



भाकृअनुप-भा.ज.प्र.सं. समाचार

# ICAR-IIWM News



Vol. 16, No. 1

January-June, 2015



## Dr. Sunil Kumar Ambast Joins as Director, ICAR-IIWM

Dr. Sunil Kumar Ambast joined as Director, ICAR-Indian Institute of Water Management, Bhubaneswar on 22<sup>nd</sup> January 2015. Born on October 15, 1965 at Janjhgir, Bilaspur, Chhattisgarh erstwhile Madhya Pradesh. Dr. Ambast completed his B. Tech. (Ag. Engg.) and M. Tech. (Soil & Water Engg.) from JNKVV, Jabalpur in 1986 and 1988, respectively. He did Ph.D. in Water Resources Engineering from Indian Institute of Technology, New Delhi in the year 2001.

Dr. Ambast has been working in the area of soil salinity and agricultural water management under sub-humid and humid rainfed, sub-humid and semi-arid irrigated, coastal and tropical island conditions. These involved water resource planning, development and management issues at field, system and basin scales. He developed expertise in use of remote sensing and geographic information system in management of large irrigation systems. Before taking over the position of Director of this prestigious Institute, Dr. Ambast worked as the Project Coordinator of AICRP (SAS & USW) at ICAR-CSSRI, Karnal since 2012 and as HOD (NRM division) and Director (Acting) of ICAR-CARI, Port Blair. Dr. Ambast has the distinction of receiving several honours and awards in recognition of his excellent academic and research contributions including Vasant Rao Naik Award and Jawaharlal Nehru Memorial Fellowship. He is a Fellow of the Indian Society of Coastal Agricultural Research (ISCAR).

## Canal Hydraulics Appraisal and Optimal Crop Planning at Distributary Level in Hirakud Canal Command Area

Seepage being the most governing process by which water is lost in the canal system, the accurate estimation of conveyance loss is vital for proper management. A case study carried out in Hirakud canal command area at distributary level to assess the canal

hydraulics and its impact on overall distribution in the crop fields. While studying the conveyance loss in lined and unlined canal reaches in Bargarh ditributary, conveyance loss of 27.5 l/s in 100 m and 181.25 l/s in 100 m is obtained in lined and unlined

canal sections, respectively. Similarly, irrigation application efficiency was within the range between 28.7-53.1%. Thus, augmentation of irrigation infrastructures vis-à-vis prudent crop planning is of paramount importance for increasing the overall efficiency in irrigation commands. An optimal crop planning in the Hirakud command area considering different crop scenarios so that improvement in irrigation efficiency with equitable water distribution should be feasible was developed. Among various scenarios, the cropping pattern obtained under Scenario – II, i.e. to utilize the maximum area for cultivation with the constraint of water availability for each outlet was found to be feasible for the command area for optimal land and water utilization and generation of requisite employment. However, if the affinity of the farmers towards heavy duty crop cannot be avoided, then Scenario – III i.e. to utilize the maximum area for cultivation with the constraints like water availability for each outlet should meet the demand and at least one-third of the cropped area should be paddy as per choice of the people may be accepted.



### Visit of Secretary DARE and Director General, ICAR

Secretary DARE and Director General, ICAR, Dr. S. Ayyappan visited ICAR-IIWM on 12<sup>th</sup> May, 2015 and graced the inaugural function of 28<sup>th</sup> Foundation day celebration of ICAR-IIWM, Bhubaneswar.

He emphasized the importance of water management research for ensuring future food, nutrition and water security of the country. He also felt the need of improving access to information and knowledge sharing about proven water management technologies and having more awareness programmes in the field in order to enhance their adoption.



On Foundation Day evening, a cultural program was organized at the institute in which children and family of staff participated.



## Visit of Deputy Director General (NRM), ICAR

Dr. A.K. Sikka, DDG (NRM), ICAR, New Delhi visited ICAR-IIWM during 30<sup>th</sup> May to 1<sup>st</sup> June 2015 in review meeting of 'Consortia Research Platform on Water and AICRP on Irrigation Water Management'. He inaugurated IIWM Digital Kiosk Information System at the Institute. He emphasized to undertake extensive field work under different research programmes of the Institute and validate the results generated by geo-spatial tools, modeling and decision support system with the field experiment. Recognizing the importance of utilization of waste water in agricultural perspectives owing to growing pressure on freshwater resources of the country. He asked the scientists to prepare water quality guidelines for agriculture under Indian conditions and also to undertake research projects related to bioremediation of poor and marginal quality water.



### RAC Meeting

The third meeting of sixth Research Advisory Committee of ICAR-Indian Institute of Water Management (formerly Directorate of Water Management) was organized during 13-14 March 2015. The meeting was chaired by Dr. S.R. Singh, former VC, RAU, Pusa and Project Director, DWMR, Patna. Other RAC members were

Dr. S.D. Sharma, Ex-Dean (Ag. Engg.) OUAT, Bhubaneswar; Dr. S.K. Tripathi, Professor, IIT Roorkee; Dr. K.N. Tiwari, Professor, IIT Kharagpur; Dr. S.K. Chaudhari, ADG (S & WM), ICAR and Dr. S.K. Ambast, Director, ICAR-IIWM. Director welcomed the Chairman and all other members. Chairman in his opening remark recapitulated the genesis of ICAR-IIWM and handed over the first concept paper in the form of a technical bulletin of ICAR-IIWM authored by him to the Director. Director presented the progress and achievements of the institute and AICRPs during 2014-15 followed by presentation of work under different programmes by programme leaders and AICRPs by Principal Scientists of AICRPs.



### IRC Meeting

Institute's Research Council (IRC) meeting was organized during 4-5<sup>th</sup> June 2015. The results of the on-going research projects were presented and deliberated in the meeting and new research project proposals were presented and discussed.

### Workshops Organized

- An Inception workshop on 'Agri-Consortia Research Platform on Water' was organized at ICAR-IIWM, Bhubaneswar during 25-26 March, 2015. Dr. S.K. Chaudhary, ADG (SWM) from NRM Division of ICAR, New Delhi graced the occasion.



- Final International Workshop under the project on 'Reuse options for marginal quality water for urban and peri-urban agriculture in the gambit of WHO guidelines' funded by Department of Science and Technology, GoI, New Delhi was organized during 9–12 March, 2015.



- Sensitization workshop on 'Groundwater Management' was conducted on 26<sup>th</sup> January 2015 at Sugo, Jaleswar, Odisha with the participation of the shallow tube well users of the blocks.



### Short Course /Training Organized

One week training program on 'Micro-irrigation and Protected Cultivation for Efficient Use of Water and Enhanced Crop Productivity'

functionaries of Water User Associations (WUAs) during 16-21 March 2015.

### Brainstorming Session

On the occasion of commemoration of foundation day celebration of ICAR-IIWM, Bhubaneswar a brainstorming session was organized on 'Application of Modern tools for R & D in Agricultural Water Management' on 12<sup>th</sup> May 2015. Dr. Sandeep Tripathy, Chief Executive of ORSAC, Govt. of Odisha, Bhubaneswar chaired the session. Dr. Trilochan Mohapatra, Director, ICAR-NRRI, Cuttack delivered an invited lecture on 'Emerging trends of use of modern tools for enhancing agricultural productivity'.

### Field Day cum Farmers' Awareness Programme Organized

- One day farmers' training programme cum farmer researcher interface meet was coordinated on 'Improving productivity of waterlogged areas' at Raisar village, Garadpur block, Kendrapara district of Odisha on 30<sup>th</sup> March, 2015. Dr. S.K. Ambast, Director, ICAR-IIWM was the chief guest on this occasion.



- Two farmers' interactive meet cum field day program was organized at Ainlatunga and Bilaikani villages of Balangir district on 28<sup>th</sup> February and 28<sup>th</sup> March 2015. Farmers interacted with the experts on need of soil analyses, cropping practices, micro-irrigation technique and pest management in the fields.



- Two farmers' training program on crop diversification for livelihood improvement at Sogar and Chandrasekharapur villages in Dhenkanal district of Odisha were organized on 20<sup>th</sup> and 21<sup>st</sup> March 2015. More than two hundreds farmers participated in the meeting and discussed on water conservation techniques, vegetable production practices, plant protection etc. for enhancing agricultural water productivity at farm level.



- A Field day on 'Mitigating excess water situation in coastal seasonal waterlogged areas' was organized by ICAR-IIWM, Bhubaneswar at Satyabadi, Puri district on 30<sup>th</sup> May 2015. The chief guest of the function, Dr. A.K. Sikka, DDG (NRM), ICAR visited on-farm experimental sites where Institute has developed integrated technology on crop and water management to mitigate excess water situation in coastal flood-prone and seasonal waterlogged areas. He also surveyed different waterlogged ecologies in Puri district and urged the scientists to prepare a geo-spatial map depicting the depth and duration of waterlogging to accommodate appropriate technology in waterlogging ecosystem.

- A field day on 'Scaling-up of technologies developed by ICAR-IIWM, Bhubaneswar for enhancing water productivity in coastal flood prone and waterlogged areas' was organised on 18<sup>th</sup> April 2015 at Alisha village, Sukal G.P., Satyabadi, Puri. The field day was presided by Dr. S. K. Ambast, Director, ICAR-IIWM, Bhubaneswar and the chief guest of this function was Shri Aravind Agrawal, Collector, Puri.



### Exhibition Organized

- Technologies / achievements of the Institutes on various aspects of water management were disseminated through displaying exhibits in 'India Water Week' from 14 – 17 January 2015 at New Delhi.
- Scientists of ICAR-IIWM interacted with the researchers and other stakeholders on various issues of on-farm water management through displaying Institute's achievements in the exhibition on 'Management of Sustainable Livelihood Systems' during Global Social Science Conference-2015 jointly organized by International Society of Extension Education and OUAT, Bhubaneswar during 14-17 February, 2015.

- Showcased the achievements / technologies of the Institute to fifty progressive farmers of Balaghat district, M.P. in their exposure visit to this Institute on 16<sup>th</sup> March 2015.



- An exhibition stall was displayed at ICAR-NRRI, Cuttack on occasion of the Foundation Day and Dhan Divas of ICAR-NRRI at Cuttack on 23<sup>rd</sup> April 2015. Technologies developed by the Institute and models on drip irrigation system, rubber dam and tank-cum-well system were exhibited and explained to the visitors.

### World Water Day-2015

ICAR-IIWM celebrated World Water Day-2015 on 23<sup>rd</sup> March 2015. On this Occasion, Dr. A.S. Kereketta, Scientist-E of RMRC, Bhubaneswar delivered lecture on 'Water for health'.



### Summer Training Programme

- One month summer training program on 'Agricultural Water Management' for five B.Tech. Students of JNKVV, Jabalpur was organised at ICAR-IIWM during May 1-31, 2015.
- One month summer training program for three M.Tech. (Agril. Engg) students of OUAT, Bhubaneswar was organised during 16 May - 15 June, 2015.

- One month training programme for five B.Tech Students of Dr. Ulhas Patil College of Agril. Engg & Tech., Jalgaon, Maharashtra was organised during 1-30 June, 2015.

### Republic Day Celebration

ICAR-IIWM celebrated 66<sup>th</sup> Republic Day of India on 26<sup>th</sup> January 2015. On this occasion, Director of the Institute unfurled our national flag and he urged all staff members of IIWM to work hard to make institute as well as country proud.



### Swachha Bharat Abhiyan

ICAR-IIWM actively participated in *Swachh Bharat Abhiyan* which was launched on the occasion of Birth Anniversary of Father of Nation, Mahatma Gandhi, on 2<sup>nd</sup> October 2014. Director and staff of the Institute initiated the *Swachh Bharat Abhiyan* at its main campus by taking pledge and conducting intensive cleanliness drive. On the occasion of the New Year Day on 1<sup>st</sup> January 2015, human chain was formed and pledge on *Swachh Bharat Abhiyan* was taken. Also, *Swachh Bharat Abhiyan* was conducted by scientists of ICAR-IIWM at a tribal village namely Birjaberna, Sundargarh



district of Odisha on 20<sup>th</sup> March 2015. The Director and staff of the institute participated in cleanliness drives organized at the Institute on 21<sup>st</sup> February, 21<sup>st</sup> March, 18<sup>th</sup> April and 20<sup>th</sup> June, 2015.

### Field Visit for European Scientists

Dr. Thilo Streck, Professor of Bio geophysics, Institute of Soil Science and Land Evaluation, University of Hohenheim, Germany and Dr. Katarzyna Kujawa Rooleveld, Wageningen University, The Netherlands visited waste water treatment plants at Puri, Cuttack and farmer's field at Jaypurpatna during 11 - 12 March 2015.



### Awards/Recognitions

- Dr. S.K. Jena, Principal Scientist and his team was awarded with 'Best Poster Award' for the paper entitled 'ICAR flexi-check dam for sustainable livelihood security for small holder farmers' at 12<sup>th</sup> Agricultural Science Congress held at ICAR-NDRI, Karnal during 3-6 February 2015.



- Dr. K.G. Mandal has been elected as Sectional Recorder for the Section of Agriculture and Forestry Sciences in the 102<sup>nd</sup> & 103<sup>rd</sup> Sessions of Indian Science Congress at Mumbai and Mysuru.

### Joining/Promotion/Transfer/Retirement

- Mrs. Prativa Sahu, Scientist (Fruit Science) joined the institute on 11<sup>th</sup> May, 2015 (FN).
- Dr. M. K. Sinha and Dr. K. G. Mandal have been promoted to Principal Scientist through CAS of the ICAR w.e.f. 15.06.2013 and 26.07.2013, respectively.



### Agricultural Water Management- Challenges Ahead

Agriculture is the important sector of Indian economy, accounting for 14% of the nation's GDP, about 11% of its exports, about half of the population relies on agriculture as its principal source of income. Land and water are the key resources for agricultural production systems. There has been mounting pressure on land and water. India accounts for only about 2.4% of the world's geographical area and 4% of world's renewable water resources, whereas it supports about 18% of the world's human population and 15% of livestock. The net sown area has remained static about 140 M ha in past 40 years. The number of farmers has increased from 70 to 140 million. About 10 million farmers are added in every five years. This has resulted in a sharp decline in average size of land holdings over the years and for all classes put together it has come down to 1.16 ha (2010-11) from 2.28 ha (1970-71). Average rainfall in the country is 1183 mm, 75% of it occurs in about 100-120 days; 68% of the sown area is subjected to drought with varying degrees. Per capita availability of water per year is steadily declining from 5177 m<sup>3</sup> in 1951 to 1820 m<sup>3</sup> in 2001, 1588 m<sup>3</sup> per year in 2010 due to increase in population, rapid industrialization, urbanization, cropping intensity and declining groundwater table; and it is expected to decline to 1341 and 1140 m<sup>3</sup> by the years 2025 and 2050, respectively. The problems are likely to aggravate in future if

suitable measures are not adopted. There has been a significant achievement in water resources development, a wide gap still exists between IPC (123.3 M ha) and IPU (91.5 M ha); hence, it is a great challenge to bridge the gap by evolving innovative technologies as well as use of existing potential options. There is need for focused research directed towards enhancing irrigation efficiency from current level of about 30-40% to at least 60% by proper maintenance and modernization of existing infrastructures, participatory irrigation management, and efficient irrigation & crop management practices. Excessive extraction of groundwater in northern Indian states viz. Rajasthan, Punjab and Haryana is a concern; a reliable estimate shows that groundwater has been depleted at a rate of 54 ± 9 km<sup>3</sup> per year between April 2002 and June 2008. Hence, reducing over-exploitation of groundwater is a challenge. On the other hand, groundwater development in eastern Indian states viz. Assam, Bihar, Chhattisgarh, Odisha and West Bengal remain low (22-43%), which should be enhanced to the level of the country average (61%).

There are pressing problems of climate change on water resources and agriculture. Increased climate variability has made rainfall patterns more inconsistent and unpredictable, which needs appropriate adaptation mechanisms. Due to climate change, Himalayan snow and ice, which provide vast amounts of water for agriculture, are expected to decline by 20% by 2030. Cost effective innovations are required for '*more food, more income with less water*'; development of mechanism for flood and drought proofing of farming; evolving technologies for safe use of wastewater in agriculture; development of irrigation systems with solar energy, management of waterlogged areas and wetland ecosystems for enhancing productivity. Finally, it is essential imparting training and dissemination of information, knowledge and skill development, capacity building of each farmer on water management techniques.

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