13, 2017.

Three days training for farmers from Chamoli District during May 18 -20, 2017.

Division of SS&A organised in-plant training on Techniques and Methodology in Soil & Water Conservation during May12- June 7, 2017.

"Librarian's Day" celebrated on August 12, 2017.

Division of H&E organised training programme on Application of Remote Sensing and GIS in Natural Resource Management during September 18–27, 2017.

Koraput

Demonstration of SWC measures in vegetable cultivation at village Podagada on April18, 2017.

Formation of water users group under *Jal Nidhi* programme at village Kutriput on May 2, 2017.

World Telecommunication Day & Information Society Day on 18th May,2017.

Training programme on Best Management Practices for kharif cropping at village Kangra on June 15, 2017.

Exposure visit-cum-interaction with Watershed Management Team (WMT) members of Kandhmal (30 nos.) and Koraput (10 nos.) Districts on June 29, 2017.

Rainwater conservation techniques for enhancing crop productivity at village Jharaput and Kokriguda on August 19 and September 16, 2017.

Exposure visit to Assistant Soil Conservation Officers (ASCO) of Odisha on August 22, 2017.

Kota

International Yoga day on June 21, 2017.

Workshop on Inter Comparison of Survey Methods for Soil and Water Conservation Planning at Jaipur on July 21, 2017.

Swach Bharat Abhiyan on August 21, 2017.

दिनांक August 28, 2017 को एक दिवसीय हिन्दी कार्यशाला "सरकारी कामकाज में राजभाषा का प्रयोग प्रसार" का आयोजन किया गया।

Udhagamandalam

Exposure Visit Cum Training on New Technologies in Soil & Water Conservation in Agriculture for farmers from Idukki

District, Kerala under ATMA Karshaka Naipunya Programme on April 7, 2017.

Exposure visit on Soil & Water Conservation Technologies for officers and students from different colleges.

Industrial visit cum field trip for students from PSG Public School, Coimbatore on April 11, 2017.

Swachhta Pakhwara from May 16-31, 2017.

Swatch Bharat Abhiyan on June 22, 2017.

Swachh Bharat Mission Campaign from June 22 - July 29, 2017.

Workshop on *Saamanya Vyakaran* on June 27, 2017.

Training on Soil and Water Conservation for the farmers of Paippad KVK, Kerala on July 18, 2017.

"Hindi Chetna Mass" was observed from September 14-October 13, 2017

Vasad

Foundation day on May 11, 2017.

Swachhta Pakhwara from May 16-31, 2015.

Hindi Pakhwara, from September 14-28, 2017.

WORKSHOPS/ MEETINGS/TRAINING ATTENDED

Dr. P.K. Mishra, Director attended Interactive meeting with ICAR SMDs/Institutes on April 11, 2017 at NIAP, Pusa New Delhi.

Dr. Ambrish Kumar attended brain storming session for Possible Science and Technological Intervention for Restoring Nainital Lake on April 20, 2017.

Dr. Indu Rawat, Sh. A.S. Morade and Sh. Rajesh Bishnoi, attended four months regular training on Certificate course on Soil & Water Conservation and Watershed Management at IISWC, DehraDun from April 22 - August 21, 2017.

Dr. Ashok Kumar attended Kota Rajbhasha Kiryanvayan Samiti meeting organised by NPCIL, Rawatbhata, Chittor Garh, on April 26, 2017.

Dr. S.P. Tiwari, Er. Monalisha Pramanik, and Er. Pramod Kumar participated in a workshop on Construction of Check Dam and Farm Pond organised by District Agriculture Department, Jhansi on May 11, 2017.

Er. Monalisha Pramanik delivered invited lecture at District Agriculture Department, Jhansi on May 11, 2017.

Dr. P.K. Mishra, Director attended the meeting with Hon'ble Agriculture & Farmers Welfare Minister and Hon'ble Chief Minister of UK at Secretariat of UK, DehraDun on May 13, 2017.

Dr. Kuldeep Kumar attended Agricultural Research Coordination Committee of CAD, Kota on May 16, 2017.

All scientists of RC Kota attended Global Rajasthan Agritech meet 2017 at Kota Rajasthan organised by Rajasthan State Government in collaboration with FICCI at Kota from May 24-26, 2017.

Dr. P.K. Mishra, Director attended Technical program Workshop of AICRPDA/NICRA at CRIDA, Hyderabad from May 26-27, 2017.

Dr. P.K. Mishra, Director attended Capacity Building Support for Neeranchal National Watershed Management Project- Dept of Land Resource, Ministry of Rural Development at ICAR-IISWC, DehraDun on May 31, 2017.

Dr. R.K. Singh, Dr. Kuldeep Kumar, Sh. B.K. Upadhyaya and Sh. Ajay Yadav participated and demonstrated Kitchen Waste Management Methods in the programme organised by Kota Horticultural Society on the eve of World Environment Day at Kota Municipal Corporation, Kota on June 4, 2017.

Dr. P.K. Mishra, Director and Dr. Harsh Mehta attended the State level Regional Committee No.1 Meeting of H.P. at Nauni, Solan on June 7, 2017,

Dr. (Smt.) Trisha Roy attended the National Seminar on Micronutrients and Pollutants in Soil-Plant-Animal-Human Continuum for Sustaining Soil, Food and Nutritional Security held at BCKV, Kalyani, West Bengal from June 9-10, 2017.

Dr. Dev Narayan attended training on Management Development Programme' at NAARM, Hyderabad from June 13-24, 2017.

Dr. V.K. Bhatt attended training on MDP on leadership development at NAARM, Hyderabad from June 13 - 24, 2017.

Dr. Pawan Sharma attended 2nd meeting of Executive Committee of State Level Nodal Agency, SLNA, Haryana at Haryana Civil Secretariat; Chandigarh on June 14, 2017.

Dr. R.K. Singh, Pr. Scientist & Head attended Monsoon Preparedness Meeting organized by CRIDA at Pant Krishi Bhawan, Jaipur on June 16, 2017.

Dr. P.K. Mishra, Director and Dr. Harsh Mehta, Dr. Lakh Chand attended the State level Annual Review Meeting of Regional Committee No.1 of J&K at SKUAST-Kashmir, Srinagar from June 19 - 21, 2017.

Dr. R.K. Singh attended MJSA Impact Assessment meeting as expert member at Aravali Bhawan, Jaipur on June 23, 2017.

Dr. Vibha Singhal attended International Conference on Agriculture, Horticulture and Plant Science at Rishikesh from June 24-25, 2017.

Dr. N.K. Sharma attended 15th RAC meeting of Regional Sericultural Research Station, Central Silk Board, Sahaspur, Dehra Dun on June 26, 2017.

Dr. A. C. Rathore acted as expert member of State level Nursery accreditation committee for accreditation and rating of fruit nurseries in Uttarakhand from June 27-30, 2017

Dr. O.P.S. Khola, attended and Chaired the Ooty-Coonor Town Official Language Implementation Committee Meeting at Cordite Factory, Aruvankadu on June 29, 2017.

Dr. Ambrish Kumar participated in 'R&D Actions for Restoration - Approaches' in the State Level Stakeholder Consultative Workshop on Restoration Opportunities Assessment for Uttarakhand organised by International Union for Conservation of Nature at FRI, DehraDun on June 29, 2017.

Dr. P.K. Mishra, Director attended Selection Board Meeting, as member, at UPSC, New Delhi on June 30, 2017.

Sh. K. Someswara Rao attended training on 'Extension PLUS: Practicing beyond Transfer of Technology' at MANAGE, Hyderabad from July 5-7, 2017.

Dr. P.K. Mishra, Director attended the Brainstorming Workshop on National Mission on Himalayan Studies at MOEF&CC, New Delhi on July 6, 2017.

Dr. Ambrish Kumar attended meeting, at DoLR (MoRD) to finalize the training course for state line departments at New Delhi on July 7, 2017.

Dr. S. Manivannan delivered Guest Lecture in Workshop on Nature and Lab organised by CPR Environmental Centre, Chennai on July 17, 2017.

Dr. N.K. Sharma delivered a lecture in the Green Skill Development Programme of MoEF&CC jointly organized by BSI and ZSI at Botanical Survey of India, DehraDun on July 18, 2017.

Dr. P. Raja delivered invited lecture on Soil - Water Conservation and Management in the Context of Climate Change at Rotary Club, Udthagamandalam on July 20, 2017.

Dr. D. Mandal, National Fellow, ICAR attended Brainstorming Workshop on National Soil Management Policy at MANAGE, Hyderabad during July 20-21, 2017.

Dr. Rajeev Ranjan participated in workshop on Research and Management of Drought organised by NRM Division, ICAR at NASC, New Delhi on July 22, 2017.

Dr. Harsh Mehta attended two day workshop on Public Private Partnership at Institute of Secretariat Training and Management Department of Personnel & Training, JNU Campus (Old) New Delhi from August 3-4, 2017

Dr. U.K. Maurya attended meeting with Chief Engineer, Irrigation Department of Uttarakhand Government regarding discussion on Naini Lake Consultancy project on August 5, 2017.

Dr. S.P. Tiwari, participated in interface meeting of ICAR-KVK-ATMA-other line department for finalisation of programme for doubling farmer's income by 2022 at CIAE, Bhopal organised by ATARI, Jabalpur (MP) on August 9, 2017.

Dr. Pawan Sharma, Dr. Ram Prasad and Dr. Sathiya, K. attended video conference of Agriculture and Farmers Welfare Department and Horticulture Department under chairmanship of Hon'ble Agriculture/Horticulture Minister, Haryana on August 10, 2017 at Haryana Secretariat, Panchkula.

Dr. Dev Narayan participated and delivered a lecture in *khariif* 2017 Interface Workshop organized by Deputy Director, ATMA, Datia from August 10-11, 2017.

Dr. P. Raja attended XXVI Indian Colloquium on Micropaleontology and Stratigraphy - 2017 organised by Department of Geology, University of Madras, Guindy Campus Chennai from August 17-19, 2017.

Dr. S. Manivannan participated in Scientific Workers Conference organised at TNAU, Coimbatore on August 18, 2017.

Dr. P.K. Mishra, Director attended 44th meeting of the RAC of NTRF at Kolkata on August 23 and 11th Biennial Workshop on August 24, 2017.

Dr. R.K. Singh and Dr. Ashok Kumar attended workshop on World Bank Assisted Project Neeranchal for the Watershed component of the *Pradhan Mantri Krishi Sinchayi Yojana* in Rajasthan State at Pant Krishi Bhawan, Jaipur on August 24, 2017.

Dr. N.K. Sharma visited ICAR-IISWC, Research Centre, Datia and chaired the meeting of CAS at CAFRI, Jhansi from August 28-29, 2017.

Dr. Pawan Sharma attended Hindi meeting of Hindi Rajbhasa - NARAKAS on August 30, 2017 at Kisan Bhawan, Chandigarh.

Dr. Pawan Sharma delivered invited lecture and chaired a session in the Golden Jubilee National Seminar on Promotion of Skills and Technologies for Sustainable Rural Development in India on September 1, 2017 at NITTTTR, Chandigarh.

Sh. Narendra Kumar Sharma attended training on Navigating on ICT in agriculture extension at MANAGE, Hyderabad from September 4-7, 2017.

Dr. Rajeev Ranjan participated in short course on Advances in Nutrient Dynamics for Improving Nutrient and Water use Efficiency of Crops at IISS, Bhopal from September 5-14, 2017.

Sh. A.K. Bagasi, Sh. Kamlesh Kumar, Sh. R.K. Hada and Sh. K.K. Lalwani, attended training on voice programme of Hindi

typing for Mobile/Computer organised by *Rajbhasa Kiryanvayan Sammiitee* at Kota on September 7, 8 and 11, 2017.

Dr. P.K. Mishra, Director and Dr. N.K. Sharma, Head attended NMSHE TF-6 Zonal Monitoring Committee meeting at CAZRI Regional Station, Leh and reviewed NMSHE Project activities from September 7 -10, 2017.

Dr. Bankey Bihari and Dr. S.L. Arya attended Regional Workshop on Skill Development on September 15, 2017 at Hotel Mount View, Chandigarh.

Sh. P. Mohan Kumar attended training on Application of Remote Sensing and GIS in Natural Resource Management-ARSGN-2017 at IISWC, DehraDun from September 18 - 27, 2017.

Dr. R.S. Yadav delivered invited lecture at ICAR-IGFRI, Jhansi on September 19, 2017.

Dr. Kuldeep Kumar attended Zonal Research and Extension Advisory Committee (ZREAC) meeting for *Rabi* 2017-18 at Agricultural University, Ummedganj, Kota on September 19, 2017.

Dr. R.S. Yadav and Dr. Rajeev Ranjan delivered invited lecture at ICAR-IIFSR, Modipuram on September 21, 2017.

Dr. Bankey Bihari attended workshop on Issues of Agricultural Development in District Haridwar at KVK, Dhanauri, Haridwar on September 16, 2017.

Dr. R. Kaushal attended Forest Advisory Committee (FAC) meeting on June 15, July 20, August 30 and September 21, 2017 at MoEF&CC, N. Delhi.

Dr. Ashok Kumar attended meeting on Midterm Review of Regional Committee of Zone VI at CAZRI, Jodhpur on September 22, 2017.

Sh. A.K. Bagasi, and Sh. K.K. Lalwani, attended a seminar on awareness programme of GST for Government Officials at Central Goods and Service Tax Division, Kota on September 27, 2017.

Dr. Bankey Bihari attended National Workshop on Developing Road Map for Agricultural Knowledge Management in India organised by DKMA at NASC, Pusa, New Delhi from September 27 - 28, 2017.

Sh. V.K. Dwivedi attended training on Navigation of ICT in Agricultural Extension organized by MANAGE, Hyderabad from September 4-7, 2017.

Sh. V.K. Dwivedi attended training on Application of Remote Sensing and Geographical Information System in Natural Resource Management organised by IISWC, DehraDun from September 18-27, 2017.

TELEVISION/RADIO TALKS

Dr. H.R. Meena, Scientist (Horticulture) delivered live phone-in-programme on "*Phaldar Paudhon aur Sabjiyon me Hormones avam Poshak Tatv Prabandhan*" at All India Radio, Kota on April 19, 2017.

Dr. S. Manivannan, Principal Scientist (SWCE) delivered radio talk on *Rainwater Harvesting and its Multiple Use* at FM radio Ooty on May 9, 2017.

Dr. Shakir Ali, Principal Scientist (SWCE), delivered live phone-in radio talk on "*Varsha Jal Ka Sangrahan*" at All India Radio Kota on June 14, 2017.

Dr. A.C. Rathore, Principal Scientist delivered a radio talk on *Importance of Fruits and Vegetable in Human Health* at Dehradun Radio Station on July 11, 2017.

Dr. Harsh Mehta, Principal Scientist delivered a radio talk on "खरीफ में दलहनी फसलों की उन्नत खेती" at Prasar Bharti, All India Radio Akashvani Najibabad on July 26, 2017.

Dr. S. Manivannan, Principal Scientist delivered a talk on *Soil and Water Resources in Nilgiris* at Nakkubetta TV on August 23, 2017.

Sankalp Se Siddhi programme of RC Chandigarh telecasted on Punjab Door Darshan and aired on All India Radio on September 7, 2017.

DISTINGUISHED VISITORS

DehraDun: Sh. Satpal Maharaj, Hon'ble Cabinet Minister of Tourism, Culture, Irrigation Minister, Govt. of Uttarakhand; Dr. Trilochan Mohapatra, Secretary (DARE) & DG (ICAR), New Delhi; Sh. C. Roul, Addl. Secretary, DARE and Secretary, ICAR, New Delhi; Dr. V.N. Sharda, Member, ASRB; Dr. V.P. Chahal, ADG (Agril. Extension), ICAR, New Delhi; Sh. Desh Raj Sharma, Dy. Director, ATMA, Bilaspur (HP); Dr. Arun Kaushal, Professor (SWCE), PAU, Ludhiana.

Chandigarh: Prof. P.R. Chandumajra, Hon'ble Member of Parliament, Punjab; Dr. K.P. Singh, VC, CCSHAU, Hissar; Dr. R.P. Singh, Member, ICAR Governing Body; Sh. Ranjan Aggarwal, Director DARE, New Delhi; Dr.J.S.Samra, Ex-DDG, ICAR; Dr. Shiv Prasad Kimothi, ADG (TC), ICAR; Dr. H.K. Verma, Director of Extension Education, GADVASU, Ludhiana; Dr. Rakesh Kumar, Joint Director, IVRI, Izatnagar; Dr. P.R. Thakur, Joint Director, CSKHPKV University, Palampur.

Datia: Dr. Trilochan Mohapatra, Secretary (DARE) & DG(ICAR) New Delhi; Sh. C. Roul, Addl. Secretary, (DARE) and Secretary, (ICAR) New Delhi; Dr. A.K. Singh, Vice Chancellor, RVSKVV,

Gwalior; Dr. Arvind Kumar, Vice Chancellor, RLBCAU, Jhansi; Dr. P.K. Ghosh, Director, ICAR-IGFRI, Jhansi; Dr. O.P. Chaturvedi, Director, CAFRI, Jhansi and Dr. Anupam Mishra, Director, ICAR-ATARI, Jabalpur; Dr. Arvind Kumar, Vice Chancellor, RLBCAU, Jhansi and Dr. M. Srivastava, Registrar, RLBCAU, Jhansi; Dr. K.P. Mohapatra, Pr. Scientist, ICAR Research Complex for NEH Region, Umiam; Dr. R.V. Kumar, Pr. Scientist, IGFRI, Jhansi and Dr. R.K. Tiwari, Pr. Scientist, ICAR-CAFRI.

Koraput: Dr. G. Ravi Babu, Professor & HOD; Department of Soil and Water Engineering, College of Engineering ANGRAU, Bapatla, Andhra Pradesh; Dr P.K. Pattajoshi Manager (Env.) and Sh. Rashmi Nayak, Sr. Fireman (Horticulture), NALCO, Damanjodi, Dist. Koraput; Ms. Geetanjali Patra PD Watershed Kandhamal,; Amit Kumar Naik, W.M.T. Kandhamal; Sh Bhavanishankar Kaloo PD Watershed, Koraput.

Kota: Dr. Pramod Khatariya, Pr. Scientist, Dr. Mohd. Athar, Pr. Sci, Dr. Vinod Chandra, Scientist IARI, New Delhi; Dr. Vikram S. Meena, Scientist, Dr. Madan Pal, Scientist, Dr. Dharmpal, Scientist from ICAR-IARI, New Delhi; Dr. Shankar Pratap, Scientist ICAR-IASRI, New Delhi; Dr. Raj Kumar, Scientist ICAR-CSWRI, Avaika Nagar; Dr. L.R. Gurjar, Scientist ICAR-CSWRI, Avaika Nagar; Dr. Chandra Shaker, Pr. Sci ICAR-IIPR, Kanpur; Dr. S.N.S. Chawasia, Pr. Sci., ICAR-IIVR, Varansi.

Udhagamandalam: Dr. S. Kathiravan, Secretary, COODU, Coimbatore; Ex-Director, CRIDA and Member Advisory Committee, NDMA; Dr. A. Panwar, Director, ICAR-IIFSR, Meerut; Dr. V.K. Dua, Head, CPRI, Shimla; Dr. P.K. Sewara, Professor, TNAU, Erode; Sh. Shalesh Kr. Maurya, District Cane Officer, Bareilly, Uttarpradesh; Sh. A. Jany Giles, Asst. Prof. JSA college of Agriculture and Technology, Andhra Pradesh; Miss. M. Jayarani, Assistant Professor, Agronomy, SBAC & RF, Karakudi, Dr. V. Navaneetha Pandiyan, Assistant Professor (SWCE), SRSIAI, Dindugal; Dr. A. Ravichandar, AP; Dr. P.G. Kavitha, Asst. Prof. FC&RI, Mettupalayam; Dr. S. Seegan Paul, Assistant Prof. (SWCE), AC&RI, Killikulam, Kerala; Sh. N. Pushparajan, Nanjanad, Ooty; Miss Madhavai Latha, Nellore;; Sh. V. Uday Bhanuprakash, KAU, Kerala; R. Saivarangaraju, AOCE, O/o ADA, Karaikal.

Vasad: Dr. Nayana Brahmnhatt, Professor, V.P. Science College.

PERSONALIA

Promotions

Dr. Nyo Nand promoted to Chief Technical Officer.
Sh. Dhoom Singh promoted to Chief Technical Officer.
Dr. Matish Chandra promoted to Chief Technical Officer.
Sh. B.B. Singh promoted to Sr. Technical Officer.
Sh. H. C. Sharma promoted to Sr. Technical Officer.
Sh. B.P. Joshi promoted to Sr. Technical Officer.
Sh. N. K. Sharma promoted to Sr. Technical Officer.
Sh. G.B. Naik promoted to Sr. Technical Officer.
Sh. W. Murlidhar promoted to Sr. Technical Officer.
Sh. Swarn Singh promoted to Technical Officer.
Sh. T. Ravichandra promoted to Technical Officer.
Sh. Ajay Pal Singh promoted to Sr. Technical Assistant.
Sh. Laxman Singh promoted to Sr. Technical Assistant.
Sh. Sarvesh Kumar promoted to Sr. Technical Assistant.
Sh. Tilak Ram promoted to Sr. Technical Assistant.
Sh. Vikram Singh promoted to Sr. Technical Assistant.
Sh. A. K. Yadav promoted to Sr. Technical Assistant.
Sh. N. K. Das promoted to Sr. Technical Assistant.
Sh. T. Shanmugham promoted to Sr. Technician.
Sh. A. K. Ahirwar promoted to Asstt. Admn. Officer.
Smt. Neha Dobhal promoted to Asstt. Admn. Officer.
Sh. Santosh promoted to Assistant.
Smt. H. N. Lakra promoted to Assistant.
Smt. P. Rathore promoted to Upper Div. Clerk.
Sh. R. Kenchanagoudar promoted to Upper Div. Clerk.

Financial Up-gradation under the MACP Scheme

Sh. Alok Khandelwal, Assistant, granted 3rd MACP.
Sh. Kuldeep Singh, UDC, granted 2nd MACP.
Smt. N. Revathi, UDC, granted 2nd MACP.
Smt. Hemlata Nirupama Lakra, UDC, granted 2nd MACP.
Smt. Arnapurna Nayak, UDC, granted 2nd MACP.
Sh. R. Siva Prasad, UDC, granted 2nd MACP.
Smt. Savitri Devi, SSS, granted 2nd MACP.
Sh. Prem Singh Rawat, SSS, granted 1st MACP.
Sh. Om Pal, SSS, granted 1st MACP
Sh. Navin Kumar, SSS, granted 1st MACP
Sh. J. Thangaraj, SSS, granted 2nd MACP.
Sh. C. Malarasu, SSS, granted 2nd MACP.
Sh. Gangadhar Khunbudi, SSS, RC, granted 2nd MACP.
Sh. Dibakar Jena, SSS, granted 2nd MACP.

Transfers

Dr. A. Raizada, Pr. Scientist transferred from RC Bellary to NRCIF, Motihari.

Sh. S.K. Srivastava, Scientist transferred from RC Bellary to IINRG, Ranchi.
 Sh. Mukesh Kumar Meena, Scientist transferred from RC Koraput to RC Datia.
 Sh. Ravi Dupdal, Scientist transferred from CRIDA, Hyderabad to RC Bellary.
 Sh. Rakesh Hadda, TA transferred from HQ DehraDun to RC Kota.
 Sh. D.L. Chaudhary Assistant transferred from RC Datia to HQ Dehra Dun.
 Sh. Dalbir Singh, UDC transferred from HQ DehraDun to RC Chandigarh.
 Sh. Sunil Kumar UDC transferred from RC Chandigarh to HQ, Dehra Dun.

Sh. D. Venkatesh, LDC transferred from RC Bellary to RC Udhagamandalam.
 Sh. Manglu, SSS transferred from RC, Sunabeda to RC Agra.

Retirements

Dr. J.P. Singh, CTO; Sh. Surat Singh, Sr.Technician; Sh. S. Natesan SSS; Sh. Banwari Lal, SSS;
 Sh. Bachan Singh, Sr.Technician; Sh. Om Prakash, SSS; Sh. Rajpal, SSS; Sh. Ram Dayal, SSS;

Obituary

Sh. Babu Singh, Dehra Dun.
 IISWC family express heartfelt condolences to the bereaved family.

IN NEWS

The collage features several prominent newspaper clippings:

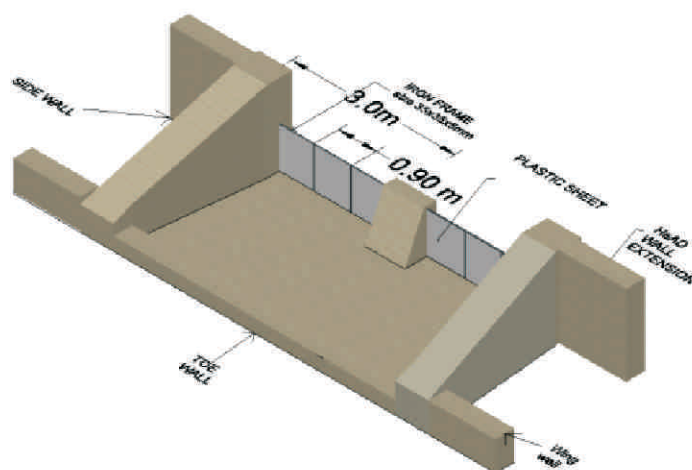
- The Pioneer:** "Scientists should work in a target-oriented objective way" - Discusses the need for scientists to focus on doubling farmers' income by May 2022.
- Amar Ujala:** "किसानों को मिलना चाहिए उचित मूल्य" - Focuses on providing fair prices to farmers.
- Garhwal Post:** "Hindi Day celebrated with enthusiasm at IISWC" - Reports on the Hindi Day celebration at the Indian Institute of Soil and Water Conservation.
- Dinakaran:** "2022 तक किसानों की आय करेंगे दोगुना" - Announces the government's goal to double farmers' income by 2022.
- The Tribune:** "Improve coordination to double farmers' income: Governor" - Quotes the Governor on the need for better coordination between government departments.
- The Times of India:** "ICAR to send action plan for doubling farmers' income in May" - States that the ICAR will release a detailed action plan by May.

TECHNOLOGY

Development of Cost Effective Plastic Check Dams for Water Harvesting in Rain-fed Regions

High initial cost, problems in construction in difficult topography and terrain, prone to cracking (cement masonry dam), etc. are some of the bottlenecks that obstruct wider adaptability of check dams, in spite of its already proven benefits in runoff and soil erosion reduction, and enhancement of ground water recharge. Modern materials like rubber and plastics provide opportunity to remove the constraints in construction of effective check dams. In a study, plastic sheets were perceived for use as head wall which can reduce the cost and provide ease in construction. Plastic materials suitable for head wall construction were identified viz. HDPE, LDPE, PVC, PP, FRP, etc. that are commonly available sheets for several purposes. Rigid (but elastic at higher loading), HDPE and PP sheets were selected for construction of check dams based on their properties. For hydrologic design, peak discharge was computed using rational formula for a watershed identified in an

experimental farm of the Institute. Structural design was worked out and dimensions of each component of the check dam was worked out for given hydrostatic pressure, weight of the structure and uplift pressure of water. The structure was mathematically checked for safety. Using properties of selected material (PP or HDPE) and thickness, structural design was made. Plastic sheets were used as head wall of the check dam, and stability and strength of the plastic sheets were evaluated to bear maximum stress. Material used was Plastic (PP and HDPE) sheet of 3m x 1.5m and thickness (10mm & 15mm), angle iron (35mm x 35mm x 5mm) at spacing of 0.9 m on 2.7 m length of sheet. Based on the design details, two check dams were constructed, using head wall made of PP (half with 10 mm and half with 15 mm sheet) and HDPE Plastic sheet (half with 10 mm and half with 15 mm sheet). All other components of the check dams were constructed by cement concrete (1:3:6) and brick masonry with 1:4 mortar. Evaluation results indicated that the plastic checkdams can successfully withstand the runoff flow over the plastic sheet headwalls without any damage during monsoon of 2016.



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