



# IISWC News



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## From The Director's Desk



During a high level deliberation at Forest Research Institute, Dehradun in August 2016 on forest fire and its control, the importance of soil and water conservation measures, and improvement of soil moisture status were dealt upon. According to the Ministry of Environment and Forests, Government of India, 3.73 M ha of forests are affected by fires annually in India. According to an estimate, forest fire is responsible for loss of Rs 440 crore annually. Coniferous forests in the Himalayan region comprising of fir (*Abies spp.*), spruce (*Picea smithiana*), deodar (*Cedrus deodara*), chir (*Pinus roxburghi*), kail (*Pinus wallichiana*) etc. is very prone to fire. Chir pine forests cover approx. 16.4 per cent of total forest area of 24,413.20 km<sup>2</sup> between 900 and 1700 m above sea level. The youngest mountain ranges of Himalayas are the most vulnerable stretches of the world susceptible to forest fires. The forests of Western Himalayas are more vulnerable to forest fires as compared to those in Eastern Himalayas. With large scale expansion of chir (pine) forests in many areas of the Himalayas, the frequency and intensity of forest fires have increased. High severity fire leads to higher rates of soil loss from erosion, increased peak flows of runoff and loss of soil nutrients. The observations in past 20 years show that the increasing intensity and spread of forest fires in Asia were largely related to rise in temperature and declines in precipitation in combination with increasing intensity of land uses (IPCC 2007). Abnormally high temperatures and low precipitation are major factors responsible for forest fire. For example, Uttarakhand state received scanty rainfall in winter months which was the key factor for forest fires during 2016.

To reduce the vulnerability of forest floor litter from catching and spreading fire, one of the strategies may be to improve moisture regime of dry hill slopes. *In situ* rainwater conservation practices like continuous or staggered contour trenching, contour bunds, gully plugs, etc. can be helpful in conserving and improving soil moisture, particularly during winter rains from January/February, and will reduce the risk of fire. Rain water retained by these structures seep downhill slopes and improves their soil moisture regime; subsequent evaporation from moist surface reduces the risk of fire outbreak. However, intensity and layout of such measures (like trenching) is of utmost importance as the hill slopes are also vulnerable to slope failure (land slips) due to excessive moisture conditions, especially during extreme rainfall events.

Drainage line treatments like silt retaining check dams on first-order streams, retards etc. decrease stream flow rates in channels and streams, store sediment and help in conserving soil moisture across landscape in a uniform manner. Besides conventional construction material for such structures, pine needles in form of bales can be used for making small check dams. The total amount of needle litter fall in pine forests ranges from 1000 to 8000 kg/ha annually. In summers, they burn in no time and fires spread very fast. The pine needles are packed inside net made of jute ropes into shape of a bedroll and can be used as bio-engineering checks across streams. These check dams not only conserved soil & moisture by decreasing speed of runoff but also contributed to reduction in calcium content in the water. While maintaining the flow of water, washing away of seeds and silt is also blocked by these checks. Within few years, while needles get decomposed, the seeds stuck inside turn into saplings.

The research information on different S&WC measures mentioned above specifying the planning, design and execution of structures and their impact on moisture conservation *vis-à-vis* forest fire needs to be generated. With the mandate of soil and water conservation, the role of ICAR-IISWC is to innovate and find ways and means for controlling/reducing the occurrence of forest fire with suitable moisture conservation/augmentation measures in the forest ecosystem.

P.K. Mishra



## NEW INITIATIVES

### Memorandums of Understanding

- ICAR-IISWC, Eco-Task Force and Van Panchayat Vikas Samiti, Uttarakhand signed triparty MoU on June 16, 2016 for developing improved tree planting techniques to enhance tree establishment under rainfed condition as an action research project in Jaunsar Tribal Region of middle Himalayas (Lakhwar-Dhanpau) of Uttarakhand.
- ICAR-IISWC, Dehradun and Tata Consultancy Services (TCS), Mumbai signed an MoU on April 18, 2016 to collaborate for ICT based Extension services based on TCS patented platform mKRISHI® for Personalized Advisory Service on Water and Soil (PAWS) under ICAR Extra Mural Research Project on 'Creation of ICT Network to Disseminate Knowledge about Soil and Water Conservation Technologies to Farmers in North West Himalayan Region' funded by ICAR.
- ICAR-IISWC and Van Panchyat, Almas, Tehri Garhwal signed an MoU on July 15, 2016 for plantation of improved provenances of bhimal and other multipurpose trees developed by IISWC on 3 ha area in Almas village, P.O. Bhawan (Jaunpur), Tehri Garhwal for conducting on-farm action research for four years.



### Externally Funded New Projects

- Monitoring and Evaluation (M&E) of Micro-Watersheds under Sujala-III Programme: The ICAR-IISWC Research Centre, Bellary has signed a MoU on March 18, 2016 with the Govt. of Karnataka for undertaking technical M&E of World Bank funded watershed projects in four sub-watersheds in districts of Chamrajnagar, Bidar, Koppal and Tumkur. These watersheds are being implemented by Watershed Development Department of Karnataka state by convergence of many line departments, including funds. The total project cost is Rs. 514.38 crores (US \$ 85.70 million). The cost of M&E project awarded to the Centre is Rs.188.14 lakhs. The project aims to develop watersheds using science based approaches, like detailed land resource inventory (LRI) preparation, use of RS & GIS for mapping of water resources and topographical features, real time weather data generation and utilization in implementing of the project, and preparing farm advisories for stakeholders etc.
- Establishment of Model Nursery for Fast Multiplication of Elite Clones and New Varieties of Guava, Litchi, Pomegranate, Aonla and mango: In order to boost quality nursery stock in these fruit crops having tremendous scope in Doon valley and lower hills suffering from low productivity of 4.0 t/ha (compared to national productivity of 12.3 t/ha) due to non-availability of quality

planting material and its dissemination within the area, a model fruit nursery is being developed for multiplication of true-to-type and genuine planting material for farmers of Uttarakhand state, and for expanding area under fruit orchards of high productivity in Doon valley and up scaling farmer's income along with ready availability of quality planting materials to make fruit industry competitive and profitable. The project was sanctioned for an amount of Rs. 15 lakh for a period of three years for 1.0 ha nursery area by Uttarakhand State Horticulture Mission (USHM), Govt. of Uttarakhand under Horticulture Technology Mission for North East and Himalayan States, Government of India, New Delhi (HMNEH). Establishment of mother block, polyhouse and net house installation, raising of rootstocks and top working have been completed.

- Development of a Model Ravine Cluster for Productive Utilization in Upper Chambal Catchment: under Rastriya Krishi Vikas Yojna has been initiated at ICAR-IISWC Research Centre, Kota.

### Online Software for Design of Straight Drop Structure Developed

A web application Online Software for Design of Straight Drop Structure (Version – 1.0) has been developed by ICAR-IISWC, Dehradun for planning and designing straight drop structure/spillway in most effective way. The software is copyrighted at Copyright Office, Department of Higher Education, Ministry of Human Resource Development. This software is available online at ICAR-IISWC institute website ([www.cswcrtiweb.org](http://www.cswcrtiweb.org)). The software will provide basic design parameters and finally estimated cost of different essential components of the drop structure which is structurally stable.



### Collaborative Research

Collaborative research programme with Dolphin College of Science and Agriculture affiliated to Punjabi University, Patiala of three months leading to M.Sc. Thesis by Mr. Tilak Ranjan Kumar with M.Sc Thesis entitled, "Study of vermicompost production from different wastes and effect of storage conditions on vermicompost quality"

### Introduction of Eucalyptus Based Agro-forestry Model in TSP Villages

The model has been introduced in newly adopted TSP villages by ICAR-IISWC Research Centre Koraput to increase farm income of tribal farmers. In the model, two paired rows of eucalyptus clones are planted 6 m apart. In between, agriculture crops are cultivated with standard practice. The wide spacing between the paired row allows sufficient light for agricultural crops. The vertical and single stem growth of eucalyptus hybrid clone does not interfere with the sunlight. This helps in normal growth of agricultural crops and helps







in sustained crop production. Apart from the agriculture production, sale of eucalyptus wood in four years rotation provides ensured economic returns to farmers. The model will augment gross returns in comparison to mono cropping. The system will also reduce vulnerability of crops. A total of 65 ha area has been brought under this model covering 50 tribal farmers in 5 villages.

### Nursery and Water Resource Creation

About 1600 horticultural plants of different species - mango, custard apple, lime, dragon fruit, guava, bael, jamun and 1500 forest plants - neem, *Melia dubia*, sandal wood, eucalyptus, mahogany, teak and bamboo were raised at ICAR-IISWC Research Centre Vasad farm. Water resources (HDPE check dam – 2 nos.) of 4544 m<sup>3</sup> and 4933 m<sup>3</sup> volume were created at the same Research Farm.

## IMPORTANT EVENTS

### Union Minister of Agriculture and Farmers Welfare visited Kota Centre

On the occasion of Kisan Diwas organised at ICAR-IISWC Research Centre Kota, Shri Radha Mohan Singh Ji, Hon'ble Minister of Agriculture & Farmers Welfare, felicitated 22 progressive farmers from 10 villages adopted by the Kota Centre under Mera Gaon Mera Gaurav (MGMG) programme. Hon'ble Minister congratulated Centre scientists for taking up MGMG programme in its true spirit and marked the event as a success indicator for initiatives taken up by scientists of the Centre under MGMG programme.



In his address, Hon'ble Minister talked about necessity and potential benefits of Pradhan Mantri Krishi Sinchayee Yojna (PMKSY), Soil Health Card Programme, MGMG and Pradhan Mantri Fasal Bima Yojna (PMFBY). He also stressed upon urgency to focus on developing livestock productivity with a preference for indigenous breeds. He advised scientists to hold regular meetings with other regional research, development and extension departments and keep political leaders informed about their achievements. Hon'ble Minister congratulated farmers, scientists, extension agencies and other state line departments for their efforts and achievements towards securing livelihood of farming community of Hadauti region. He encouraged all Heads of departments and institutions to hold regular periodical meeting and work as a team to build a prosperous future. Earlier, Dr. P.K. Mishra, Director welcomed Ministers and other delegates and briefed about activities of ICAR-IISWC; Dr. R.K. Singh, Head of Centre briefed about recent achievements of the Centre and current regional issues. Shri Om Krishna Birla, Member of Parliament (Kota); Shri Ajay Singh Kulkarni, Co-operative Minister, Rajasthan State Government; Smt. Chandrakanta Meghwal, M.L.A.; Sh. Ramganj Mandi; Dr. G.L. Keshwa, Vice Chancellor, Kota Agriculture University were among distinguished guests. The event was participated by 198 farmers, 60

representatives from Kota Agricultural University, KVKs, District Line Departments, Press, Media and All India Radio.

### Union Minister of Science & Technology and Earth Sciences Tweets about Innovative Low-cost Checkdams of IISWC

Dr. Harsh Vardhan, Hon'ble Union Minister of Science & Technology and Earth Sciences tweeted about the low-cost pre-fabricated plastic checkdams developed by ICAR-IISWC Centre Vasad (Gujarat) for blue water harvesting which are easy to construct without much manpower and reduce cost of construction and time by 4 times. These checkdams



can be easily transported and constructed in difficult terrain/locations also. The check dams have been innovated under a study conducted at farmers fields in action research programme under ASAR programme of SEED Division of DST for augmenting agricultural production and productivity of semi arid and backward districts - Panchmahal and Dahod - of Gujarat due to rainfall dependence, low green water (*in-situ*) and blue water (runoff) use; poor recharge capacity of aquifers, low groundwater availability and absence of irrigation facilities. These checkdams and recharge filters increase rainwater availability, ground water recharge, and enhance productivity/production in rainfed regions by two folds. Green water harvesting techniques - conservation furrow for rainfed crops produced maximum green water harvesting (up to 80%) and minimum runoff and soil loss. It also increased crop yields of rainfed crops upto 30%. These blue and green water techniques can be upscaled through watershed development programmes, and Prime Minister Krishi Sinchayi Yojana (PMKSY).

### XXIV Meeting of ICAR Regional Committee No. I Organized at GBPUAT

The XXIV meeting of ICAR Regional Committee for Region No. I, covering states of Jammu & Kashmir, Himachal Pradesh and Uttarakhand, was held on May 30-31, 2016 at Govind Ballabh Pant University of Agriculture & Technology (GBPUAT), Pantnagar. The meeting was inaugurated by Dr. K.K. Paul, Hon'ble



Governor of Uttarakhand. The meeting was attended by Sh. Ghulam Nabi Lone (Hanjoora), Hon'ble Minister for Agriculture, Govt. of Jammu & Kashmir; Dr. Trilochan Mohapatra, Secretary (DARE) & Director General (ICAR); Sh. C. Roul, Additional. Secretary (DARE) & Secretary (ICAR); Sh. S.K. Singh, Financial Advisor (ICAR); Sh. Sudhir Bhargava, Sh. R.P. Singh and Sh. Suresh Chandel, Members of Governing Body of ICAR; Deputy Director Generals (ICAR), Vice Chancellors of State Agriculture Universities of Jammu & Kashmir, Himachal Pradesh & Uttarakhand; Assistant Director Generals (ICAR); Directors and Heads / Officers-in-charge of Headquarters / Regional Stations of ICAR Institutes located in Region I; Directors of Research Extension and Education of State Agriculture Universities of Jammu & Kashmir, Himachal Pradesh & Uttarakhand; Directors of State



Departments of Agriculture, Horticulture, Animal Husbandry and Fisheries of Uttarakhand; Assistant Director (Extension), Department of Animal Husbandry (HP); Project Officer, Command Area Development (J&K); and Staff of PME Cell of ICAR-IISWC. The Technical Sessions of the Meeting were Chaired by Dr. Trilochan Mohapatra. Dr. N.K. Krishnakumar, DDG (Horticulture) & Nodal Officer (Region No. I) and Dr. P.K. Mishra, Director, ICAR-IISWC & Member Secretary coordinated the meeting.

Dr. Mangala Rai, Vice Chancellor, GBPUAT, Pantnagar delivered the Welcome Address. Opening Remarks were given by Dr. N.K. Krishnakumar, who stated that a Green Revolution is required for temperate horticulture crops. The Chairman's Address was given by Dr. T. Mohapatra, who stated that this meeting gives us an excellent opportunity for close interaction between R&D organizations and State Govt. Departments in the Region, and to work together for benefit of farming community. Hon'ble Minister of Agriculture from J&K in his address stated that this meeting is a forum where best brains come together to examine indepth the major gaps in current research and training efforts in agriculture and allied sectors. In his Inaugural Address, the Chief Guest spoke about the need of a 'Green Revolution' for hill crops. He also stressed upon the need to make hill agriculture a less cumbersome and economically viable enterprise so as to put a hold on migration of youth from the hills. The Chief Guest also released five publications from ICAR-IISWC and GBPUAT. The vote of thanks was proposed by Dr. P.K. Mishra.

#### Member ASRB Visits Examination Centres at Dehradun

The Agricultural Scientist Recruitment Board (ASRB), ICAR, Ministry of Agriculture and Farmers Welfare, New Delhi conducted a common written examination for recruitment to the post of Technical Assistant (T-3) on July 17, 2016 at different centres across the country. ICAR-IISWC Dehradun was also identified as a Centre for holding this examination. Dr. V.N. Sharda, Member, ASRB visited Dehradun on July 6, 2016 for inspecting arrangements for conducting the examination. Dr. Sharda inspected both the examination centres - Shri Guru Ram Rai Public School and Sanatan Dharam Inter Collage. He expressed his satisfaction over the arrangements. He advised the examination functionaries to conduct the exam strictly and smoothly. On July 7, 2016, Dr. Sharda visited Institute's ASRB examination hall, where NET (I) - 2016 examination was scheduled to be conducted during 01.08.2016 to 6.08.2016. He expressed his satisfaction over the computer and internet facility in the Centre.



#### Deputy Director General (NRM) Dedicated Developed Water Resource to Hattal Farmers

The ICAR-IISWC, Dehra Dun organized a Kisan Mela at village Hattal, (Tehsil Tuni, District Dehradun) on April 15, 2016. The Chief Guest, Dr. Alok Kumar Sikka, Deputy Director General (NRM), ICAR dedicated a water harvesting structure and system developed by ICAR-IISWC under Tribal Sub-Plan (TSP) to the villagers for use in irrigation and augmenting agriculture production. In his Address, Dr Sikka

emphasized on judicious use of soil and water resources, soil health management, crop diversification, water budgeting and effective water utilization and upon need of sustainable agriculture in hills in tune with changing climate. He advised that farmers take active participation in Government schemes so that intended benefits are realized. Earlier, Dr. P.K. Mishra, Director welcomed the Chief Guest, farmers and participants, and informed about the activities and achievements made through participatory interventions under the TSP program by the Institute. Sh. Prem Chand Sharma, Chairman of Farmers' Association established in the village for effective water use, shared views of farmers on benefits of water resource being provided and expressed satisfaction and happiness over the changed agriculture scenario. He thanked the Institute on behalf of all the farmers for all the endeavors. About 200 farmers, Heads of Division, scientists, and technical officers actively participated.



#### Deputy Director General (Agricultural Extension) Launched Mobile Based Agro-advisory

A launching workshop was organized on July 2, 2016 at ICAR-IISWC, Dehradun to start the mKrishi®PAWS service for hill farmers residing in remote and difficult situations. The ratio of extension worker to farmers is 1:5000 in the country, which is a wide gap for extension workers to transfer farm technology. At the same time, about 70-75% hill farmers own mobiles, and the ownership is growing. This service will harness this potential for transfer of soil and water conservation, and production & protection technologies of fruits, vegetables, and cereals. Dr. A.K. Singh, Deputy Director General (Agricultural Extension), ICAR launched the service under ICAR-Extramural Research Project 'Creation of ICT Network to Disseminate Knowledge about Soil & Water Technologies to Farmers in North Western Himalayas'. On this occasion, the Chief Guest, Dr. A.K. Singh, emphasized on importance of soil and water conservation in crop husbandry. His main concern was on agricultural scenario in changing climate. He advised the scientists to initiate research work on tuber crops, pulses, and oilseeds so that import of these commodities is minimized. He suggested that such agro-advisory should be based on personal characteristics and needs of individual farmer. Soil test based integrated nutrient management is essentially required. He also cited many examples of such services focused on sending text and voice messages. But it needs special attention to send on time, regularly and as per need of farmers living in specific locations. He also briefed about national programmes in agriculture like Farmer First, ARYA (Attracting and Retaining Youth in Agriculture), Mera Gaon Mera Gaurav, PMFBY, etc. He also delivered a lecture to officer trainees of 114th batch on Climate Resilient Agriculture and Knowledge Sharing'. Earlier, the workshop began with warm





welcome and introduction about Chief Guest. Dr. P.K. Mishra, Director appreciated the initiative and desired to expand this service to other Centres of the institute. He said that specific content should be developed for farmers. Weather and market related information should also be provided by using such information communication technology. Mr. Aditya Tiwari, Project Manager, Tata Consultancy Services (TCS) made its live demonstration. In the workshop, 40 scientists, technical officers/office staff and 50 farmers participated and got orientation about PAWS (Personalized Agro-advisory on Water and Soil) service. A capacity building program was organized for the ICAR extramural project team members on mKRISHI® PAWS at IISWC, Dehradun during August 4-5, 2016.

### DST Funded Project Reviewed

A team of Department of Science and Technology (DST), Government of India visited the interventions on paddy cultivars (Pusa 1612, Pusa Sugandha 5 and Pusa Basmati 1121) demonstrated at farmers fields covering 134 farmers (35 in Narsan, 33 in Lakshar and 66 in Roorkee block) of district Haridwar in lower Shivalik range of Uttarakhand. The



team comprising of Dr. Chandra Mohan, Head, SEED, DST, New Delhi; Dr. Rashmi Sharma, Scientist-E, DST; Dr. R. Roy Burman, Principal Scientist & Principal Investigator of the project (ICAR-IARI); Dr. Lakhan Singh, Head (HRD & Social Science), ICAR-IISWC, Dehradun visited the frontline demonstrations. Shri Balvinder Tyagi, Devendra Kumar and other farmers of the project area shared their opinion and gave technical feedback about wheat cultivars (HD-3086 and HD 2967) demonstrated at farmers' fields covering 33 farmers. On the occasion, a Farmers Training cum Goshthi was also organized in Baswakheri village of Narsan block in district Haridwar, where Dr. Chandra Mohan from DST was the Chief Guest and Dr. Rashmi Sharma was the Guest of Honour. About 100 farmers from 3 villages (Baswakheri, Sadoli and Kumrari) of Narsan block participated. The Chief Guest distributed Leaf Colour Charts for effective utilization of nitrogen in paddy and other crops, and necessary steps of the technique were also narrated. Special attention on farm women participation was suggested. Lectures on paddy production and protection technologies, diversification of agriculture through fruit and vegetable cultivation, protected cultivation, emphasizing soil and water conservation practices, etc. were delivered. In addition, focus on organizing farmers and custom hiring services was given. There was demand of interventions keeping farming situation and small land holdings of farmers in view. Sugarcane harvester was demanded by the farmers. In addition to wild animals' problem, non availability of quality inputs, low productivity of major crops, different opportunities were also discussed. Dr. R. Roy Burman presented a brief report about project interventions.

### DST Funded Project Sites Visited by DST Scientists

Dr. Chander Mohan, Head, SEED Division of Department of Science and Technology, Government of India, New Delhi and Dr. Rashmi Sharma, Scientist-E visited sites of DST funded project entitled

“Development of efficient and innovative blue and green water harvesting techniques for enhancing the land and water productivity of semi-arid districts of Gujarat” on June 27, 2016 at Navadh and Navagam villages of Panch Mahal district of Gujarat with project team of ICAR-IISWC Research Centre



Vasad. They visited innovative blue water harvesting structures such as cost effective check dams and recharge filters and green water use techniques such as micro catchment techniques for horticultural crops, conservation furrow and mulch farming techniques for rainfed crops. They interacted with project beneficiaries and were impressed with works done under this project. They appreciated the team for wonderful work in farmers fields in difficult terrain and socio-economic setup. They said it is the best project under ASAR programme of SEED Division of DST and the successes story could be kept in DST website.

### IISWC Participates in Consultation Workshop on Water Conservation and Management at LBSNAA, Mussoorie

The Hon'ble Prime Minister has desired to compile and demonstrate the exemplary Traditional Water Harvesting and Management Practices developed in different regions of the country. In this context, LBSNAA organized 1-day workshop on Water Conservation and Management (WCM) at LBSNAA, Mussoorie on August 18, 2016 with an objective to prepare a Training Module on WCM for IAS probationers. In the workshop, about 25 national level participants, including policy makers, senior level bureaucrats of Gol and State Govt, NGOs, LBSNAA faculties and scientists of ICAR-IISWC, participated. Dr.P.K. Mishra, Director, ICAR-IISWC moderated one of the sessions - 'Recent Advances in Water Conservation and Management'. Dr Mishra briefed the participants that development of the SWC technologies are mostly based on refinement and improvement of indigenous SWC practices, and development is nothing but ever upward spiraling process of innovation and improvement. Refinement and validation of ITK on SWC & WHS is felt need of the day. He suggested that some potential ITKs on WHS and SWC popular in different Agro-ecological Regions of the country that have already been documented by the ICAR Institutes would be included in the Training Module. He further stressed that some improved technologies on SWC developed by ICAR-IISWC may also be a part of the curriculum. Dr P.R. Ojasvi, Head & Principal Scientist (H&E) Division delivered a presentation on Recent Advances in WH&M practices in different agro-climatic zones of the country and Dr Ambrish Kumar, Principal Scientist (SWC Engg.) delivered on 'Water Harvesting and Governance' in the workshop. In the plenary session, Mr. Rajeev Kapoor, Director LBSNAA appreciated the salient points emerged from 1-day long brain storming on various issues associated to Water Harvesting and Management.

### IISWC Annual Day Celebrated

ICAR-IISWC, Dehra Dun celebrated Annual Day on April 7, 2016. The day-long program was inaugurated by Dr Savita (IFS), Director, Forest Research Institute (FRI) and Vice-Chancellor, FRI Deemed University,



Dehradun. Citing an example of afforestation program executed in Shimla, Himachal Pradesh that sustained potable water source for over 10,000 people, she emphasized the importance of managing soil, water and forest resources for welfare of ecosystems and lives on earth. Dr Savita in her enlightening inaugural address spoke about the activities and targets of National Mission for Clean Ganga, on needs of maintaining environmental flows and association of forest resources to sustain water resources and biodiversity. Remembering the contribution of IISWC, she appreciated the activities and achievements of the Institute. Earlier Dr. P.K. Mishra, Director welcomed the Chief Guest and participants, and provided an overview of the Institute and the program. Dr. N.K. Sharma, Head (SS&A) briefed about various activities and achievements of the Institute for the year. Sh A.K. Singh, Chief Administrative Officer presented administrative reforms and promotions effected during the year. The Chief Guest and dignitaries honoured officials who superannuated from the Institute during 2014-15 and 2015-16 and also released the Institute's IISWC Newsletter 9th issue during the occasion. Sh. Nirmal Kumar, CTO received the Institute's Best Employee of the Year Award. Various sports events for different groups were organized during the day time. A lively cultural program was organized in the evening. Children, family members and staff of the Institute exhibited their unique talent during the cultural evening that was applauded by one and all. The program concluded with prize distribution for winners of various sport events and participants of cultural evening.



#### Himalayan Day Celebrated at Dehradun

ICAR-IISWC, Dehradun celebrated 7th Himalayan Day on September 9, 2016. The Chief Guest, Dr. A. Senthil Kumar, Director, Indian Institute of Remote Sensing, Dehradun in his speech described the role of Himalayas as creator, viz.; biggest water resource of the world; store house of global biodiversity and many medicinal plants useful for human health and the role of a protector, as it is considered as 3rd pole of Earth. He also emphasized on integration of geospatial technologies in remote areas of Himalayas. He highlighted the recent achievements of Indian Space Research Organization in his speech. Finally, he focused on the awareness of local people about all these concerns. Dr. P.K. Mishra, Director, presiding the function, reassured that the institute strives for the sustainable management of Himalayas. He urged all the assembled guests to use the resources available responsibly for their own benefit and for the next upcoming generations. A personal oath with focus on "Conserve Soil and Water – Save Himalayas, Save Life" was undertaken by all assembled guests. A brief presentation on 'Effect of Climate Change on Agriculture in Indian Himalayan Region' was delivered. An exhibition of soil and water conservation technologies was organized by IISWC which was



viewed by more than 300 students from different schools and colleges.

#### Parthenium Awareness Week Celebrated

Parthenium Awareness Week was celebrated during August 16 to 22, 2016 by ICAR-IISWC at Dehradun, Agra, Datia and Kota. During the week, various programmes were organized. At the Headquarters and Centres, for create awareness about health hazards due to parthenium on human and livestock (allergic, skin disease etc.), reduction in agricultural productivity and biodiversity (through allelopathic properties), control and possible uses, talks were delivered by scientists. During awareness campaign, the weed was destroyed within office campus as well as Research Farm by the scientists and staff of ICAR-IISWC. During the week, farmers visiting the Institute campus or Research Farms, or during scientists' visits to MGMG villages, farmers were made aware about above aspects of parthenium.



#### IISWC Celebrated International Yoga Day

The International Yoga Day was celebrated at the ICAR-IISWC Centres – Agra, Bellary, Chandigarh, Datia, Koraput, Kota and Udhagamandalam on June 21, 2016 with participation of staff of the Centres and at four Centres, along with students and trainees currently undergoing training. The celebrations were initiated with talk delivered regarding mental and spritual benefits of yoga, and various asanas to create a toned, flexible and strong body. At Agra, Chandigarh and Koraput Centres, Yoga instructors were invited as Chief Guest, who after their formal welcome, gave instructions for practical demonstration of asanas which are easy to practice.



#### World Nature Conservation Day Celebrated at Chandigarh

World Nature Conservation Day was celebrated on July 28, 2016 at ICAR-IISWC Centre Chandigarh for importance of conservation of nature which provides us with various indispensable services that has made human existence possible on the planet. Right from the air we breathe to the raw materials required for development processes, everything is provided by nature. Nature Conservation is





the wise management and utilisation of natural resources. On the occasion, different technologies developed by the Centre for soil and water conservation and degraded lands were discussed with the students in presence of scientists of various disciplines. Twenty-three students from Army Public School and 20 students from Kendrya Vidyalaya-II, Chandimandir, Panchkula along with their teachers actively participated in the event. Dr. Y. Agnihotri, Former Principal Scientist was the Chief Guest, who delivered a lecture on 'Conservation and Management of Natural Resources in Shivaliks'. Dr. A.K. Tiwari, Head welcomed the gathering and briefed about the event. Declamation contest on the topic 'Global Climate Change' was organized; quiz contest was conducted; a painting competition on the topic 'Save the Earth' was organized. The students were enlightened about possible harmful effects of degradation of natural resources in coming future. The teachers also shared information on different ongoing activities in schools like eco club, plantation, green building initiatives, energy saving activities, etc. A field visit was conducted to show the technologies developed and tested at research farm to the students.

#### World Environment Day Celebrated by Planting Tree Saplings at Datia

ICAR-IISWC Research Centre, Datia celebrated 'World Environment Day' on June 5, 2016 by planting more than 50 avenue trees in the office campus by scientists, technical officers, employees and B. Tech. students undertaking one month training at the Centre. Dr. RS Yadav, Head, called to make efforts at individual and collective levels to save world environment in every possible manner looking into gravity of damage of present environment. Importance of the day and role of planting and saving trees was highlighted in present climate change situation.

#### Agriculture Technology Week Celebrated at Kota

Agriculture Technology Week was observed during August 22-27, 2016 at IISWC, Resaerch Centre, Kota. During this period a *Sangoshthi* was organized on August 24, 2016 chaired by Hon'ble Vice Chancellor of Kota Agricultural University, Kota, Dr. G.L. Keshwa. The topic for discussion was "Present Status and Future Scope of Agricultural Development in Hadoti Region". Scientists and Professors, Officers from line departments and farmers from MGMG villages participated in the Sangoshthi.



#### Four - Months Regular Training Course Concluded

ICAR-IISWC, Dehradun organized a 4 Months Certificate Course on 'Soil & Water Conservation and Watershed Management' during April 21 to August 21, 2016. In the course, 23 officer trainees from 9 states (Punjab-2, Chhattisgarh-3, Nagaland-6, Madhya Pradesh-4, Uttarakhand-2, Assam-2, Odisha-1,



Uttar Pradesh-1, Rajasthan-1 and Uttar Pradesh-1) participated, including 8 women officers. Shri S. Choudhury, Director, Soil Conservation, Govt. of Assam, as the Chief Guest in his address expressed concern about soil and water conservation as they are precious recourses. He said that 'Soil without water is desert and water without soil is useless'. Focus on rational utilization of land and water for increasing production and productivity without adverse effect on environment was given. Rainfed area needs to be utilised judiciously for making the country food and nutritionally secured. Dr. P.K. Mishra, Director presided and expressed that all passing out officer trainees are IISWC ambassadors in their working areas for promoting soil and water conservation technologies. He emphasized on use of skill learned by the participants in their respective states in real field situations. He advised that more attention should be given on use of remote sensing, GIS, soft skill development, following participatory approaches, developing successful case studies/success stories for larger adoption and awareness. The course completion certificates were distributed to all the officer trainees by the Chief Guest. In addition, based on outstanding performance, 8 merit certificates were also awarded to the participants. Dr. (Mrs) Trisha Roy of IISWC, Dehradun was awarded with overall aggregate certificate.

#### Collaborative Training on Climate Change and Agriculture Organized

Four days training on 'Climate Change and Agriculture' was organized at ICAR-IISWC, Dehradun during September 14-17, 2016 in collaboration with MANAGE, Hyderabad. In this course, 32 officers from different state line departments of Agriculture, Livestock, Fishery, Sericulture, KVK experts representing states of Gujarat, Punjab, Haryana, Madhya Pradesh, Uttarakhand, Karnataka, Puducherry, Chhattisgarh, Meghalaya, Maharashtra and Scientists from ICAR-IISWC, Dehradun participated. The participants were sensitized about importance, impact, mitigation and adaptation measures to address climate change on agriculture and allied sectors. Varied issues related to climate change – carbon credit and clean development mechanism; climate trend analysis and weather based agro advisory services; policies and programmes for climate change, including contingency plan; participatory research and extension in dissemination of climate resilient technologies were covered by different experts. Dr. P.K. Mishra, Director inaugurated the training and emphasized on adoption of soil and water conservation technologies in changing climatic scenario for reducing infiltration rate of water, raising water table and reducing erosion of top soil. Dr. P. Das, former DDG (Agril. Extension), ICAR focused on climate smart adaptation research. He cited different global case studies representing different aspects. He shared different climate study tools at village level and suggested village water security plans.



#### Write Shop for Success Stories Organized

Four days training on 'Write Shop for Success Stories' was organized at ICAR-IISWC, Dehradun during June 20-23, 2016 in collaboration





with MANAGE, Hyderabad. In this course, 23 officers representing states of Gujarat, Himachal Pradesh, Madhya Pradesh, Uttarakhand, Jammu & Kashmir and Uttar Pradesh participated. The focus of the programme was on research methods including experiential learning, documenting success stories, effective communication, scripting for electronic media, etc. Exposure visit was organized at Kalimati in Raipur block in Dehradun. Panel discussion was also organized with journalists to orient towards writing for news media. Dr. P.K. Mishra, Director inaugurated the programme and emphasized to develop professionalism. He said that experience sharing will make a difference in promotion of farm technologies among villagers. Dr. J.P. Sharma, Joint Director (Extension) and Dr. R. Roy Burman from IARI, New Delhi; Dr. S.K. Kashyap, Head (Agril Communication), GBPUAT, Pantnagar delivered lectures as per their expertise.



#### Skill Development Training on Application of RS and GIS in NRM

ICAR-IISWC, Dehradun organized a 10 days training programme on 'Application of Remote Sensing and GIS in Natural Resource Management' during September 20 – 29, 2016 in which 15 Technical Officials participated from different ICAR institutes. The participants belonged to 7 states (West Bengal, Rajasthan, Uttarakhand, New Delhi, Assam, Meghalaya and Karnataka) from 6 ICAR institutes (IARI, New Delhi; VPKAS, Almora; IISWC, Dehradun; DCFR, Bhimtal; ICAR-NEH, Barapani; IISWC-Research Centre, Kota; NBSSLUP Regional Centre, Kolkata and Jorhat). In compliance to the Council's initiative, the course was planned for enhancing competency level in terms of knowledge and skill of technical officials as per their training needs identified at individual institute level. The course was inaugurated by Dr. P.K. Mishra, Director on September 20, 2016. In his address, he focused on integrated use of remote sensing, GIS, GPS and other latest technologies for making farming a more profitable venture. Google Earth, Web GIS and Desktop GIS, etc. may be used for effective application of available information to make agriculture climate smart. It was suggested map of participants own farms should be prepared using these latest technologies.



#### Field Training on Improved Soil Working Techniques

ICAR-IISWC, Dehradun organized a field training on "Improved Soil Working Techniques" at project site in Lakhwar-Dhanpao villages of Uttarakhand. 25 field officials from 127 Infantry Battalion Eco-Task Force participated in this programme who are primarily engaged in afforestation work in Himalayan



region. These officials learnt about different soil and water conservation practices like digging of pits and improvisation of micro-site condition in degraded lands, application of Pusa hydrogel, plastic mulching and vertical barriers, trenching and modified sub-surface planting through PVC pipe, etc. which are applicable to forestry plantation.

#### MANAGE-IISWC Join Hands for Capacity Building of Forty Forest Officers

Three-days training of trainers on 'Integrated Watershed Management Projects (IWMP)' was organized at ICAR-IISWC, Dehradun during June 14-16, 2016 in collaboration with MANAGE, Hyderabad. Forty officers, including 7 DFOs from Uttarakhand participated in the programme. The DFOs shared experiences and expectations. In his inaugural speech, Dr. P.K. Mishra, Director focused on importance of different components of Pradhan Mantri Krishi Sinchai Yojana (PMKSY). He shared experiences of PMKSY implementation in different states and utility of the District Irrigation Plan (DIP). His concern was on resource conservation for our future generation. He also gave emphasis on importance of agro-forestry in hilly regions. Dr. B. Renuka Rani, Asstt. Director (HRD), MANAGE explained the course curriculum of the training programme. In the programme, process mechanism of integrated watershed management and Detailed Project Report (DPR) preparation were taught.



#### Training on Blue and Green Water Harvesting Techniques

Training and demonstration programme of blue and green water harvesting techniques was organized for farmers of Nawad, Navagaon and Surajpura villages, in Panchmahals district of Gujarat on August 19 & 21, 2016 under the DST funded project "Development of efficient and innovative blue and green water harvesting techniques for enhancing land and water productivity of semi-arid districts of Gujarat." Sixty-five farmers attended the field demonstrations, where exposure visits to cost effective and innovative blue water harvesting techniques, viz.; plastic check dams for different flow regimes and recharge filters for farmers were organized. Various *in-situ* moisture conservation techniques viz.; conservation furrow, stubble mulch farming, V-shaped and crescent shaped micro catchments for horticultural crops demonstrated in farmers field in Navadh were exposed. A lively discussion was held on different green water harvesting methods and their benefits to farmers.



#### Swachta Pakhwara - Making India Clean through Clean Surroundings, Body and Mind

Environmentalist, Social Worker and Director of HESCO-NGO, Padam Shree Dr. Anil Prakash Joshi, graced the occasion with his benign



presence on initiation of celebration of *Swachta Pakhwara* (May 16-31, 2016) at ICAR-IISWC, Dehradun and appreciated the contribution of the Institute in the area of soil and water conservation leading to cleanliness as a whole. He lamented on reckless exploitation of natural resources and stressed on urgent need to check it



for future generation. He focussed upon society's empowerment following old culture, social values and norms towards resource conservation and judicious use. On this occasion, Dr. P.K. Mishra, Director said that cleanliness is a common word but not a common practice in our day to day life that is to be internalized and socialized in the society. He stressed upon collection of degradable and non degradable waste material separately for its easy management, decomposition and recycling. He said that cleanliness drive may be extended in *Mera Gaon Mera Gaurav* (MGMG) adopted villages across the Research Centres. Various speakers highlighted various issues related to cleanliness. Contribution of Mahatma Gandhi in this respect was recalled. Importance of *Swachta Pakhwara* was highlighted and stressed upon cleanliness as not only a physical effort but an inner voice was laid. Information on solid waste management was imparted. Environmental conservation activities taken under TSP programme were highlighted. In the beginning of the programme, all present officials took the *Swachta* Pledge. Cleaning of IISWC campus was undertaken at the end. During *Swachta Pakhwara*, awareness camps were organized by divisions of ICAR-IISWC, Dehradun at village Bhadasi (SS&A), villages Udpalta and Koti Koruwa (Plant Science) and village Kalimati (HRD&SS). In these awareness camps, more than 100 villagers (70% were women), more than 60 villagers (from villages Udpalta, Uproli, Khatasa, Kuroli and Bhorli), about 40 villagers, and more than 30 farmers (including 10 women participants from villages Kalimati, Bhopal Pani and Bharasi), respectively participated in the camps. In these various camps, awareness about solid waste management; issues pertaining to plastic/polythene; house hold and animal wastes management at individual and house hold levels; technique of making vermicompost from waste material and crop residue; ill effects of polythene use; water bodies cleanliness and hygiene maintenance; plantations under agro-forestry, horticulture, and farm / social forestry in open areas, farm boundaries, roadside, school premises and backyard of house for diversification towards cottage industries for income generation was created.



arranged. Students were briefed about the *Swachh Bharat Abhiyan* of Govt. of India and motivated to contribute on individual level in making Clean India. Cleanliness oath was also given to them. They visited the lab, farm and field also. Research Centre Chandigarh organised *Swachta Pakhwada* at Research Farm. Oath taking for maintaining cleanliness and cleaning of the Research Farm area was carried out by all the staff. Research Centre Datia celebrated by cleaning of office road and creating awareness about the importance of cleanliness in surroundings and public places in selected villages viz.; Sitapur, NayaGaon, Murera, Maheba, Jigna, Tiwaripura, Dang Karera, Chopra and Imliya. All scientists, technical officers and employees took a round of streets of these villages for required cleanliness, making appeal to villagers to have their surroundings neat and clean and making efforts to have required infrastructure for the purpose in their respective villages. A pledge to *swachata* was also administered to the participant villagers in Jigna, Tiwaripura, Dang Karera, Chopra and Imliya. Research Centre Koraput started celebrations with taking *swachhta* pledge by all staff. After taking pledge, all the staff of the Centre took a round in the office premises and undertook activities cleaning the pathway of office and residential colony, uprooting of parthenium weed, collecting plastics and dumping them in proper site, cleaning and sweeping the back side of the vehicle garage and planning for activities to be taken up. At Research Centre Kota, similar activities were undertaken. In the initiation function, the Chief Guest, Dr Sudhir Upadhyay highlighted importance of cleanliness through scientific reasoning. Guest of Honour, Sh. Aditya Chaturvedi, Retired Police Officer stressed upon starting cleanliness from one's own home. Awareness camps were also organized in selected villages of Bundi and Baran districts.

### **Swachta Pakhwara Celebrated at IISWC Centres**

ICAR-IISWC Research Centre Agra held a staff meeting to discuss cleanliness around campus. Garbage was collected by all and separated, and for biodegradable material compost pits will be made. At Research Farm, similar activity was undertaken. Biodegradable garbage was dumped in the existing compost pit. Also, a visit of biology students of XI and XII classes from Prelude College, Agra was

arranged. Students were briefed about the *Swachh Bharat Abhiyan* of Govt. of India and motivated to contribute on individual level in making Clean India. Cleanliness oath was also given to them. They visited the lab, farm and field also. Research Centre Chandigarh organised *Swachta Pakhwada* at Research Farm. Oath taking for maintaining cleanliness and cleaning of the Research Farm area was carried out by all the staff. Research Centre Datia celebrated by cleaning of office road and creating awareness about the importance of cleanliness in surroundings and public places in selected villages viz.; Sitapur, NayaGaon, Murera, Maheba, Jigna, Tiwaripura, Dang Karera, Chopra and Imliya. All scientists, technical officers and employees took a round of streets of these villages for required cleanliness, making appeal to villagers to have their surroundings neat and clean and making efforts to have required infrastructure for the purpose in their respective villages. A pledge to *swachata* was also administered to the participant villagers in Jigna, Tiwaripura, Dang Karera, Chopra and Imliya. Research Centre Koraput started celebrations with taking *swachhta* pledge by all staff. After taking pledge, all the staff of the Centre took a round in the office premises and undertook activities cleaning the pathway of office and residential colony, uprooting of parthenium weed, collecting plastics and dumping them in proper site, cleaning and sweeping the back side of the vehicle garage and planning for activities to be taken up. At Research Centre Kota, similar activities were undertaken. In the initiation function, the Chief Guest, Dr Sudhir Upadhyay highlighted importance of cleanliness through scientific reasoning. Guest of Honour, Sh. Aditya Chaturvedi, Retired Police Officer stressed upon starting cleanliness from one's own home. Awareness camps were also organized in selected villages of Bundi and Baran districts.



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### **Awareness Programme on Pradhan Mantri Fasal Beema Yojana**

ICAR-IISWC Research Centre Agra participated in *Kisan Jagrookta Sammelan evam Krishi Pradarshini* on April 30, 2016 at U.P. Pandit Deen Dayal Upadhyay Pashu Chikitsa Vigyaan Vishwavidhyalaya evam Gau Anusandhan Sansthan, Mathura organized under *Pradhan Mantri Fasal Beema Yojana*. Programme was inaugurated by Smt Hema Malini, Hon'ble Member of Parliament, Mathura with local MLA Sh. Pooran Prakash. Activities of centre were showcased through a stall, which were visited by more than 109 farmers. Research Centre Udhagamandalam participated in Farmers' Fair and Awareness Programme on Pradhan Mantri Fasal Beema Yojana conducted on





June 7, 2016 at KVK, Vivekanandapuram (Coimbatore). An exhibition was organized in which activities and mandate of IISWC, various soil and water conservation technologies, agronomical measures for controlling soil erosion, causes and remedial measures for landslides in Nilgiris were displayed. Around 200 farmers from the Coimbatore district visited the exhibits and gained knowledge about soil and water conservation technologies. The Centre also participated in an exhibition on June 22, 2016 during Farmers Fair on *Pradhan Mantri Phasal Beema Yojana* organised by UPASI-Krishi Vigyan Kendra at Connoor, The Nilgiris. The fair was inaugurated by Dr. C. Gopalakrishnan, Member of Parliament (Lok Sabha). About 500 farmers, department officials and media people from the Nilgiri district participated in this programme. During this fair, the Centre exhibited various technologies developed on soil and water conservation for the hilly areas and its outreach activities.



#### Technologies Displayed in Labharthi Kisan Mela

ICAR-IISWC Research Centre Datta participated in Labharthi Kisan Mela on June 2, 2016 at ICAR-IGFRI, Jhansi and in an exhibition, displayed technologies, viz.; contour bunding, green manuring, intercropping of castor with green gram, summer ploughing and ber budding, to about 300 farmers who showed interest in the technologies. Queries of farmers were clarified. Earlier, the exhibition was inaugurated by Shri Radha Mohan Singh, Hon'ble Union Minister of Agriculture and Farmers Welfare. Later, Hon'ble minister addressed the farmers and had an interaction meeting with the officials of line departments and ICAR institutes on the activities undertaken for farmers and emphasized upon dissemination of lab technologies to farmers' field.



#### Participation in Exhibition Vikas ki Nayi Udaan

The ICAR-IISWC Research Centre Chandigarh participated in the Exhibition *Vikas ki Nayi Udaan*, organized by DAVP, Ministry of Information and Broadcasting, Govt. of India at Sector 17 Plaza, Chandigarh on March 30, 2016. A large number of local farmers, entrepreneurs and students participated in the event. Dr. A.K.Tiwari (Head of the center) was the Guest of Honour in the event. Through a stall, the farmers were enlightened about role of soil testing in diagnosing conditions of available nutrients in soil which indicates the fertility and productivity. Different schemes related to soil health card preparation were highlighted. The farmers were shown the sample soil health card, developed in Mandhala watershed. The use of such information was explained to farmers and it was also discussed



whether the health card would help reduce consumption of fertilizers. The farmers also discussed about the problems they are facing regarding water availability and salinity in the region. Another aspect highlighted in the event was the best utilization of degraded soils in Shivalik through agri-horti land use systems. The utility and cultivation technologies of a number of medicinal plants were discussed. The farmers took keen interest in the event.

#### Participation in Stakeholders Meet for Integrated Tribal Development Plan

To develop integrated plan for development of tribal people in the Nilgiris district for 2016-17, a stakeholders' meet was organised at Nilgiri Adivasi Welfare Association, Kotagiri, The Nilgiris to converge various schemes/programmes available with various government departments, research institutes and NGOs. The meeting was presided by Mr. Rajkumar, IAS, former collector of the Nilgiris. Mr. C. Paulrasu, IAS, Executive Director, Tea Board; Dr. P. Subramaniam, Director, Tribal Research Centre; officials from various developmental departments of the district and tribal farmers participated in the meet and discussed the plan. Dr. K. Kannan, Dr. P. Sundarambal and Dr. P. Raja from ICAR-IISWC Research Centre Udhagamandalam participated in the meet. Dr. K. Kannan, Principal Scientist presented the plan for development of tribals by the Research Centre under Tribal Sub Plan, 2016-17. During this meet, Mr. Rajkumar and Mr. C. Paulrasu distributed leaflets on various soil conservation technologies for hilly region developed by the Udhagamandalam Centre to the tribal farmers.



#### Participation in Farmers Mela at Sugarcane Breeding Institute

ICAR-IISWC Research Centre Udhagamandalam participated in Farmers Mela organized at Sugarcane Breeding Institute, Coimbatore, Tamil Nadu during August 26-27, 2016. On the occasion, Dr. S. Manivannan, Principal Scientist and Sh. George John, Technical Officer participated in the exhibition and displayed activities and mandate of the Institute, various soil and water conservation technologies, agronomical measures for controlling soil erosion, causes and remedial measures for landslides in Nilgiris, and demonstration on application of jute geo-textiles for slope stabilization. Dr. K. Ramasamy, Vice Chancellor, Tamil Nadu Agricultural University, Coimbatore inaugurated the Exhibition on August 26, 2016. Farmers from different states namely Tamil Nadu, Kerala, Karnataka, Andhra Pradesh, Telangana, Maharashtra, Uttar Pradesh and Haryana participated in the Mela. Overall, 1500 visitors including farmers, scientists, industrialists and extension functionaries visited the exhibits and gained knowledge about soil and water conservation technologies. Farmers and visitors were interested in technologies developed by IISWC, and they had useful interaction with the







scientists. Publications regarding activities of the Centre and technology bulletins on various soil and water conservation technologies developed were distributed to farmers and participants. Eminent Industrialist Dr. M. Manickam, Chairman, Sakthi Sugars Ltd., visited the stall and appreciated the work done by the Centre. He was Chief Guest of the valedictory function and presented Memento to all the participants. The exhibition provided platform for wide publicity of the Institute and to disseminate knowledge on importance of soil and water conservation in present day situation.

#### Scientists-Farmers Interaction Meeting at Kumahali under NMSHE Project

One day scientists-farmers interaction meeting was organised on August 29, 2016 at Kumahali village, Shimla (H.P.) under NMSHE project. The objective of the meeting was to generate awareness about soil health management and



also to distribute soil health card among the farmers. Soil health card of 14 farmers were prepared in collaboration with State Agriculture Department, Shimla and distributed in the event. Dr. Pankaj Panwar, PI for Chandigarh Centre explained the ongoing as well as forthcoming activities under NMSHE project. Dr. Sharmistha Pal, Scientist (Soils) explained to the farmers about use of soil health card at individual farmer level. The technique of extracting information from soil health card and use of such information was explained. It was emphasised that soil health card based nutrient application would help to reduce consumption of fertilizers, therefore preventing wastage of money and environmental damage. They were informed about the ongoing schemes at state and central levels, to provide support to farmers for integrated soil health management. In the same event, a camp for checking animal health was organised by Dr K.C. Negi, Scientist, IVRI, Mukteshwar, Uttarakhand in collaboration with officers from State Animal Husbandry Department, Shimla. The farmers expressed the problems of animals like low milk production, skin diseases, inflammation and reproductive problems. They were explained the causes, effects and remedy of the problems and medicines and mineral mixtures were distributed among the farmers.

#### Sensitization Meeting under Model Ravine Area Development Project

One day sensitization meeting was organized under Model Ravine Area Development Project, Lohali-Bagli on June 8, 2016 at Bagli village. About 214 stakeholders from Lohali and Bagli villages participated in the programme. Dr. R.K. Singh, Head Research Centre, Kota briefed the audience on the need of soil and water conservation, adoption of innovative technologies, and livelihood support in watershed management programmes.

#### Participation in Akshaya Tiritiya Celebration and Farmers Fair 2016

Akshaya Tiritiya Celebration and Farmers Fair-2016 was organized by ICAR-National Rice Research Institute, Cuttack on May 9, 2016. This auspicious occasion marks the beginning of farming activities of this year. ICAR-IISWC Research Centre Sunabeda participated in this fair

and displayed technologies developed and various developmental activities pertaining to the Institute. During the one day fair, three thousand farmers from Odisha participated. All ICAR Institutions, KVKs and State Govt. Line Departments working in Odisha participated and displayed exhibits of respective departments. Shri Radha Mohan Singh Ji, Hon'ble Minister of Agriculture & Farmers Welfare addressed the gathering and highlighted various initiatives taken by the Government. He urged farmers to reap the benefits of various schemes launched in the field of agriculture. Sh. Dharmendra Pradhan, Hon'ble Union Minister of Petroleum & Natural Gas, and Sh. Juel Oraon, Hon'ble Union Minister of Tribal Affairs also spoke on this occasion. Other dignitaries – Directors, Heads of different ICAR Institutions and KVKs also attended/spoke in this fair and participated in scientists-farmer interaction meet. Various technology pamphlets/leaflets/bulletins developed/published by the Institute were displayed/distributed to the dignitaries and farmers. The farmers in large number visited the stall put up by the Centre and interacted with the staff members. This fair provided a platform to showcase the technological innovations and developmental activities being implemented by the Institute.

#### भाकृअनुप-भारतीय मृदा एवं जल संरक्षण संस्थान, देहरादून पर हिंदी दिवस एवं सप्ताह का आयोजन दिनांक 14-21 सितम्बर, 2016 को किया गया

भाकृअनुप-भारतीय मृदा एवं जल संरक्षण संस्थान, देहरादून में बड़े हर्षोल्लास के साथ दिनांक 14 सितम्बर, 2016 से 21 सितम्बर, 2016 तक हिंदी दिवस एवं सप्ताह के कार्यक्रम आयोजित किए गए। इस श्रृंखला में दिनांक 14 सितम्बर, 2016 को एक कार्यक्रम आयोजित हुआ जिसमें संस्थान के निदेशक डॉ. पी. के. मिश्रा सहित सभी प्रभागध्यक्षों डॉ. एन. के.



शर्मा, डॉ. लाखन सिंह, डॉ. पी. आर. ओजस्वी, डॉ. हर्ष मेहता, श्री ऐ.के. सिंह, मुख्य प्रशासनिक अधिकारी एवं श्री आर.के. सिंह, वरिष्ठ वित्त एवं लेखा अधिकारी ने अपने विचार रखे। अन्य वक्ताओं में डॉ. लेख चंद, वरिष्ठ वैज्ञानिक एवं श्रीमती सरोज सेमवाल ने हिंदी की वर्तमान स्थिति एवं कार्यालय के कार्यों में उसकी उपयोगिता का वर्णन किया। संस्थान में हिंदी सप्ताह के अन्तर्गत, हिंदी- अंग्रेजी शब्दावली प्रतियोगिता, निबंध, अनुवाद, शब्द रचना आदि कुल छः प्रतियोगिताएं आयोजित की गयी। इस अवसर पर श्री राधा मोहन सिंह जी, माननीय कृषि एवं किसान कल्याण मंत्री, भारत सरकार द्वारा प्रेषित सन्देश को संस्थान में परिचालित किया गया। दिनांक 21.09.2016 को समापन समारोह में पुरस्कार वितरण कार्यक्रम आयोजित किया गया। इस अवसर पर मुख्य अतिथि श्रीमती कुसम मरिचन्दानी, प्रबंधक (राजभाषा), तेल एवं प्राकृतिक गैस आयोग थीं। वरिष्ठ तकनीकी अधिकारी श्री एस के सिन्हा, श्री एच एस भाटिया, इं. अमित चौहान, श्री आर एस हाड़ा, श्रीमती सरोज सेमवाल, सहा प्रशासनिक अधिकारी, श्रीमती ममता नेगी, श्रीमती मिनाक्षी पन्त एवं श्रीमती लता ने भी अपना सक्रिय योगदान दिया। कार्यक्रम का संचालन डॉ (श्रीमती) संगीता नैथानी शर्मा, मुख्य तकनीकी अधिकारी एवं प्रभारी अधिकारी, राजभाषा ने किया।

#### हिन्दी दिवस आयोजन

भारतीय कृषि अनुसंधान परिषद- भारतीय मृदा एवं जल संरक्षण संस्थान अनुसंधान केंद्र, बेल्लारी

दिनांक 14.9.2016 को भारतीय कृषि अनुसंधान परिषद- भारतीय मृदा एवं जल संरक्षण संस्थान अनुसंधान केंद्र, बेल्लारी (कर्नाटक) में हिन्दी दिवस का आयोजन किया गया। केंद्राध्यक्ष डा. ए. रायजादा ने हिन्दी दिवस समारोह के अवसर पर हिन्दी के प्रयोग को प्रशासनिक एवं अनुसंधान के क्षेत्र में और बढ़ाने का आवाह किया। प्रशासनिक कर्मचारियों से अनुरोध किया की वो किसी भी प्रशिक्षण में जा सकते हैं बशर्ते वो रुचि दिखायें एवं अपनी ओर से कदम उठाएं। हिन्दी दिवस समारोह के अवसर पर "हिन्दी प्रतियोगिता" का आयोजन किया गया, जिसमें सोलह प्रतिभागियों ने भाग लिया, जिनमें केंद्र के सभी वैज्ञानिक, तकनीकी अधिकारी, प्रशासनिक अधिकारी एवं अन्य कर्मचारियों



ने उत्साहपूर्वक भाग लिया। प्रतियोगिता में प्राप्त अंको के आधार पर श्री बी. एन. शेषाद्री (तकनीकी अधिकारी), पी. मोहन कुमार (तकनीकी अधिकारी) तथा श्री मुरलीधर ने क्रमशः पहला, दूसरा तथा तीसरा स्थान प्राप्त किया। केंद्राध्यक्ष डा. ए. रायजादा ने प्रथम, दूसरा तथा तीसरे स्थान प्राप्त करने वाले प्रतिभागियों को प्रमाण-पत्र एवं पुरस्कार से सम्मानित किया और बधाई दी। कुछ प्रतियोगियों, विशेषकर प्रशासनीक अनुभाग के, जिनका प्रदर्शन सतोष जनक नहीं था, उन्हें और ज्यादा प्रयास करने की सलाह दी। केंद्र के सभी कर्मचारियों ने बड़े उत्साहपूर्वक हिन्दी समारोह में भाग लिया तथा इसके सफल आयोजन के लिये सराहनीय प्रयास किये। अंत में केंद्र के हिन्दी अधिकारी ने सभी का आभार व्यक्त किया तथा जो कर्मचारी हिन्दी सीखना चाहते हैं उनको हर संभव सहयोग तथा सहायता देने का अश्वासन दिया।

### हिन्दी चेतना मास कार्यक्रम

भारतीय मृदा एवं जल संरक्षण संस्थान के आगरा केंद्र पर दिनांक 14 सितम्बर, 2016 को हिन्दी चेतना मास (14-09-2016 से 13-10-2016) का शुभारंभ वैज्ञानिकों द्वारा मां सरस्वती की वन्दना व दीप प्रज्ज्वलित कर किया गया। प्रभारी केंद्राध्यक्ष डा. ए.के. परन्डियाल ने केंद्र पर हिन्दी कार्यों की प्रगति की सराहना करते हुए आशा व्यक्त की कि समस्त अधिकारी व कर्मचारी दैनिक कार्यालय अभिलेखों में हिन्दी का अधिकाधिक प्रयोग करेंगे। इस अवसर पर उन्होंने फादर कामिल बुल्के द्वारा हिन्दी के प्रसार के योगदान का उल्लेख किया। केंद्र के राजभाषा अधिकारी एवं (प्रधान वैज्ञानिक (अभियान्त्रिकी), डा. ए.के. सिंह ने माननीय केंद्रीय कृषि एवं किसान कल्याण मंत्री, श्री राधामोहन सिंह जी के परिषद में हिन्दी के अधिकाधिक प्रयोग के आह्वान से संबंधित संदेश को पढ़ कर सुनाया तथा सभी वैज्ञानिकों, अधिकारियों व कर्मचारियों से हिन्दी में कार्य करने का अनुरोध किया। डा. आर.के. दुबे, वरिष्ठ वैज्ञानिक-शस्य ने हिन्दी चेतना मास के उपलक्ष में अपने विचार व्यक्त किये। श्री भगवती प्रसाद, वरि. तक. अधिकारी व राजभाषा सचिव ने धन्यवाद ज्ञापन किया।



### हिन्दी पखवाड़ा समापन समारोह

भाकृअनुप-भारतीय मृदा एवं जल संरक्षण संस्थान, अनुसंधान केंद्र, दतिया पर 01 सितम्बर से 15 सितम्बर 2016 तक हिन्दी पखवाड़ा मनाया गया। इस अवसर पर हिन्दी निबन्ध, हिन्दी पत्र लेखन, हिन्दी सामान्य ज्ञान, हिन्दी कविता एवं समूह प्रतियोगिता का आयोजन किया गया। केंद्र के सभी कार्यालयीनों ने प्रतियोगिताओं में भाग लिया। पखवाड़े के समापन समारोह के अवसर पर मुख्य अतिथि, श्री आ0 सी0 रेगर, शाखा प्रबन्धक भारतीय स्टेट बैंक ए.डी.वी. दतिया ने विजेता प्रतिभागियों को पुरस्कार प्रदान किये। इस अवसर पर केंद्राध्यक्ष डा0 आर. एस.यादव, एवं डा0 देवनारायण, प्रधान वैज्ञानिक ने सभी कार्यालयीनों को हिन्दी में अधिक से अधिक कार्य करने के लिये प्रेरित किया। हिन्दी अधिकारी डा0 एस. पी. तिवारी ने कार्यक्रम को सफल बनाने के लिये सभी का आभार व्यक्त किया। कार्यक्रम का संचालन हिन्दी कार्यान्वयन समीति के सचिव श्री ए0 के0 अहिरवार द्वारा किया गया।



### हिन्दी दिवस 2016

भ कृ अनु प. भारतीय मृदा एवं जल संरक्षण संस्थान, कोरापुट ओडिशा ने एक दिवसीय हिन्दी कार्यक्रम का आयोजन मुखबिड़ई जूनियर हाई स्कूल में दिनांक 9 सितम्बर 2016 को किया। कार्यक्रम का संचालन हिन्दी अधिकारी, डॉ कर्म बीर (वैज्ञानिक, फल विज्ञान) के द्वारा किया गया। कार्यक्रम में हिन्दी से सम्बंधित तमाम गतिविधियों में जैसे निबंध लेखन, हिन्दी भाषण तथा हिन्दी वाद-विवाद प्रतियोगिता का आयोजन बड़े उल्लास के साथ किया गया। विद्यार्थियों ने कार्यक्रम में बढ़ चढ़ कर भाग लिया और निबंध लेखन, हिन्दी भाषण तथा हिन्दी वाद-विवाद प्रतियोगिता में हिस्सा लिया। मुखबिड़ई जूनियर हाई स्कूल के शिक्षको ने कार्यक्रम को सफल बनाने में पूरा सहयोग किया, उन्होंने हमें सभी प्रकार की मूलभूत सुविधाएं मुहैया कराईं। प्रतियोगिता में प्रथम, द्वितीय व तृतीय पुरस्कार के अलावा सभी प्रतिभागियों के लिए सांत्वना पुरस्कार भी रखा गया था। भारतीय मृदा एवं जल संरक्षण संस्थान, कोरापुट ओडिशा के वैज्ञानिक गण (डॉ जी सी साहू, प्रवीण जाखड़, होमबे गौड़ा, मुकेश कुमार मीना,) और तकनीकी सहायक (श्री जी बी नायक) ने कार्यक्रम को सफल बनाने में महत्वपूर्ण योगदान दिया। प्रत्येक अधिकारी

ने अपने संबोधन में हिन्दी को आगे ले जाने व स्कूल परिसर में हिन्दी को बढ़ावा देने के लिए सुझाव दिया और हिन्दी से सम्बंधित किसी भी परेशानी को हल करने का आश्वासन दिया। पुरस्कर वितरण व धन्यवाद प्रस्ताव के बाद कार्यक्रम का समापन किया गया।



### अनुसंधान केंद्र कोटा में हिन्दी कार्यशाला का आयोजन

केंद्र, पर 02 जून, 2016 को एक दिवसीय हिन्दी कार्यशाला का आयोजन किया गया। डा. आर. के. सिंह ने अपने स्वागत उद्बोधन में हिन्दी के इतिहास एवं विकास पर चर्चा करते हुए कहा कि हमें आज की आवश्यकताओं को ध्यान में रखते हुए वैश्विक स्तर की सोच रखते हुए क्षेत्रीय आवश्यकताओं के अनुरूप कार्य करने पर जोर दिया। वैज्ञानिकों को जमीनी स्तर पर कार्य करने के लिये हिन्दी को संवाद प्रेषण का माध्यम बनाने पर जोर दिया। डा. बी. एल. मीना ने हिन्दी कार्यशाला आयोजन के उद्देश्यों से अवगत कराते हुए हिन्दी की संवैधानिक स्थिति से सबको परिचित कराया तथा हिन्दी का अधिक से अधिक प्रयोग करने पर जोर दिया। मुख्य अतिथि श्री रजनीश कुमार यादव ने हिन्दी भाषा के गौरवशाली इतिहास, हिन्दी भाषा की शैली के वैज्ञानिक औचित्य, हिन्दी की तकनीकी शब्दावली से अवगत कराते हुए दैनिक जीवन में Unicode के द्वारा कम्प्यूटर पर हिन्दी के प्रयोग की बारीकियों से सबको लाभान्वित किया। श्री हरि ओम आर्य (तकनीकी सहायक) ने अपनी स्वरचित कविता "कोशिश" के माध्यम से हिन्दी एवं संस्कृति के जुड़ाव पर अपने विचार व्यक्त किये। श्री वी. के. जैन, (तकनीकी अधिकारी) ने हास्य कविता के माध्यम से लोगों को धोखा देने से बचने का संदेश दिया। डा. अशोक कुमार, प्रधान वैज्ञानिक ने सभी को धन्यवाद देकर आभार प्रकट किया। कार्यक्रम का संचालन श्री कमलेश कुमार, तकनीकी अधिकारी ने किया।



### हिन्दी दिवस एवं हिन्दी चेतना मास का आयोजन

अनुसंधान केंद्र, कोटा पर 14 सितम्बर, 2016 को हिन्दी दिवस मनाकर हिन्दी चेतना मास का शुभारम्भ किया। कार्यक्रम की शुरुआत डा. अशोक कुमार ने की। केंद्र के हिन्दी अधिकारी डा. गोपाल लाल मीणा ने अनुसंधान केंद्र पर पिछले एक वर्ष के दौरान हिन्दी के उपयोग के प्रयासों का ब्यौरा प्रस्तुत किया एवं हिन्दी की वर्तमान स्थिति से अवगत कराया 19 सितम्बर, 2016 को हिन्दी की संरचना, स्वरूप एवं सुझाव के वैज्ञानिक पक्ष पर विचार-विमर्श एवं काव्य गोष्ठी का आयोजन किया गया। कार्यक्रम की अध्यक्षता जाने माने राष्ट्रीय कवि एवं विचारक श्री वीरेन्द्र सिंह विद्यार्थी जी द्वारा की गई। डा. आर. के. सिंह, केंद्राध्यक्ष ने कार्यक्रम की विधिवत् शुरुआत की। डा. गोपाल लाल मीणा, केंद्र के राजभाषा अधिकारी द्वारा पधारें हुए सभी आगन्तुकों एवं केंद्र के समस्त कर्मचारियों का स्वागत एवं अभिनन्दन किया। श्री वीरेन्द्र सिंह विद्यार्थी जी द्वारा 'वैज्ञानिक एवं तकनीकी ज्ञान के उत्कर्ष में हिन्दी का योगदान' विषय पर अतुलनीय सम्मोहक एवं प्रेरणास्पद सविस्तर वक्तव्य दिया। कवि श्री वेद प्रकाश एवं श्री संजय शुक्ला ने अपनी ओजस्वी कविता की प्रस्तुति से नूतन शक्ति का संचार कर दिया। केंद्राध्यक्ष डा. आर. के. सिंह ने कहा कि जब हम हिन्दी दिवस मनाते हैं तो संस्कृति का उत्सव मनाते हैं। डा. अशोक कुमार, प्रधान वैज्ञानिक ने उपस्थित समुदाय का धन्यवाद किया। कार्यक्रम का संयोजन डा. गोपाल लाल मीणा ने किया।





## भारतीय मृदा एवं जल संरक्षण संस्थान, अनुसंधान केन्द्र, आगरा पर वन महोत्सव मनाया गया

भारतीय मृदा एवं जल संरक्षण संस्थान, अनुसंधान केन्द्र, आगरा में आज दिनांक 19 जुलाई, 2016 को गुरु पूर्णिमा के पावन अवसर पर वन महोत्सव कार्यक्रम के अन्तर्गत समस्त वैज्ञानिकों, अधिकारियों एवं कर्मचारियों ने केन्द्राध्यक्ष, डा. एस.के. दुबे के साथ वृक्षारोपण में भाग लिया। डा. ए.के. परन्डियाल, प्रधान वैज्ञानिक (वानिकी) ने इसका समन्वयन किया। इस वर्ष जुलाई माह में आगरा में अच्छी वर्षा होने के कारण वृक्षारोपण हेतु वातावरण बहुत अनुकूल है। केन्द्राध्यक्ष, डा. एस. के. दुबे एवं डा. ए.के. परन्डियाल ने समस्त अधिकारियों एवं कर्मचारियों से उनके द्वारा रोपित पौधों की उत्तरजीविता सुनिश्चित करने का आग्रह भी किया। ज्ञात हो इस महोत्सव के दौरान केन्द्र पर 16 प्रजातियों के कुल 351 पौधे रोपित किये गये। केन्द्र के प्रत्येक कर्मचारी ने इसमें बढ़ चढ़ कर भाग लिया।



## Van Mahotsav celebrated by Plant Science Division

Van Mahotsav programme was organized by Plant Science Division under TSP programme at Village Udtapalta on September 9, 2016. About 65 students, 6 staff members and 30 villagers participated in the programme. At the outset Dr. JMS Tomar interacted with students and explained the aims and importance of Van Mahotsav programme. He insisted on the use of quality planting material for undertaking plantations. Dr. R. Kaushal demonstrated the school children about pit digging and tree planting using different soil and water conservation practices. Different multipurpose tree species viz.; *bhimal*, oak, bamboo, *kachnar*, *reetha* were planted by the students in the school premises and community land. After the programme sweets were distributed to all the students.



## ICAR NEWS/WEBSITE REPORTING

- ICAR-IISWC Celebrated Annual Day. ICAR website, April 7, 2016.
- Skill Development Programme for Agriculture Engineers from Tamil Nadu state organized at ICAR-Indian Institute of Soil and Water Conservation (IISWC), Dehradun. ICAR website, June 10, 2016.
- MoU signed between IISWC, Eco Task Force and Uttarakhand Van Panchayat Vikas Samiti. ICAR website, June 16, 2016, Dehradun.
- Capacity Building Programme on Integrated Watershed Management for Odisha Agriculture Officers organized at ICAR-IISWC, Dehradun during July 26-30, 2016. ICAR website. August 2, 2016.
- Five Training news related to 4 months certificate course and short term trainings published on ICAR Website.

## AWARDS AND RECOGNITIONS

- Dr. P.K. Mishra nominated as a Member of General Body of the

ICAR Society under the category Directors of ICAR Research Institutes for a period of 03 years.

- Dr. N.K. Sharma, Head, SS&A acted as a Chairman in 14th Regional Research Advisory Committee meeting of Regional Sericultural Research Station at Central Silk Board, Sahaspur, Dehradun on July 21, 2016.
- Dr. S.K. Dubey awarded for his par excellence in Soil Conservation Techniques at ICAR-CSSRI, Karnal.
- Dr. A.K. Singh awarded for work done by the Agra centre in implementation of Rajbhasha in 67th Hindi NARAKAS Meeting.
- Dr. Rajesh Kaushal, Sr. Scientist (Forestry) nominated as member of Implementation Team for Testing and Releasing of Tree Varieties and Clones for Haryana, Punjab, Uttarakhand and Uttar Pradesh States by FRI, Dehradun.
- Dr. Rajesh Kaushal nominated as Editor, Indian Journal of Agroforestry by Indian Society of Agroforestry, Jhansi.
- Er. B.S. Naik awarded Ph.D. degree from the Odisha University of Agriculture and Technology (OUAT), Bhubaneswar.
- Dr (Mrs.) Trisha Roy, Scientist (Soils) awarded Overall Merit Certificate, Merit Certificate in Engineering and Soil Science Training Modules during 114<sup>th</sup> batch of regular training of Soil & Water Conservation and Watershed Management organized at ICAR-IISWC, Dehradun during 22 April, 2016 to 21 August, 2016.
- Mr. Rajesh Bishnoi, Scientist nominated as HRD-Co-Nodal Officer of ICAR-IISWC, Dehradun for implementation of training functions.
- Dr (s). Indu Rawat, Vibha Singhal and Sh. S.K. Sinha awarded first, second and third prize respectively in Bilingual *Anuvad Pratiyogita* held during Hindi *Saptah* celebration during September 14-21, 2016.
- Dr. Vibha Singhal awarded first prize; Smt. Manjula Dobhal and Dr. Indu Rawat jointly awarded second prize while Sh. Satvinder Singh awarded third prize for *Sabdh Banao Pratiyogita* held during Hindi *Saptah* celebration during September 14-21, 2016
- Ms. C. Jana, Dr. N.M. Alam and Dr. Trisha Roy received first, second and third prize respectively in *Shruti Lekh* and *Laghu lekhan* competition during Hindi week celebration from September 14-21, 2016 at ICAR-IISWC, Dehradun.
- Smt. Manjula Dobhal. awarded first prize; Smt. Neha Dobhal and Smt. Lata jointly awarded second prize while, Sh. T.S. Rawat awarded third prize for *Shabdawali Pratyogita* during Hindi *Saptah* celebration during September 14-21, 2016.
- Sh. Prem Singh Rawat, Sh. Manmohan Singh awarded first and second while, Sh. Chanderpaul and Sh. Rajesh Joshi jointly awarded third prize for *Nibandh Pratiyogita* held during Hindi *Saptah* celebration during September 14-21, 2016.

## IMPORTANT PUBLICATIONS

### Research Papers

- Adhikary PP, Hombegowda HC, Barman D, Jakhar P and Madhu M (2016) Soil erosion control and carbon sequestration in shifting cultivated degraded highlands of eastern India: performance of two contour hedgerow systems. *Agroforestry Systems* DOI: 10.1007/s10457-016-9958-3.
- Ali Shakir, Sethy BK, Singh RK, Parandiyal AK, and Kumar A (2016) Quantification of hydrologic response of staggered contour trenching for horti-pastoral land use system in small ravine watersheds: a paired watershed approach. *Land Degradation and Development* DOI: 10.1002/ldr.2517.



- Ch. Jyotiprava Dash, Sarangi A, Adhikary PP and Singh DK (2016) Soil water budgeting approach to quantify potential groundwater recharge from croplands and groundwater use in a semi-arid region. *Environmental Earth Sciences* 75: 853. DOI :10.1007/s12665-016-5620-7.
- Dhaker RC, Dubey RK, Tiwari RC and Dubey SK (2016) Water use, yield and economics of fenugreek (*Torigonella foenum graecum* L.) under varying IWCPE ratios and fertilizer levels in South-West Rajasthan. *Legume Research* (Accepted).
- Jakhar P, Dass A, Adhikary PP, Sudhishri S, Naik BS, Hombegowda HC, Madhu M, Lenka NK, Chaudhary PR and Panda RK (2016) Multi-tier agroforestry system for integrated resource conservation on uplands of Eastern Ghats region in India. *Agroforestry Systems* DOI:10.1007/s10457-016-9976-1.
- Kaushal R, Verma A, Mehta H, Mandal D, Tomar JMS, Jana C, Rajkumar, Jayparkash J and Chaturvedi OP (2016) Soil quality under *Grewia optiva* based agroforestry systems in western sub-Himalaya. *Range Management & Agroforestry* 37 (1): 50–55.
- Kumar S, Raizada A, Biswas H, Srinivas S and Mondal B (2016) Application of indicators for identifying climate change vulnerable areas in semi-arid regions of India. *Ecological Indicators* 70:507–517.
- Madhu M, Naik BS, Jakhar P, Hombe Gowda HC, Adhikary PP, Gore KP, Barman D and Naik GB (2016) Comprehensive impact assessment of resource conservation measures in watershed of eastern region of India. *Journal of Environmental Biology* 37 (3): 391–398.
- Mandal U, Sahoo S, Munusamy SB, Dhar A, Panda SN, Kar A and Mishra PK (2016) Delineation of groundwater potential zones of coastal groundwater basin using multi-criteria decision making technique. *Water Resources Management* 30(12), 4293–4310.
- Manivannan S, Kholra OPS and Dinesh D (2016) Probability Analysis of weekly rainfall for crop planning in Nilgiris hills of Tamil Nadu. *Journal of Agrometeorology* 18 (1): 163–164.
- Moharana Pratap & Raja P (2016) Distribution, forms and spatial variability of desert pavements in arid western Rajasthan. *Journal of Geological Society of India* 87: 401–410.
- Nilendu Singh, Patel NR, Singh Joyeeta, Raja P, Soni P and Parihar J.S. (2016) Carbon exchange in some invasive species in the Himalayan foot hills. *Tropical Ecology* 57(2): 263–270.
- Pal S & Marschner P (2016) Influence of clay concentration, residue C/N and particle size on microbial activity and nutrient availability in clay amended sandy soil. *Journal of Soil Science and Plant Nutrition* 16 (2): 262–273.
- Pal S and Marschner P (2016) Soil respiration, microbial biomass and n availability in a sandy soil amended with clay and residue mixtures. *Pedosphere* 26(5): 643–651.
- Rawat I., Chhuneja NK, Gite LP and Meena MS (2016) Health hazard among workers of agro processing industries: an exploratory research in Punjab's context. *Natl Acad Sci Lett* DOI 10.1007/s40009-016-0478-5
- Roy T, Biswas DR, Datta SC and Sarkar A (2016). Phosphorus release from rock phosphate as influenced by organic acid loaded nanoclay polymer composites in an alfisol. *Proceedings of National Academy of Science. Sect. B Biol. Sci.* DOI 10.1007/s40011-016-0739-6.
- Surendran U, Ramasubramoniam S, Raja P, Kumar V and Murugappan V (2016) Budgeting of major nutrients with mitigation strategies for agricultural sustainability in semi arid tropical agro ecosystem of India. *Environmental Monitoring and Assessment* 188 (4):1–17.

#### Books

Singh L, Chand, L, Rathore AC, Sharma SN and Kumar S (2016) *Mrida evam Jal Sanrakshika- A Rajbhasha Patrika (Praveshank - 2016)* Published by ICAR-Indian Institute of Soil and Water Conservation, Dehradun. pp 105.

Mishra PK, Jana C; Patra S and Sena DR (2016) Online Software for design of straight drop structure (Version – 1.0). The software is copyrighted under copyright office, Dept. of Higher Education, Ministry of Human Resource Development with registration number SW-8647/2016.

#### Technical Bulletin/ Brochures/Research Briefs

Biswas H, Raizada A, Mandal D, Kumar S and Srinivas S (2016) Prioritization of districts vulnerable to soil erosion risk in Telangana. *Soil and Water Conservation Brief No. IISWC–RB -2/BL-2/2016*, ICAR-IISWC, Dehradun.

Naik BS, Hombe Gowda HC, Madhu M and Sudhishri S (2016) *Sambuta - A suitable vegetative barrier for soil & water conservation in sloping highlands of Eastern Ghats region.* Technology Brochure.

Narayan Dev and Tiwari SP (2016) *Barani kheti mein Bundelkhand ki lal mittiyon mein sansadhan sanrakshan evam utpadan hetu arand+moong ki antaphasli kheti.* Technology Brochure, pp. 08.

Narayan Dev and Tiwari SP (2016) *Bundelkhand ki lal mittiyon mein sansadhan sanrakshan evam tikau utpadan hetu samochit medbandi,* Technology Brochure, pp.06.

Narayan Dev and Tiwari SP (2016) *Hari khad dwara Bundelkhand ki lal mittiyon mein sansadhan sanrakshan evam utpadakta vridhi,* Technology Brochure, pp. 08.

Pande VC, Bagdi, GL and Sena DR (2016) Status of community based water storage structures in Gujarat. *Technical Bulletin No. T-69/V-5.*

Singh DV, Patra S, Mishra PK, Amrut S, Morade and Tomar D.K. (2016) *Uttarakhand ke Janjatia shetro me Jan-sahbhagi Jan sansadhan prabandhan evam krishi vikas.* Technical Folder. ICAR-IISWC, Dehradun.

Leaflet « Checkdam and groundwater recharge filter for enhancing land and water productivity in rainfed areas ».

Leaflet « Grass filter for reducing soil and nutrient losses in arable land and water stream ».

#### Foreign Visits

- Dr. M. Muruganandam, Sr. Scientist (Fisheries) proceeded to North Dakota University, USA for 18 months for Post-Doc. Fellowship under prestigious Fullbright Nehru Fellowship Programme.

#### WORKSHOPS/TRAININGS/VISITS/DAYS/WEEKS/MEETS ORGANIZED

##### Agra

- Hindi workshop on June 30, 2016.
- *Swachta Pakhwara* observed from May 16-31, 2016.
- One month Summer Practical Training for 25 B.Tech. (Agril. Engg.) students on Soil and Water Conservation Engineering from OUAT, SHIATS-Naini, Allahabad, CAET Etawah, SCRIET Meerut, and MPKV Rahuri (Maharashtra) from June 1-30, 2016.
- One month Summer Practical Training for 25 B.Tech. (Agril. Engg.) students on Soil and Water Conservation Engineering from School of Engineering and Technology, Nagaland University from July 1-15, 2016.





- International Yoga Day on June 21, 2016.
- *Mera Gaon Mera Gaurav* at Manikpura, Garhi, Sarangpur, Udairaj, Beelpura, Brehmpur and Naya Bansh on July 15, 18, August 20 and 22, 2016.
- *Van Mahotsav* celebrated on July 19, 2016.
- 11th Parthenium Grass Awareness Week from August 16-22, 2016.
- Hindi *Chetna Mass* from September 14- October 13, 2016.
- Exposure visit for 68 farmers and 15 school students during the reporting period.

#### Bellary

- One month Summer Practical Training for B.Tech. (Agril Engg) students on Soil and Water Conservation Engineering from College of Agricultural Engineering, UAS, Raichur (Karnataka and College of Agricultural Engineering, ANGRUA, Bapatla (Andhra Pradesh).
- Awareness camps under *Mera Gaon Mera Gaurav* programme on August 22-23, 2016.
- *Hindi Diwas* on September 14, 2016.

#### Chandigarh

- One day Scientist-Farmers Interface Meeting under *Mera Gaon, Mera Gaurav* programme at Jabrot village, Haryana on June 28, 2016.
- World Conservation Day at Research Farm, Mansa Devi (Haryana) on July 28, 2016.
- One day Scientist-Farmers Interface Meeting under *Mera Gaon, Mera Gaurav* programme at Mallah village, Haryana on July 29, 2016.
- Training cum Parthenium Awareness Programme in Johranpur Village under *Mera Gaon, Mera Gaurav* programme on August 28, 2016.
- One day Scientists-Farmers interaction meeting at Kumahali village, Shimla, H.P. under NMSHE project on August 29, 2016.

#### Datia

- Special *Swachata Pakhwara* from May 16–30, 2016.
- Nine awareness camps under *Mera Gaon Mera Gaurav* programme in nine adopted villages (Sitapur, Naya Gaon, Murera, Maheba, Jigna, Tiwaripura, Dang Karera, Chopra and Imliya) on May 18, 19, 20 and 23, 2016.
- Summer Practical Training for B.Tech. (Agril. Engg.) students on Soil and Water Conservation Engineering from CAE, JNKVV, Jabalpur, M.P. CAET, Godhra, AAU, Gujarat from June 1-30, 2016.
- World Environment Day on June 5, 2016.
- International Yoga Day on June 21, 2016.
- Parthenium Awareness Day on August. 20, 2016.
- *Hindi Pakhwara* from September 1-15, 2016.

#### Dehradun

- Institute's Annual Day celebrated at Dehradun on April 7, 2016.
- Farmers' Day celebrated at village Hattal on April 15, 2016.
- 4 Months Certificate Course on Soil & Water Conservation and Watershed Management at Dehradun from April 21- August 21, 2016.
- *Swachta Pakhwada* celebrated at Dehradun from May 16-31, 2016.
- Dr. U.K. Maurya coordinated visit of the Scientists and Technical personals to Central Lab and Research Farm from NIH, Roorkee on May 27, 2016.
- *Swach Bharat Abhiyan*-Cleanliness drive cum Farmers-Scientists interaction meet under *Mera Gaon Mera Gaurav* adopted village

at Kalimati on May 27, 2016.

- *Swachata Pakhwara* under *Mera Gaon Mera Gaurav* at village Udpalta-Sahiya Kalsi block, Dehradun on May 27, 2016.
- *Swachta Shivir* organized under *Mera Gaon Mera Gaurav* programme at Koti Koruwa village, Dehradun on May 28, 2016.
- Awareness camp on *Swach Bharat* in Bhadasi village, Dehradun on May 30, 2016.
- XXIV meeting of ICAR Regional Committee for Region No. I, covering the states of Jammu & Kashmir, Himachal Pradesh and Uttarakhand at Govind Ballabh Pant University of Agriculture & Technology (GBPUAT), Pantnagar on May 30-31, 2016
- Trainings on Integrated Watershed Management in collaboration with MANAGE, Hyderabad at Dehradun from June 14-16, 2016.
- Four days training in collaboration with MANAGE, Hyderabad on Writeshop for Success Stories for officials from different state at Dehradun from June 20-23, 2016.  
ICAR-IARI team visited ICAR-IISWC regarding establishment of IARI Deemed University Off Campus on June 28, 2016.
- Launching workshop to start the mKrishi®PAWS service at Dehradun on July 2, 2016.
- Dr. JMS Tomar successfully coordinated Common written Examination for Technical Assistant (T-3) of ICAR-IISWC, Dehradun and ICAR-VPKAS, Almora at Dehradun on July 17, 2016.
- Scientist-Farmer meeting at Thetyu village adopted under *Mera Gaon Mera Gaurav* programme on August 4, 2016.
- Parthenium Awareness Week from August 16- 22, 2016.
- Sh Sujeet Desai, Scientist, ICAR-CCARI, Goa completed 3-month Professional Attachment Training (FOCARS) under mentorship of Dr Ambrish Kumar on August 23, 2016.
- Dr. JMS Tomar successfully coordinated Common Written Examination for Technician (T-I) of ICAR-IISWC, Dehradun and ICAR-VPKAS, Almora at Dehradun on September 4, 2016.
- Celebration of Himalayan Day at Dehradun on September 9, 2016.
- *Van Mahotsav* celebrated at village Udpalta, Dehradun under TSP on September 9, 2016.
- Training programme cum awareness camp under *Mera Gaon, Mera Gaurav* programme at village Udpalta, Kalsi block Dehradun on September 10, 2016.
- Collaborative Training on Climate Change and Agriculture Organized at ICAR-IISWC, Dehradun from September 14-17, 2016.
- Er. S.S. Shrimali, Dr. D.R. Sena, Dr. Lakhani Singh and Ms. C. Jana organized 10 days training programme on Application of Remote Sensing and GIS in Natural Resource Management for ICAR technical officers during September 20-29, 2016.
- Two days field training on Improved Soil Working Techniques at project site in Lakhwar-Dhanpau from September 2-3, 2016.
- Four training programmes sponsored by Director of Agriculture & Food Production, Siripur, Bhubaneswar on Soil and Water Conservation and Watershed Management of 5 days duration for district/field level functionaries of different districts of Odisha.
- 43 number of awareness camps/training programmes/meetings with farmers were conducted in the adopted villages under *Mera Gaon Mera Gaurav*.
- 27 groups of students/farmers/trainees/extension workers containing 406 visitors exposed with soil and water conservation technologies in the Institute Museum.



### Koraput

- Summer Practical Training programme for 15 B.Tech (Agril. Engg.) students on Soil and Water Conservation and Watershed Management from CAEPHT, Gangtok (Sikkim), BCKV, Mohanpur, (West Bengal) and CAE, Madakasira, ( Andhra Pradesh).
- International Yoga Day on June 21, 2016.
- *Hindi Diwas* on September 9, 2016.

### Kota

- *Swachata Pakhwara* from May 18-31, 2016.
- 21st ICAR All India Entrance Examination for the admission to undergraduate programme at eight examination centres in Kota city on May 21, 2016
- One month Summer Practical Training for B.Tech. (Agril. Engg.) on Watershed Management from MPUAT, Udaipur and Dr. B.S. Konkan Krishi Vidyapith, Dapoli from June 1-30, 2016.
- Hindi workshop on June 2, 2016.
- One day sensitization meeting under Model Ravine Area Development Project at Bagli village on June 8, 2016.
- International Yoga Day on June 21, 2016.
- 11th Parthenium Awareness week from August 16-22, 2016.
- Agriculture Technology Week from August 22-27, 2016.
- *Kisan Divas* on August 28, 2016.
- Hindi *Chetna Mass* from September 14- October 13, 2016.

### Udhagamandalam

- Summer Practical Training for B.Tech. (Agril Engg) students on Soil and Water Conservation Engineering from Maharashtra and Gujarat from June 1-30, 2016.
- One-day training programme cum exposure visit on Water Harvesting and Water Management for 110 farmers from Gudalur, Ooty and Kotagiri block of Nilgiri district on April 4, 12 and 26, 2016 sponsored by ATMA under *Pradhan Mantri Krishi Sinchayee Yojana*.
- Awareness programme on rain water harvesting and recycling at Senguttaiyur and Seenguly villages of *Mera Gaon Mera Gaurav* scheme on July 8, 2016.
- Hindi Quarterly meeting of Official Language Committee on June 24, 2016 and September 3, 2016.
- Workshop on *Paribhasik Shabdavali* on June 30, 2016.
- Exposure visit on Soil and Water Conservation organized for students from TNAU Coimbatore; UAS, Bengaluru; Forest College and Research Institute, Mettupalayam; College of Agricultural Technology, Gullapuram, TN; College of Horticulture, University of Horticultural Sciences, Bagalkot; Aditya Engineering College, AP; KSR College of Engineering, Namakkal; Officials from Agricultural Department, Puduchery ; Gandhi Polytechnic College, Vinnapalli, TN.

### Vasad

- Two months in-plant training on Soil and Water Conservation and Watershed Management to B. Tech students from Junagadh Agricultural University.
- One month training on Soil and Water Conservation and Watershed Management to B. Tech students from Junagadh, Rahuri and Dapoli Agricultural Universities.
- Training and demonstration program of Blue and Green Water Harvesting techniques was organized for the farmers of Nawad, Navagaon and Surajpura villages, in Panchmahals district of Gujarat on August 19 and 21, 2016.

- Field demonstrations and exposure visits for cost effective and innovative blue water harvesting techniques, viz.; plastic check dams for different flow regimes and recharge filters for farmers.
- Foundation day-cum-stakeholders workshop on May 26, 2016.
- Cleanliness awareness program at Dodka, Rayka, Rajupura villages on May 20, 2016.

### WORKSHOPS/MEETINGS/TRAINING ATTENDED

- Programme on Prime Minister's Crop Insurance Scheme organized by KVK Datia on April 4, 2016: Dr. S.P. Tiwari.
- Brain Storming Session on Agroforestry for Rehabilitation of Water-Congested Ecologies in the Eastern States organized by ICAR Research Complex for Eastern Region, Patna on April 5, 2016. Dr. H.Gowda.
- Coordination-cum-Empowered Committee meeting on Mineral Development and Regulations on at New Delhi. April 6, 2016: Dr. R.K. Singh.
- Meeting organized by Deputy Director Agriculture, Koraput, Odisha and delivered lecture on topic Soil Erosion and its Management at Jeypore, Koraput, Odisha on April 7, 2016: Dr. M Madhu, Dr. D.C. Sahoo and Dr. P.P. Adhikary.
- Farmers' Fair organized by KVK, Borkheda, Kota on April 7, 2016: Dr. Kuldeep Kumar.
- Participated and delivered lecture on Maintenance of Micro Irrigation System at Padanthurai and Pudumandu village, Gudalore block on April 7 and 13, 2016: Dr. K. Kannan.
- Meeting of the Expert Committee for Third Party Appraisal (TPA) of DPR on Forestry Interventions for Ganga under National Mission for Clean Ganga at Indira Paryavaran Bhavan, New Delhi on April 11, 2016: Dr. Charan Singh.
- Participated and delivered lecture on Water Management for Vegetable Crops for farmers at the office of Assistant Director of Horticulture, Gudalur, The Nilgiris on April 13, 2016: Dr. K. Rajan.
- *Kisan Mela* alongwith DDG (NRM) at Hattal Village from April 14-15, 2016: Dr. P.K. Mishra.
- Farmers Day at Attal village District Dehradun on April 15, 2016: Dr (s). N.K. Sharma, D. Mandal, Harsh Mehta, P. Dogra, J.M.S. Tomar, U.K. Maurya, R. Kaushal and Sh. DM Kadam.
- ICAR North Zone Sports Meet at ICAR-NDRI, Karnal from April 16-19, 2016: Dr. Kuldeep Kumar and Mr. Manish Kumar.
- Four months Certificate Course on Soil and Water Conservation and Watershed Management from April 22 to August 21, 2016 at ICAR-IISWC, Dehradun: Dr (s). Karma Beer, Rama Paul and I. Rashmi.
- Review meeting of DIP at the office of OWDM on April 25, 2016: Dr. M Madhu, Dr. D.C. Sahoo and Dr. P.P. Adhikary.
- Inaugural workshop on Monitoring and Evaluation of Micro-Watersheds under SUJALA-III Project at Bangalore on April 25, 2016: Dr. P.K. Mishra.
- Meeting of Governing Board ATMA at Datia on April 27, 2016: Dr. S.P. Tiwari
- District level watershed advisory committee at Nowrangpur on April 29, 2016: Sh. G.B. Naik.
- Six monthly Hindi Rajbhasha meeting at Kota on April 28, 2016: Dr. B.L. Mina.
- *Kisan Gosthi* at KVK Mathura on April 30, 2016: Sh. B Prasad and Sh. Radhey Shyam.
- Zonal Research & Extension Advisory Council meeting of RRTTS, Semiliguda on May 4, 2016: Sh. G.B. Naik.





- 29th Management Committee Meeting of Extension Education Institute, Nilokheri organized at FRI, Dehradun on May 7, 2016: Dr. Lakhani Singh and Mr. Rajesh Bishnoi.
- Akshaya Tritiya Celebration and Farmers Fair 2016 at ICAR-NRRI, Cuttack on May 9, 2016: Sh. G.B. Naik and Sh. S. Kindal.
- PMKSY Training Programme and delivered lecture as a resource person Water Harvesting to IAS/IFS officers at Pune from May 12-14, 2016: Dr. P.K. Mishra.
- Review meeting for the year 2015-16 for externally funded Project under National Mission of Sustainable Agriculture (NMSA) by Ministry of Agriculture & Farmers Welfare at N. Delhi on May 18, 2016: Dr. U.K. Maurya.
- Awareness Programme on Pradhanmantri Fasal Bima Yojana at KVK, Dhakrani, Dehradun on May 18, 2016: Dr. P.K. Mishra.
- 400th Academic Council Meeting at IARI Campus, Pusa, New Delhi on May 20, 2016: Dr. P.K. Mishra.
- XXIV Meeting of ICAR Regional Committee No.1 at GBPUAT, Pantnagar from May 28-31, 2016: Dr (s). P.K. Mishra, P. Dogra, B.L. Dhyani, S.N. Sharma, Sh. Nirmal Kumar and Sh. Laxmi Kant Sharma.
- National Workshop on Jute Geo-textiles at Kolkata on May 30, 2016: Dr S. Manivannan.
- Circle level training on Capacity Building of Front Line Forest Officials for implementation of soil moisture conservation programme on hilly forest blocks in Koraput Forest circle organized by Regional Chief Conservator of Forest, Koraput, Odisha on June 1, 2016: Dr. M Madhu and Sh. G. W. Barla.
- *Kisan Mela* organized by ICAR-IGFRI, Jhansi on June 2, 2016: Dr (s) R.S. Yadav, Dev Narayan, Rajeev Ranjan, Govind Prasad and N.K. Sharma.
- PMKSY Training Programme and delivered lecture as a resource person on Best Practices for Rain Water Harvesting to IAS/IFS officers at Guwahati organized by NIRD&PR, Hyderabad: June 2-6, 2016: Dr. P.K. Mishra.
- 3 days training programme on Integrated Watershed Management Project at ICAR-IISWC, Dehradun during June 14-16, 2016: Mr. Rajesh Bishnoi.
- Seminar on Seven Million Dream- One Nation organized by Institution of Engineers (Sunabeda Chapter) on June 5, 2016: Dr. Ch. J Dash.
- RC Udhagamandalam participated in Farmers Fair and Awareness Programme on Pradhan Mantri Fasal Beema Yojana on June 7 and 22, 2016 at KVK, Vivekanandapuram, Karamadai, Coimbatore and UPASI-Krishi Vigyan Kendra at Connoor: Dr (s). O.P.S. Khola and S. Manivannan.
- Delivered lecture on Spring Rejuvenation and Water Management to the B. Tech. (Agricultural Engineering) students under In-plant training conducted at the RC, IISWC, Koraput on June 8, 2016: Dr. U.K. Maurya.
- Scientific Advisory Committee meeting at KVK, Dehradun on June 8, 2016: Dr. Lakhani Singh and Mr. Rajesh Bishnoi.
- Training of Trainers on Integrated Watershed Management Projects at ICAR-IISWC, Dehradun in collaboration with MANAGE Hyderabad from June 14-16, 2016: Dr. Gambhir Singh.
- Training on Advances in GIS at NRSA, Hyderabad from June 20-July 1, 2016. Dr (s). P. Raja and V. Kasthuri Thilagam.
- Farmers fair on Pradhan Mantri Fasal Beema Yojana at UPASI-KVK Connoor and organised an Exhibition in the programme on June 22, 2016. Dr. K. Kannan and Dr. P. Sundarambal.
- International Seminar on Development and Application of Potentially Important Jute Geo-Textiles organised by National Jute Board (NJB) at New Delhi from June 22-23, 2016: Dr. Harsh Mehta and Dr. S. Manivannan
- XXIII meeting of ICAR Regional Committee- II at NAARM, Hyderabad from June 24-25, 2016: Dr. M Madhu.
- Farmers Training programme at Datia (MP) on June 25, 2016: Dr. S.P. Tiwari.
- Regional RAC meeting of Regional Sericulture Research Station on June 27, 2016: Dr. M Madhu and Dr. P.P. Adhikary.
- 19th Research Advisory Committee meeting of KVK Datia on June 29, 2016: Dr. S. P. Tiwari.
- NMSHE Workshop and discussion with Hon'ble Director-General, ICAR at VPKAS, Almora and attended the Foundation Day of VPKAS, Almora from July 3-5, 2016: Dr. P.K. Mishra and Dr. N.K. Sharma.
- Interface meetings on enhancing the preparedness for agriculture contingencies such as mid-season droughts, high rainfall events, during kharif 2016 for Rajasthan at Jaipur on July 4, 2016: Dr. R.K. Singh.
- 401<sup>st</sup> Academic Council Meeting at IARI, Pusa, New Delhi and meeting with ADG, NRM, Director, DKMA from July 6-8, 2016: Dr. P.K. Mishra.
- Training and Managerial Skill for Agricultural Professionals at Directorate of Extension Education, SKRAU, Bikaner from July 6-15, 2016: Mr. Rajesh Bishnoi.
- Delivered invited lecture on Organic Agriculture: Status, Scope, Criticism and Strategy in Farming System Perspective in the training cum discussion on Status and Scope of Organic Farming in Rajasthan at SKRAU, Bikaner from July 7-08, 2016: Dr. R.S. Yadav.
- Conducted Financial Literacy Awareness Programme on the Occasion of NABARD Foundation Day on July 11, 2016 at Gudalur: Dr. S. Manivannan.
- Monthly Zonal workshop on July 12, 2016 and made presentation on SWC measures to be adopted in young tea plantation and importance of INM: Dr. P. Sundarambal.
- Research Council meeting at Kota Agricultural University, Kota on July 18, 2016: Dr. R.K. Singh.
- RC Udhagamandalam participated in the Stake Holders Meet for Integrated Tribal Development Plan for the Nilgiri district on July 19, 2016.
- RAC meeting of NTRF as a RAC member and stakeholder's consultation meeting at Kolkata from July 19-22, 2016: Dr. P.K. Mishra.
- Delivered seminar on topic entitled Use of GIS Technology in Agriculture and Deficiency Symptoms of Micronutrient in Crop at District Agriculture Office, Jeypore on July 22, 2016: Dr. P.P. Adhikary.
- Indo-Africa Training Program organized by MANAGE, Hyderabad on July 25, 2016: Dr. P.K. Mishra.
- RC Udhagamandalam participated in *Kisan Gosties* on July 25, 2016 in The Nilgiri district, Tamil Nadu.
- *Kisan Gosties* under PMKSY at Balacola and Jegadhala village on July 25 and 28, 2016: Dr (s). K. Kannan and P. Sundarambal.
- ICAR sponsored training programme for technical staff on Agrometeorological data collection, Analysis and Management at



- CRIDA, Hyderabad from July 25 - August 6, 2016: Sh. P.R. Raibole.
- NMSHE-TF6 monitoring committee meeting at NASC Complex, New Delhi on July 26, 2016: Dr. N.K. Sharma.
  - Meeting to review the progress of the NMSHE-Task Force on Himalayan Agriculture, chaired by DDG (NRM) at New Delhi on July 26, 2016: Dr. P.K. Mishra.
  - ITRA Project review meeting as Mentor at IIT, Bhubaneswar (Odisha) from July 27-28, 2016: Dr. P.K. Mishra.
  - Scientific Advisory Committee meeting at KVK, Dehradun on July 29, 2016: Dr. Lakhani Singh and Mr. Rajesh Bishnoi.
  - Delivered invited lecture on Parameterization & Assessment of Greenhouse gases in Integrated Farming System in the training on Carbon Sequestration & Greenhouse gas Measurement in IFS model of AICRP on IFS on August 2, 2016 at ICAR-IIFSR, Modipuram: Dr. R.S. Yadav.
  - Delivered lecture on Technological Options on Resource Conservation for Profitability of Custom Hiring Centres during the model training course organized by Central Institute of Agricultural Engineering, Regional Centre, Coimbatore on August 4, 2016: Dr. S.Manivannan
  - II Task Force Executives Committee for Hydrological Monitoring Network(HMN) and Crop Water Budgeting meeting organized by Directorate of Watershed Management & Soil Conservation, Govt. of Rajasthan at Jaipur on August 4, 2016: Dr. Shakir Ali.
  - ICAR- Staff training programme on Use and Maintenance of Advanced Instruments in Soil and Plant Analysis at ICAR- Indian Institute Soil Science, Bhopal from August 8- 13, 2016: Dr. Gambhir Singh.
  - Consultation Workshop on Water Conservation and Management at LBSNAA (Lal Bahadur Shastri National Academy of Administration), Mussoorie on August 18, 2016. Dr. Ambrish Kumar.
  - Consultation Workshop on Creation of Teaching Module on Water Management at LBSNAA, Mussoorie on August 18, 2016: Dr. P.K. Mishra.
  - PMKSY Training Programme and delivered lecture as a resource person on Watershed Development Programmes – Some success stories on August 22, 2016 at ICAR-IIWM, Bhubaneswar from August 21-23, 2016: Dr. P.K. Mishra.
  - PMKSY Training Programme and delivered lecture as a resource person on Monitoring and Evaluation of Watershed Development Programmes on August 22, 2016 at ICAR-IIWM, Bhubaneswar from August 21-23, 2016: Dr. P. Dogra.
  - RC Udhagamandalam participated in Farmers Mela at Sugarcane Breeding Institute, Coimbatore, Tamil Nadu from August 26-27, 2016.
  - Meeting of Hon'ble Union Minister of Agriculture & Farmer Welfare during *Kisan Mela* at ICAR-IISWC, Research Centre, Kota from August 26-29, 2016: Dr. P.K. Mishra.
  - RC Vasad participated in *Kisan Mela/Exhibition* organized at ICAR-IISWC, Research Centre, Kota on August 28, 2016
  - *Kisan Diwas* at ISWC RC Kota on August 28, 2016: Sh. Radhey Shyam and Sh. Ramesh Pal.
  - Task Force Executives Committee for Hydrological Monitoring Network (HMN) and Crop Water Budgeting Programme organized by Commissionerate of Watershed Development & Soil Conservation Department, Govt. of Rajasthan at Pune, Maharashtra from August 29-30, 2016: Dr. Shakir Ali.
  - Delivered lecture on Managing Forests in the Contest of Soil and Water Conservation in the workshop on Contemporary Forest Management For Multiple Functions In The Perspective of National Working Plan Code, 2014 for SFS officers from August 29, 2016 - September 3, 2016: Dr S. Manivannan.
  - Brainstorming Meet on Control on Forest Fire : An Integral Step at Forest Research Institute, Dehradun on August 30, 2016: Dr (s) P.K. Mishra, P.R. Ojasvi, Ambrish Kumar, B.L. Dhyani and R. Kaushal.
  - PMKSY Training Programme as a resource person and delivered lecture on Watershed Development Programmes – Some Success Stories on September 7, 2016 at ICAR-IIWM, Bhubaneswar and meeting with Secretary (Forest), Govt. of Odisha for discussion on NRM activities from September 6-8, 2016: Dr. P.K. Mishra.
  - PMKSY Training Programme and delivered lecture as a resource person on Monitoring and Evaluation of Watershed Development Programmes on September 7, 2016 at ICAR-IIWM, Bhubaneswar from 6-8 September, 2016: Dr. P. Dogra.
  - 3rd Board of Management Meeting of Uttarakhand University of Horticulture & Forestry, Bharsar, Pauri Garhwal (Uttarakhand) at Hotel Aketa, Dehradun on September 14, 2016: Dr. P.K. Mishra.
  - Interaction meeting of Vice chancellor, Secretary, Director and Head of the Department with Sh. Radhamohan Singh, Hon,ble Union Minister of Agriculture and Farmers Welfare, Gol on September 2, 2016: Dr. M Madhu.
  - Brain storming meeting on Minimizing Water use in Agriculture organized jointly by ICAR-Indian Institute of Water Management and NAAS Regional Chapter, Bhubaneswar on September 3, 2016: Dr. M Madhu.
  - 49th Engineers Day held at HAL, Sunabeda on September 15, 2016: Dr (s). M. Madhu and D.C. Sahoo.
  - 23<sup>rd</sup> Zonal workshop of KVK and made presentation on Soil and Water Conservation Technologies for Madhya Pradesh, Chhattisgarh and Odisha at ICAR- Central Institute of Fresh Water Aquaculture, Bhubaneswar from September 3-5, 2016: Sh. P. Jakhar
  - Meeting organized by MSSRF, Jeypore for imparting training to cluster level water user group on Use of Safe Drinking Water And Utilization Of Harvested Rain Water in a Sustainable Manner on September 2, 2016: Dr. P.P. Adhikary.
  - 24th Meeting of ICAR Regional Committee-VI at CAZRI, Jodhpur from September 13-14, 2016: Dr. R.K. Singh
  - Training programme on Climate Change and Agriculture organized by NAARM, Hyderabad at IISWC, Dehradun during September 14-17, 2016: Ms. C. Jana.
  - Application of Remote Sensing and GIS in Natural Management from September 20- 29, 2016 at ICAR-IISWC, Dehradun: Sh. Ashok Kumar and Dr. Gambhir Singh.
- #### TELEVISION/RADIO TALKS
- Dr. S. P. Tiwari, Pr. Scientist, RC Datia delivered TV talk on Soil and Water Conservation Techniques for Bundelkhand Region on RS TV on April 25, 2016.
  - Dr. Ashok Kumar, Dr. B.L. Mina and Dr. Kuldeep Kumar took part in panel discussion on *Krishi ko labhkari banana ke liye Mrida Prabandhan* at AIR, Kota which was broadcasted from AIR, Jaipur on May 20, 2016.
  - Dr. G.L. Meena delivered a radio talk on *Mitti Parkshan: Aaj Ki Aavasyakta* at AIR, Kota on May 20, 2016.
  - Dr. R.K. Singh delivered live phone - in radio talk on *Mrida Avam Jal*





*Sarakshan-Aaj Ki Avashyakta* at AIR, Kota on June 1, 2016.

- Sh. H.R. Meena delivered live phone - in radio talk on *Naye Bagiche Lagan ke Vaigyanik Tareeke* at AIR, Kota on June 1, 2016.
- Dr. Ashok Kumar delivered radio talk on *Krishi ko Aarthik Aadhar Se Labhkari Kaise Banaye* at AIR, Kota on June 2, 2016.
- Dr. B.L. Mina delivered radio talk on “Soil Health Card ki Avashyakta Evam Upyogita” at AIR, Kota on June 3, 2016.
- Dr. Kuldeep Kumar delivered a radio on *Kharif Faslon Mai Kam Lagat Mai Adhik Labh Kese Le* at AIR, Kota on June 6, 2016
- Dr S. Manivannan delivered a radio talk on Water Harvesting and Management at FM Radio, Ooty on August 9, 2016.
- Dr. Harsh Mehta delivered a radio talk on Lahi ki unatshil prajatian evam unki buvai at AIR, Najibabad on September 20, 2016.

#### DISTINGUISHED VISITORS

**Agra:** Dr Bhisham Pal, Principal Rama Singh Maha Vidhyalaya; Nagla Sikander, Firozabad (Rtd Professor RBS College, Bichpuri Agra.

**Chandigarh:** Sh. Chhabilendra Roul, Additional Secretary (DARE) & Secretary (ICAR)

Dehradun: Dr. V.N. Sharda, Member, ASRB; Dr Savita (IFS), Director, Forest Research Institute (FRI) and Vice-Chancellor, FRI Deemed University; Dr. A.K. Sikka, Ex-DDG, NRM; Dr. A. K. Singh, DDG (Agril. Extension), ICAR, New Delhi, Dr C. M. Pandey, Additional Commissioner (NRM), DAC, Ministry of Agriculture and Farmers Welfare; Dr. K.M. Manjaiah, Associate Dean, PG School; Dr. Indarmani Mishra, Head, Agril. Engineering; Dr. S.K. Singh, Head Fruits & Horticultural Technology, IARI; Dr. Man Singh, Professor, Water Science & Technology; Dr. S.K. Jha, Professor, Post Harvest Technology.

**Koraput:** Dr Suchitra Bhandari Business Head, BTTL, New Delhi; Dr Kamka Trivedy, Director, CSR&TI, Berhampore; Dr D.P.Das Mohapatra, Scientist- C, REC Dhenkikote (Odisha); Sh. K.V. Uma Maheshwar Rao, Dy. Registrar, Central University of Odisha, Koraput; Pravat Kumar, INAS NAD, Sunabeda; Dr P.K.Pattajoshi, Manger (Env.), NALCO, Odisha

**Kota:** Hon’ble Sh. Radha Mohan Singh, Union Agriculture and Farmer’s Welfare Minister, GOI, New Delhi; Sh. Om Birla, MP, Kota-Bundi, Kota; Sh. Ajay Singh Kilak, State Minister Co-operative, GOR, Rajasthan; Mrs. Chandra Kanta Megawal, MLA, Ramganj Mandi, Kota; Dr. G.L. Keshwa, VC, KAU, Kota; Dr. Jitenrda Kumar, Director, ICAR-DMAPR, Anand; Dr. R.N. Bhakar, IFS, Udaipur; Sh. U.C. Prasad, CFAO, INST, DST, Delhi; Dr. R.N. Goswami, Ex-Director (Extension), SKRAU, Bikaner; Dr. I.J. Gulak, Dean & Registrar, SKRAU, Bikaner; Dr. I.J. Mathur, Director, ATIC, MPUAT, Udaipur; Dr. Baij Nath, Director, MPUAT, Udaipur; Dr. Mrs Asha Yogi, NRCSS, Ajmer; Dr. Om Prakash, Ex-DSCO, Dept. of Agril., Haryana; Dr. A. Mishra, Professor & Head, CHF, Jhalawar;

**Udhagamandalam:** Dr. Mathew Zaharias, Deputy Project Director, ATMA Kottayam; Dr. B.C. Nagaraju, Bangalore University; Dr. O.P. Yadav, Director, CAZRI, Jodhpur; Dr. P. Rajamani, TNAU, Coimbatore; Dr. Shivamma, Bangalore; Dr. Sivakumar & Dr. M. Tilak, FCRI, MTP; Students from K.S.R. College of Civil Engineering, Tiruchangodu; ATMA farmers from Kozhikode, Kerala; SFS officer trainees, CASFOS, Coimbatore; Assistant Director of Horticulture, Thalavadi; Assistant Director of Agriculture, Vayanadu, Kerala.

#### PERSONALIA

##### Appointments

- Dr. R.S. Yadav, Head joined RC Datia from ICAR-IIFSR, Modipuram.
- Sh. Deepak Singh Scientist (SWCE) joined H&E Division, Dehradun

- Dr. Gaurav Singh, Scientist (SWCE) joined RC Vasad.
- Dr. O.P. Meena, Scientist (Soils) joined RC Vasad.
- Dr. (Mrs) Trisha Roy Scientist (Soils) joined HRD & Social Science Division, Dehradun.

##### Promotions

- Dr. D. Mandal promoted to Pr. Scientist at Dehradun.
- Dr. Ram Prasad and Pankaj Panwar promoted to Pr. Scientist at RC Chandigarh.
- Dr. V.C. Pande, promoted to Pr. Scientist at RC Vasad.
- Dr. P. Sundarambal and K. Rajan, promoted to Pr. Scientist at RC Udhagamandalam.
- Sh. S.K. Sinha promoted to Asstt. Chief Technical Officer at Dehradun.
- Smt. Sarita Gupta and Sh. K.R. Joshi promoted to Sr. Technical Officer at Dehradun.
- Sh. Kamlesh Kumar promoted to Sr. Technical Officer at RC Kota.
- Sh. D.L. Chaudhary promoted to AAO at RC Datia.
- Sh. A.K. Bagasi promoted to AAO at RC Kota.
- Smt. Meenakshi promoted to PA at Dehradun.
- Smt. Suman Dimri and Sh. Krishan Kumar promoted to Assistant at Dehradun.
- Sh. Kuldeep Singh promoted to UDC at Dehradun.
- Smt. Revathi promoted to UDC at RC Udhagamandalam.
- Sh. Kailash Chan, Sh. Ram Prasad, Sh. Ram Singh, Sh. Shyam Lal, Sh. Gaya Prasad, Sh. Ved Ram, Sh. Prem Pal, Sh. Rakesh Singh, Smt. Premwati promoted to SSS at RC Agra.
- Smt. Shanthamma and Smt. Chowramma promoted to SSS at RC Bellary.
- Sh. Daya Ram; Sh. Rama Kant and Sh. Santosh Kumar promoted to SSS at RC Chandigarh.
- Sh. Balvir Singh, Sh. Ramesh Kumar, Sh. Tej Bahadur, Sh. Vikram Singh, Sh. Dinesh Chand promoted to SSS at Dehradun.
- Sh. A. Devaraj, Sh. S. Sunderraj, Sh. R. Chandran, Sh. S. Natesan, Sh. S. Sekar, Sh. R. Srinivasn and Mrs. I. Rani promoted to SSS at RC Udhagamandalam.

##### Transfers

- Dr. Om Prakash, Pr. Scientist (Agri. Extn.), transferred from RC Datia to ICAR-IARI, N. Delhi.
- Dr B. K. Rao, Sr. Scientist (SWCE) transferred from RC Vasad to ICAR-CRIDA, Hyderabad.
- Sh. Prabhat Kumar, Scientist (Soils) transferred from RC Datia to ICAR-NRC Litchi, Muzaffarpur, Bihar.
- Sh. K. Sunil transferred from RC Udhagamandalam to ICAR-CTCRI, Trivandrum.
- Sh. Shailendra Kumar Yadav, STO transferred from RC Datia to ICAR-IISWC, Dehradun.

##### Retirements

**Agra:** Sh. A.P. Gawande, Chief Technical Officer; Sh. Jamuna Prasad, Technical Officer and Sh. Krishan Bihari, TSCL.

**Dehradun:** Sh. Nirmal Kumar, Chief Technical Officer; Sh. Laxmi Kant Sharma, Sr. Technical Officer; Sh. Sukhpal, SSS; Sh. Vijay Singh, SSS; Sh. Anil Kumar, SSS. Udhagamandalam: Sh. S. Lakshmanan SSS; Sh. K. Chandran, SSS and Sh. P. Prabhakaran SSS.

##### Obituaries

Sh Mean Bahadur, RC Agra and Sh. Ali Hasan, Dehradun.

IISWC express heartfelt condolences to the bereaved families.

**In News**



**TECHNOLOGY**

**Peach Based Agri-Horticulture Land Use System for Degraded Shivaliks**

Shivalik region covers an area of more than 3 million hectares in the states of Jammu & Kashmir, Punjab, Himachal Pradesh, Haryana, parts of Uttarakhand, and Chandigarh (UT). The region receives an annual rainfall of more than 1000mm, the soils are sandy loam in texture and are low in soil fertility. Soil erosion is the main problem of the region during rainy season. Peach (*Prunus persica* L.) cultivation in degraded Shivalik lands alongwith most compatible intercrop (fodder crop) and moisture conservation practice for higher growth and production potential of the tree crop were studied since 2008 at Research Farm of ICAR-IISWC Research Centre Chandigarh. Low chilling peach cultivar Shan-i-Punjab was planted at 6m x 6m spacing consisting of 278 plants/ha, in 1m<sup>3</sup> size pits during 3rd week of January 2008. Intercrops of bajra, sorghum and cluster bean were sown in July-August 2008. *In-situ* moisture conservation practices - normal basin (as control), trench (1m x 0.3m x 0.3m; l x b x d), and circular trench (1m x 0.3m; dia x depth) were tested. For resource conservation studies, data on run off and sediment loss was recorded with the help of Ramser samplers in a plot size of 18m x 18m. A total of 12 no. treatments were imposed.

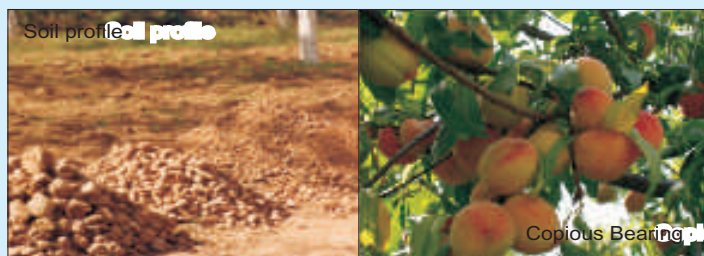
The findings of 7 year old study revealed that plant height showed an increasing trend both in pre-bearing (2008 and 2010) and post-bearing stage (2011-15). Among all the treatments average plant height ranged from 2.20 m (2008) to 4.84m (2015) and was found maximum (5.55m) in T12 (peach + cluster bean + circular trench) in 2015. Basal girth of plants also showed the same trend and varied from 4.82 cm (2008) to 75.0 cm (2015) in treatment T1 (Control). The intercrops were cultivated from 2008-2012 and after that no intercrop was sown due to shading effect of plants because of their dense foliage and hindrance in the various intercultural operations. Fodder yield of sorghum, bajra and cluster bean decreased from 28.5 to 7.6 t/ha, 26.0 to 8.6 t/ha and 12.6 to 3.9 t/ha, respectively over the period from 2008-2012. No serious pest problem was observed except Peach Leaf Curl and Gummosis for which Rogor (0.1%) and Copper Sulphate (0.1%) + Lime was used to control this problem. During pre-bearing stage, runoff varied from 26.95% to 4.25%, minimum in T12 and maximum in T1 (Control) and 10.82 to 3.57% in the post-bearing stage. The same decreasing trend was exhibited by

sediment loss. Among all the different treatments, minimum run off (3.57%) and sediment loss of (0.69t/ha) was obtained in combination of peach + circular trench + cluster bean (T12).

The gross revenue obtained by open auction of peach fruits showed an increasing trend of Rs. 13000, Rs. 25000, Rs. 1.30 lacs, Rs. 3.30 lacs, Rs. 4.30 lacs, Rs. 5.60 lacs and Rs. 5.60 lacs during the year of 2010, 2011, 2012, 2013, 2014, 2015 and 2016, respectively and gave a gross revenue of Rs. 20.48 lacs in a span of 7 years. During 2016, gross revenue obtained was Rs. 5.60 lacs from auction of 200 bearing peach plants and maintenance cost was Rs. 86,300/- which gave net returns of Rs. 4,73,700/-. Plant productivity varied from 4.43 t/ha to 32.5 t/ha over the years from 2011 to 2015 and revenue obtained per plant varied from Rs. 96 to Rs. 2800/plant for the same period.

Scope of Technology: This technology can be implemented in the Shivaliks of Jammu, Punjab, Haryana, Himachal Pradesh, Chandigarh (UT) and Uttarakhand experiencing sub-tropical climate with the availability of low chilling hours during winter season. Low chilling cultivars of peach in degraded Shivaliks have great potential in terms of highest production per unit area and helps in resource conservation when intercropped with fodder grasses during initial years. There is also good scope for shade loving crops viz; turmeric, colocasia and ginger after 4-5 years of plantation. In this study, peach + circular trench + cluster bean combination was found most compatible combination for resource conservation producing minimum run off and soil loss, maximum fruit yield per plant, maximum B:C ratio of 5.25 which gave a gross revenue of 20.48 lacs in a period of 7 years.

Peach orchard can be established by investing Rs. 51000/ha by ex-situ grafting method and this cost can further be reduced to Rs. 44000/ha by In-situ method of orchard establishment where growers can save upto Rs. 7000/ha (13.73%).



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