



भारत - भा.ज.प्र.सं. समाचार

ICAR-IIWM News



ICAR - Indian Institute of Water Management

Vol. 18, No. 1

January-June, 2017

Director's Column

Water, Energy and Food Security Nexus: Challenges Ahead



The water, energy, and food share a lot in common, including inaccessibility to billions of people, rapidly growing demand, strong interdependencies with climate change, different regional availability, and variations in supply and demand. Water, energy, and food are interlinked in many ways. For example, water is required to produce energy and food, energy is required to produce water and food, and food can be a source of energy. Growing natural resource scarcity, and changing consumption trends has increased the urgency to act through the utilization of integrated approaches that encompasses all three sectors. Therefore, the nexus approach i.e., integrated policies related to water, energy, and food is required in the face of growing concerns over the future availability and sustainability of these resources. There is a need to consider both human well-being and environmental outcomes, that is, the environment has to have 'a seat at the table' or integral part for nexus analyses.

In recent period, with the increase standard of living of middle-income group, there has been a sudden and sharp increase in the water consumption. The global withdrawals in 2009 stood at 4500 BCM of which 70% was used for agriculture, 17% for industry, and 13% for municipal and domestic purposes. The projected demand will be of 6900 BCM by 2030 under the business-as-usual scenario i.e., 40% more than the current demand. A report by the United Nations indicates that water demand will increase by about 55% by the year 2050 due to the growing needs in the manufacturing sector, thermal power plants, and domestic use. Hence, effective demand-side management needs effective policy interventions. The Sustainable Energy for All (SE4ALL), launched by UN Secretary General in 2011 has three main objectives to be achieved by 2030: ensure universal access to modern energy services, double the global rate of improvement in energy efficiency, and double the share of renewable energy in the global context.

In the agriculture sector, there are concerns on whether the world would be able to produce enough food for the growing population due to decrease in arable land and water availability. The world's average per capita availability of food for direct human consumption to meet nutritional requirement was 2770 kcal/person/day in 2005/2007. By 2050, food production will need to be increased by 60% globally and 100% for developing countries. In India, the real food security and water management

challenge lies in the mismatch between water availability and agricultural water demand: high demands occur in water scarce but agriculturally prosperous regions and low demands in naturally water-abundant but agriculturally backward regions. Groundwater depletion is a serious problem, which occur in the naturally water-scarce but surplus food-producing regions, magnify the challenge. The small area of arable land per capita is a major reason for low agricultural water demand in regions that have abundant water. Sustainability of well-irrigation in the naturally water-scarce regions, which is the backbone of India's food security, could be achieved through judicious investment in surface water projects which encourage direct irrigation and replenishment of over-exploited aquifers. Some of the strategies include: pro-rata pricing of electricity in the farm sector; volumetric pricing of water, improving efficiency of utilization of green water or the rainwater held in the soil profile, preventing depletion of soil moisture after crop harvest, reducing the use of water by shifting to low water consuming crops, and utilizing efficient irrigation methodology.

Some key issues need to be addressed: national budgeting on water-energy-food security, options for managing water-energy-food nexus and predictive models; trade-off between increased water productivity and food security with energy requirement, and water-energy-food as trading commodity to minimize regional conflict. It is essential to develop a unifying framework of nexus of water, energy and food security.

Concept :

Dr. S.K. Ambast

Compiled, Edited and Layout Design :

Dr. A.K. Thakur, Dr. K.G. Mandal, Dr. P. Panigrahi,
Dr. O.P. Verma & Dr. Rachana Dubey



हर कदम, हर डगर
किसानों का हमसफर
भारतीय कृषि अनुसंधान परिषद

AgriSearch with a human touch

Visit us at: www.iwm.res.in

Performance of Drip Irrigation in Rice-based Cropping Sequence

Erratic rainfall is one of the major causes of low productivity in rice-based cropping systems in eastern India. Drip irrigation (DI) has the potential in producing higher crop yields using less water. On other hand, deficit irrigation could be an efficient irrigation strategy for irrigated agriculture, under which water is applied in reduced quantity over full water requirement of the crops, resulting optimum stress on the plant. In the regions, where water resources are limited, deficit irrigation can be more profitable for the farmers to maximize crop water productivity instead of maximizing the yield. The saved water can be used for other purposes or to irrigate extra units of land to produce more crops. DI with deficit irrigation strategy could save substantial amount of water over full irrigation (FI), without affecting the yield significantly in vegetable crops. Moreover, the information on the response of rice to DI in eastern India is limited. With this strategy, Scientists of ICAR-IIWM conducted field experiments to study the techno-economic feasibility of DI along with deficit irrigation in rice-based cropping sequences (rice-rice-baby corn and rice-capsicum-baby corn).

Drip irrigation (in-line system) with 0.4 m emitter spacing and 2.1 l h⁻¹ emitter discharge was laid out at 1.4 m and 1.0 m later-to-lateral distances in the rice, capsicum and baby corn fields. The hydraulic performance of the drip system was studied time to time and found satisfactory with emitter flow rate variation (Q_e) of 5%, co-efficient of variation of 4% and distribution uniformity of 96%. The rice variety grown in *kharif* season was 'Khandagiri', whereas the aerobic rice 'Apo' was grown in irrigated condition during summer. In rice, drip irrigation was imposed at 125% crop evapo-transpiration (ET_c), 100% ET_c(FI) and 75% ET_c, whereas surface irrigation (SI) was applied at 40 k Pasoil water potential. In capsicum, DI was scheduled at 100% ET_c (FI) 75% ET_c(DI₇₅), 50% ET_c (DI₅₀) and at 50% ET_c except flowering and fruiting stage, whereas in baby corn DI was applied at 100% ET_c (FI) 75% ET_c (DI₇₅), 50% ET_c (DI₅₀) and at 50% ET_c except knee high stage to pre-tasselling stage.

The highest grain yield (4.51–5.96 t ha⁻¹) of rice was recorded under SI, which was statistically at par with that under DI at 125% ET_c (4.40–5.37 t ha⁻¹) and 100% ET_c

(4.27–5.16 t ha⁻¹) with 1.0 m lateral layout. However, DI at 100% ET_c saved 30–40% irrigation water resulting in 40–50% higher water productivity than that under SI (0.6 kg m⁻³). In capsicum, the maximum number of fruits was harvested from fully-irrigated plots (5.9 plant⁻¹) followed by DI₇₅ (5.6 plant⁻¹). However, the maximum fruit weight was recorded in DI₇₅ (118.40 g fruit⁻¹). The highest fruit yield was obtained in FI (24.71 t ha⁻¹), which was statistically at par with that in DI₇₅ (23.33 t ha⁻¹). However, 25% water saving resulted in 30% higher water productivity under DI₇₅ compared to FI (7.04 kg m⁻³) in capsicum. Similarly, in baby corn, FI with 1.0 m lateral spacing produced the highest yield (2.06 t ha⁻¹) which was at par with DI₇₅ (1.94 t ha⁻¹). However, water productivity under DI₇₅ (0.84 kg m⁻³) was 60% higher than that under FI. Overall, rice-capsicum-baby corn sequence under DI was found water efficient (water productivity - 3.3 kg rice m⁻³) and economic (net income - ₹ 4.3 lakh ha⁻¹; benefit-cost ratio - 2.9) using 30% less water compared with rice-rice cropping sequence under SI (water productivity- 0.5 kg rice m⁻³; net income - ₹ 0.57 lakh ha⁻¹; benefit-cost ratio - 1.6).

Average annual yield, water productivity and economics of rice-based cropping sequences under drip irrigation

Treatments	Yield/ REY* (t ha ⁻¹)	Water used (m ³ ha ⁻¹)	Water productivity (kg rice m ⁻³)	Gross income (₹ ha ⁻¹)	Net income (₹ ha ⁻¹)	Benefit-Cost ratio
Rice-capsicum-baby corn under DI	48.1	14,700	3.3	6,67,150	4,34,950	2.9
ice-rice-baby corn under DI	19.8	18,250	1.0	2,74,630	1,22,900	1.8
Rice-rice under DI	9.4	15,850	0.6	1,30,380	29,100	1.3
Rice-rice under SI	10.4	21,200	0.5	1,44,250	56,950	1.6

*REY: Rice equivalent yield; DI: Drip irrigation; SI: Surface irrigation; Net income includes the cost of drip irrigation system (₹ 1.60 lakh ha⁻¹) and water harvesting pond of size 40 m x 35 m x 2.5 m of costing ₹ 2.5 lakh



Drip irrigation in rice, capsicum and baby corn

P. Panigrahi, R.K. Panda, S.K. Rautray, A.K. Thakur and S. Raychaudhuri

Science

Density-dependent Water Use in Carp Polyculture

Water scarcity has posed serious challenges to aqua food security and ecosystem sustenance under the changing climate scenario of recent years. Hence, enhancing water productivity in aquaculture sector is of prime necessity. More often than not, farmers carry out unplanned water exchange during fish culture period that becomes counter productive and uneconomical. Carp polyculture (*Catla catla*,

Labeo rohita, and *Cirrhinus mrigala*) is a highly profitable farm enterprise and livelihood option for a large number of farmers in India, especially in Odisha, Andhra Pradesh and West Bengal. However, due to increasing scarcity of water resources, there



has been the need to determine ideal amount of water required for successful fresh water aquaculture operation and for special efforts on water cutback approach.

With this challenging mission, a group of Scientists led by an expert on aquaculture from ICAR-IIWM, Bhubaneswar, quantified the optimum total water requirement and consumptive water use through hydrological water balance study for improving water productivity, production performance and profitability in carp polyculture systems under varying intensity levels. Keeping in view the trivial impact of excess water exchange, they have found that, by adopting regulated or demand driven water exchange, water productivity and profit increased in many folds. In this study, with best management practice at the stocking density of 8000 fingerlings/ha, total water use could be minimized to 39,200 m³ and water exchange minimized to 2,000 m³/ha. With this stocking

density, carp productivity enhanced to a level of 3.62 t/ha per 180 days. Further, it has been estimated that with this novel technique, consumptive water use index was 5.61 m³ of water per kg production of carps, and net income of ₹ 9.75 was generated per cubic meter of water used. They have also suggested that farming systems with low water exchange not only keeps pond water quality suitable for the fish growth but also improves carp water use efficiency i.e., 178 g of carp biomass per m³ of water and helps in minimizing the quantity of pollutant outputs.

Adapted from Rajeeb K. Mohanty, S.K. Ambast, D.K. Panda, A.K. Thakur, and S. Mohanty. 2017. Density-dependent water use in carp polyculture: Impacts on production performance and water productivity. Aquaculture, 470: 32-39. View the full article online at <http://doi.org/10.1016/j.aquaculture.2016.12.007>

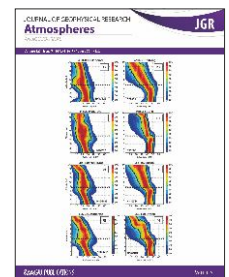
Concerns on Drought-induced Recent Heat Waves and Warm Spells in India

The summer season heat waves and non-summer warm spells are a major climate change phenomena. These aberrations cause concerns on agricultural, environmental and even social activities for a populous country like India, where most are involved in outdoor activities, such as work in the agriculture field and construction sectors. In particular, the rice-wheat cropping system of north India, which ensures rural employment and the food security of the country, is at risk due to frequent occurrences of heat waves and warm spells.

Most of the previous researches have highlighted the role of anticyclones on the genesis and extension of heat waves in India. Recently, a group of Scientists from ICAR-IIWM have found out the reasons underlying these extreme climatic events. For the first time, they have provided the evidence that a stronger coupling of soil moisture and temperature over central and northwest India is most likely to have enhanced the recent hot extremes. Because, it is well established that sufficient wetness of soil triggers enough evaporative cooling that even frequent anticyclones can hardly

increase the temperatures to produce hot days, but antecedent moisture-deficit conditions being sensitive to atmospheric circulation induce hot extremes. Notably, research shows that the 2009-10 year drought and heat wave in India, whose spatial extent and strength exceeded the previous records, are comparable in terms of evolution and amplification with that of the 2010 record-breaking Russian hot episode. Moreover, the severity of summer 2015 is another example of the drought-induced heat amplification. Researchers point out to the future predictability of hot extremes from the antecedent terrestrial water storage changes.

Adapted from D.K. Panda, A. Agha Kouchak, and S.K. Ambast. 2017. Increasing heat waves and warm spells in India, observed from a multi-aspect framework. J. Geophys. Res. Atmos., 122, 3837-3858. View the full article online at <http://doi:10.1002/2016JD026292>.



Events & News

Visit of Hon'ble Union Minister of State for Agriculture & Farmers Welfare

Hon'ble Union Minister of State for Agriculture and Farmers Welfare, Shri Sudarshan Bhagat visited ICAR-Indian Institute of Water Management, Bhubaneswar on May 23, 2017 for review of research programmes and interaction meeting with officials of ICAR Institutes and

Regional Research Stations located in Bhubaneswar. He also presided over a Farmer-Scientist Interaction Meeting in which farmers from different districts of Odisha participated in the discussion about ongoing programmes of Govt. of India. Hon'ble Minister calls for more efforts

towards agricultural development in the drought affected regions in the country. He also urged upon the need for creation of more water resources for successful implementation of 'Har Khet Ko Pani' movement and stressed on need for harnessing of stream flows which are coming out from hills, and the effective use of its water for agricultural purpose. He mentioned the potential of horticulture, fisheries and animal husbandry sectors for doubling farm productivity and income within stipulated time frame. Dr. S.K. Ambast, Director, ICAR-IIWM welcomed the Hon'ble Minister and guests and briefed the gathering about various achievements of ICAR-IIWM and its research activities including those under PMKSY, MGMT program in the farmer's field.



Hon'ble Union Minister of State for Agriculture & Farmers Welfare addressing gathering

2nd Meeting of the Seventh Research Advisory Committee (RAC)

The second meeting of 7th Research Advisory Committee (RAC) of ICAR-Indian Institute of Water Management, Bhubaneswar was held on February 13-14, 2017. The RAC comprised of Dr. T.K. Sarkar, Chairman, Former Project Director, Water Technology

Centre, ICAR-IARI, New Delhi; Dr. A.K. Misra, former Head, Division of Soil Physics, ICAR-Indian Institute of Soil Science, Bhopal; Dr. P.K. Mahapatra, former Dean, College of Agriculture, OUAT, Bhubaneswar; Dr. S.K. Chaudhari, Asst. Director General



National Productivity Week Celebrated

ICAR-IIWM celebrated National Productivity Week during February 12-18, 2017 with the theme 'From Waste to Profits through Reduce, Recycle and Reuse'. A training



program was organized at our research farm, Mendhasal, one sensitization and awareness program at *Saraswati Sishu Vidya Mandir*, and one speech competition was organized for the students. Another speech competition for the staff of ICAR-IIWM was also organized regarding innovative and effective ways of making profits from waste by means of 3 R's (reduce, recycle and reuse). Winners of the competitions were awarded with prizes and certificates by the Director of the institute during the valedictory function.

Celebration of 30th Foundation Day of the Institute

ICAR-Indian Institute of Water Management, Bhubaneswar celebrated its 30th Foundation on May 12, 2017. On the occasion, a brainstorming session entitled 'Translating the research findings into implementable solutions / products in the field of agricultural water management' was



organized. Nearly, 50 scientists/officials from sister ICAR institutes participated in the meeting. Dr. S.K. Ambast, Director, ICAR-IIWM, welcomed guests and participants of the meeting and made a brief presentation on the background and purpose of the brain-storming meeting. Dr.

Dipankar Saha, Member, CGWB, MoWR, RD & GR, Govt. of India, New Delhi graced the occasion as Chief-Guest. He opined that translating findings of research on agricultural water management to profitable adoption would play a vital role in augmenting national agricultural productivity

(S&WM), NRM Division, ICAR, New Delhi; Dr. V.U.M. Rao, former Project Coordinator, AICRP on Agro-Meteorology, ICAR-CRIDA, Hyderabad and Dr. S.K. Ambast, Director, ICAR-IIWM, Bhubaneswar. Dr. S.K. Ambast, Director, ICAR-IIWM welcomed chairman and members of RAC and presented the research accomplishments of the Institute. Dr. T.K. Sarkar, Chairman in his opening remarks, expressed satisfaction about his interaction with the scientists during his visit at the research farm of the Institute and appreciated efforts of scientists of ICAR-IIWM. The action taken report was presented by Dr. S. Roy Chowdhury, Principal Scientist and Member Secretary, RAC. Dr. S.K. Chaudhari, ADG (S&WM) asserted that regrouping of research programs would result in better scientific output and future research needs. Director explained the objectives for reorientation of the programs for better integration of existing research works.

Institute Research Council (IRC) Meeting

Institute's Research Council (IRC) meeting was organized during May 18-20, 2017 with the Chairmanship of Dr. S.K. Ambast, Director, ICAR-IIWM. The results of the twenty four completed/ on-going in-house research projects under different programmes were presented and deliberated in the meeting. Also, eight new research project proposals were presented and discussed. Dr. S.K. Jena, Principal Scientist and Member Secretary, IRC organized the meeting.

and to meet food security challenges in future; it is essential that information be integrated using communication technology with ample use of spatial data and groundwater modeling. In the afternoon session, Dr. Saha delivered foundation day lecture on 'Groundwater development in India: present status and future perspective' for the benefit of scientific fraternity and shared his vast experiences. Dr. S. Pasupalak, Hon'ble Vice-Chancellor, OUAT, Bhubaneswar was the Chief-Guest of the session. Dr. Jatinder Kishitwaria, Director, ICAR-CIWA; Dr. J.K. Sundaray, Director (Acting), ICAR-CIFA and Heads of the Regional Stations of ICAR-IIHR, ICAR-CTCRI and ICAR-CARI graced the occasion. A cultural program was organized in the evening and ICAR-IIWM staff & family members performed different cultural events.

World Water Day Celebrated

ICAR-IIWM celebrated World Water Day on March 22, 2017 and Prof. R.K. Panda, Dean (R&D), IIT, Bhubaneswar delivered a lecture on 'Future perspective for sustainable agricultural water management'. Dr. S.K. Ambast, Director, ICAR-IIWM welcomed Dr. Panda and all the scientists, and briefed the objectives and theme of 'World Water Day 2017' i.e. why waste water?



Republic Day Celebration



ICAR-IIWM celebrated 68th Republic Day of the country on January 26, 2017. On this occasion, Director of the institute hoisted the National Flag and addressed the staff and family members of ICAR-IIWM. He stressed on the need for hard work by the staff for the welfare of farming community and to make the institute as well as the country proud.

Exhibitions

Institute's achievements were displayed/ showcased in the following exhibitions held in different locations:

Events	Place	Period
Foundation Day Celebration of ICAR-CIWA, Bhubaneswar	ICAR-CIWA, Bhubaneswar	February 17, 2017
Inauguration of Highly Sensitive Laboratory at International Centre for Foot & Mouth Disease (ICFMD)	ICFMD, Jatni, Khorda	April 1, 2017
Kisan Kalyan Mela	Mahatma Gandhi Central University, Motihari, Bihar	April 15-19, 2017
Foundation Day Celebration of ICAR - NRRI, Cuttack	ICAR-NRRI, Cuttack	April 23, 2017



Celebration of International Day of Yoga

The International Day of Yoga was celebrated at ICAR-Indian Institute of Water Management, Bhubaneswar on June 21, 2017. A mass yoga was performed in the morning as per the Common Yoga Protocol, which was issued by the Ministry of Ayush, Government of India. Shri Jugojoyti Jadabanand Choudhury of *Patanjali Yog Peeth*, Khurda, Bhubaneswar briefed about yoga and its origin and then started mass yoga with a prayer and various asanas.

A formal workshop on Yoga was also conducted in the afternoon and Shri Sudhangshu Sekhar Adhikary, Odisha State Coordinator, *Patanjali Yog Peeth*, Khurda, Odisha delivered a lecture on usefulness of yoga in our day-to-day life. This was followed by another programme of plantation of guava and sapota saplings in the institute campus. The program was coordinated by Dr. M. Raychaudhuri, Principal Scientist and Nodal Officer of the International Day of Yoga.



Farmer-Experts Interaction-cum-Practical Training Programs

Farmers from	Date	Participants
Egra block, Purba Medinipur, West Bengal (PMKSY)	February 7, 2017	20
Keonjhar, Odisha (Farmer's First project of ICAR-IIWM)	March 25, 2017	50
Purulia, West Bengal (ATMA)	March 28, 2017	95
Bolangir, Odisha (ATMA)	April 11, 2017	10
Ramnagar, Medinipur, West Bengal	May 31, 2017	20
Purba Medinipur, West Bengal	June 7, 2017	40



Summer Training Programmes Organized

- A thesis research work was carried out by one M. Sc. (Ag.) student of Agrometeorology of IGKV, Raipur during September 1, 2016- March 31, 2017.
- One month Summer Training program was organized for three M. Tech. students from College of Agricultural Engineering and Technology, OUAT, Odisha during May 16- June 15, 2017.
- Three week Summer Training was organized for two M. Tech. students from College of Agricultural Engineering, Dr. R.P.C.A.U., Pusa, Samastipur, Bihar during June 12- July 2, 2017.

Farmer's Training

- A two-day farmers' training program was organized at Birjaberna village, Sundargarh during March 23-24, 2017. Total 101 tribal farmers participated in the training programme. Emphasis was given on different aspects of water conservation and irrigation methods. On the second day, farmers' were taken to a model watershed and were exposed to various *in-situ* water conservation techniques. Dr. R.K. Panda, Principal Scientist coordinated the program.
- ICAR-IIWM organized a one-day training program on 'Utilization of farm waste for generating profit' for technical officers of our research farm and 30 farmers of adjoining villages near Mendhasal on February 15, 2017 during National Productivity Week.



Swachha Bharat Abhiyan

The Director and staff of ICAR-IIWM, Bhubaneswar participated actively in *Swachha Bharat Abhiyan*. Seven numbers of cleanliness campaigns were conducted during January-June, 2017. The *Swachhata Pakhwara* was celebrated during May 16-31, 2017 as per the directives of ICAR and Government of India. Physical cleaning of drainage lines, wastewater treatment using filters ensured better sanitation and solid waste management in the institute campus. Shri Sudarshan Bhagat, Hon'ble Union Minister of State, Agriculture & Farmers' Welfare, GoI visited the wastewater treatment site of the Institute during his visit. Other activities viz. clearance of e-waste, pruning of shrubs, beautification of the Institute and plantation of tree saplings were also performed during the period.



Mera Gaon - Mera Gaurav

Training and interaction meetings organized at adopted villages

Detail of programs	Place and date	No. of beneficiary farmers
Farmer-Scientist interaction meeting on enhancing mungbean productivity and demonstration of line sowing using a tractor-drawn seed drill	Pompalo village, Balipatna block January 3, 2017	30
Farmer-Scientist interaction meeting	Dinkia village January 21, 2017	12
Scientist-farmer interaction meeting on crop establishment, fertilizer application and irrigation methods in <i>rabi</i> crops	Khalibandha, Nuagaon, Sadeiberini villages, Dhenkanal January 28, 2017	130
Interaction meeting on field problems in groundnut	Bhakarsahi village, Balipatna block February 24, 2017	15
Scientist-farmer interaction meeting on crop management including irrigation scheduling and diseases-pest management in <i>rabi</i> crops	Gajamara, Saptasajyapada villages, Dhenkanal February 25, 2017	265
Farmer-Scientist interaction on flowering problem in mustard crops, disease and insect pests in vegetables	Jammujhari and Haridamada villages February 25, 2017	15
Farmers' interaction meet on integrated farming system, soil management, fish culture, water management for <i>rabi</i> and summer crops	Hasimnagar village March 3, 2017	15
Interaction meeting on pest and disease identification in rice and groundnut	Bhakarsahi, Balipatna block March 10, 2017	38
Farmer-Scientist interaction on pisciculture, residual soil moisture management, hybrid seed production	Alisha village, Satyabadi, Puri March 25, 2017	33

Farmer-Scientist interaction meet	Chatabar, Durgapur, Giringaput, Haridamada and Jammujhari villages March 30, 2017	30
Visit of farmers in <i>Kisan Goshti</i> at International Centre for Foot and Mouth Disease, Arugul, Bhubaneswar	Chatabar, Durgapur, Giringaput, Haridamada and Jammujhari villages April 1, 2017	60
Interaction meeting on problems in pointed gourd and potato	Bhakersahi, Balipatna Block April 17, 2017	21
Farmer-Scientist interaction on problems in ridge gourd and cucumber	Chatabar village April 22, 2017	10
Scientist-farmer interaction meeting on crop establishment, fertilizer application and irrigation methods for summer crops, and importance of animal health management	Khalibandha, Nuagaon villages, Dhenkanal April 22, 2017	149
Awareness program on ploughing methods	Churali village, Satyabadi, Puri April 29, 2017	22
Distribution of pineapple suckers (var. Queen) and training on its package and practices	Khadala village, Jagatsinghpur May 5, 2017	6
Training program on agro-techniques and value addition in tuber crops	Jammujhari village May 6, 2017	32
Scientist-farmer interaction meeting on sowing and management of vegetable crops in up lands and rice cultivation in medium and low lands	Sadeiberini, Gajamara, villages, Dhenkanal June 24, 2017	42
Interaction meeting on problems in pumpkin crop	Bhakersahi, Balipatna, Khurda June 28, 2017	19
Awareness program on cultivation of <i>kharif</i> season rice, poultry farming and pond-based farming system	Alisha village, Satyabadi, Puri June 28, 2017	35



Distribution of pineapple suckers to the farmers at Khadala village, Jagatsinghpur

Joining / Promotion

- Dr. Hemant Kumar Dash, Principal Scientist (Agricultural Economics), joined ICAR-IIWM on April, 01, 2017 on transfer from ICAR-CIWA, Bhubaneswar.
- Mr. Saroj Kumar Singh, Administrative Officer, joined ICAR-IIWM on April, 01, 2017 on transfer from ICAR-IIMR, Hyderabad.
- Dr. D.K. Panda has been promoted to Principal Scientist through CAS of the ICAR w.e.f. October, 24, 2015.



Visit of farmers in *Kisan Goshti* at ICFMD, Arugul

DD Kisan/ Radio Talk

- Dr. R.K. Panda and Dr. P. Nanda participated in '*Vichar Vimarsh Karyakram*' on '*Krishi Jal Prabandhan*', telecasted on June 23, 2017 on Doordarshan (Kisan).
- Dr. P. K. Panda, Principal Scientist of this institute delivered a radio talk on '*Dhipa Jamire Labhajanaka Fasala Chasa*' under the programme of *Pallimancha* of All India Radio, Cuttack on February 10, 2017.

Awards & Honours



Dr. G. Kar, Principal Scientist, ICAR-IIWM received 'Ekamra Shree Award'



Drs. S. Mohanty, P. Panigrahi, M. Raychaudhuri and S.K. Ambast received 'Er. R.C. Patra Memorial Award' from The Institution of Engineers, Odisha



Dr. G. Kar, Principal Scientist, ICAR-IIWM received 'Hooker Award' of ICAR-IARI, New Delhi



Dr. P.S. Brahmanand, Principal Scientist awarded with 'Utkal Diwas Samman-2017'

- Dr. Rachana Dubey, Scientist has been awarded with 'Best Paper Presentation Award' at International Conference on Sustainable Natural Resource Management from Science to Practice, held at Banaras Hindu University, Varanasi, UP during January 12-13, 2017 for the research paper entitled 'Evaluating adaptation options for increasing heat stress tolerance in wheat'
- Dr. S.K. Ambast, Director has been elected Vice-president, Executive Council (2017-18), Indian Society of Coastal Agricultural Research (ISCAR), ICAR-CSSRI, RRS, Canning Town, West Bengal.
- Dr. K.G. Mandal, Principal Scientist has been elected Councilor, Executive Council (2017-18), Indian Society of Coastal Agricultural Research (ISCAR), ICAR-CSSRI, RRS, Canning Town, West Bengal.
- Dr. K.G. Mandal, Principal Scientist has been selected as Editor, Indian Journal of Agronomy, published by the Indian Society of Agronomy, ICAR-IARI, New Delhi.
- Dr. M. Raychaudhuri, Principal Scientist has been elected as Member, Sectional Committee of the Section of Agriculture and Forestry Sciences for 2017-18 for 105th Session of Indian Science Congress.
- Dr. M. Raychaudhuri, Principal Scientist became women chess champion and women table tennis runners up during ICAR sports meet for eastern zone at ICAR-NRRI, Cuttack held during March 6-9, 2017. Dr. M. Raychaudhuri and Dr. Rachana Dubey became runners up in table tennis (women) team and badminton (women) team events.
- Dr. K.G. Mandal, Principal Scientist and his team won table tennis (men) runners-up in team event; Dr. S. Raychaudhuri, Principal Scientist won table tennis (men) singles runners up during ICAR eastern zonal sports meet at ICAR-NRRI, Cuttack, during March 6-9, 2017.



ICAR-IIWM sports team at ICAR-NRRI, Cuttack

ICAR - Indian Institute of Water Management

Chandrasekharpur, Bhubaneswar - 751 023, Odisha, India

Phone : 91-674-2300060 (Director), 2300010/2300016/2301815, Fax : 91-674-2301651

E-mail : director.iwmm@icar.gov.in // Web : www.iwmm.res.in