ICAR-IIISS Newsletter

Volume 19, Number 2 July - December 2016

CONTENTS

Secretary, DARE and Director General, ICAR, Dr. Trilochan Mohapatra Visits ICAR-IISS

Secretary (DARE) and Director General (ICAR), Dr. Trilochan Mohapatra, launched the India-UK Nitrogen Fixation Centre (IUNFC) at ICAR-Indian Institute of Soil Science (IISS) , Bhopal on 06 October, 2016. On this occasion, he emphasized the need for a practicable technology of utilizing the biological nitrogen fixation for maintaining soil health and sustainaing food production that would also be helpful in managing the environmental pollution. He further motivated the scientific gathering to research on the emerging fields such as genetic engineering of rhizobia, rice endophytes and improving biological nitrogen fixation. Dr. S.K. Chaudhari, Assistant Director General, Soil and Water Management, ICAR also visited the ICAR-IISS Bhopal on this occasion and emphasized on the importance and role of BNF in soil health management.

During this visit, Dr. Trilochan Mohapatra also laid down the foundation stone of 'Nanotechnology Laboratory', and inaugurated the 'Open Top Chambers' and 'Composting Unit' at ICAR-IISS, Bhopal.

Director's Desk

Fertilizer Phosphorus: Scope for Saving

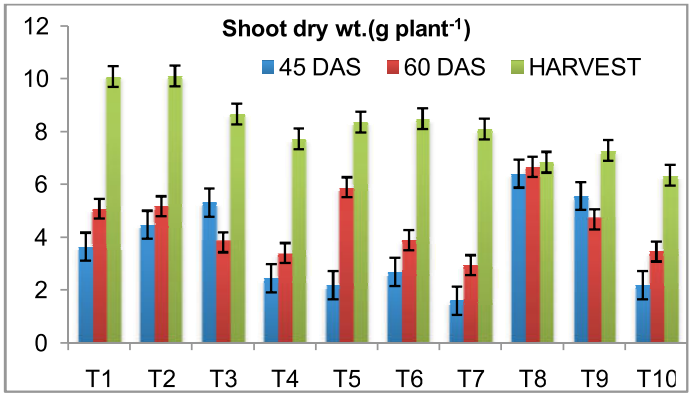
Phosphorus (P) is one of the essential plant nutrients playing an important role in food and nutritional security of a country. Most of the Indian soils are low in available P and its application helps in increasing the crop productivity to a very large extent. However, because of its high reactiveness, it is fixed in the soil. In alkaline soils it is fixed as calcium phosphate (DCP, TCP, apatite, etc.) while in acid soils it is converted into non-labile aluminum and iron P. Long-term fertilizer experiments (LTFE) of AICRP under ICAR-IISS have revealed that, continuous application of P fertilizers enhanced available P from 9 kg to 73 kg ha^{-1} in inceptisol of Ludhiana; 8.4 to 35 kg ha^{-1} in vertisol of Jabalpur; and from 12 to 153 kg ha^{-1} in Alfisol of Ranchi. The soil fertility maps developed by the ICAR-IISS, Bhopal have indicated that some districts which were earlier categorized as low in available P have now become medium or high in P; the districts which were earlier medium in the available P content have reached to very high P category. Majority of P fertilizers or their raw materials are imported and the cost has been on rise with time thereby increasing the cost of cultivation. Thus, to decrease the burden on foreign exchequer due to their import and to reduce the cost of cultivation, it is very pertinent to find out strategies to mobilize and reutilize the immobilized P in soil. Results from AICRP on LTFE have clearly revealed very high P accumulation in soils of Punjab; and, based on field trails, prescribed either no or half of the recommended dose of P fertilizer application. In India, nearly 50 million hectares area is under acid soils, out of which 25 million ha is under different field crops, where, P is a major yield limiting factor. Application of organic materials (FYM or green manures) helps in the mobilization of soil P. Apart from this, crop residue is another organic source not only for P, but also for K and N during crop growth. Studies at ICRISAT have also demonstrated that addition of crop residues, FYM and green manure in acid soil increases the availability of P in soil. Further, the long-term studies have revealed that application of organic manure not only moderates the soil conditions but also mobilizes recalcitrant soil P which meets P requirement of the crops. Reduction in P fertilizers dose not only increase benefit: cost ratio of the farm, but also reduce the P import. Primary data generated from AICRP on LTFE across the country for the last 40 years showed that reduction in P application up to 50 per cent in continuous P applied field (20-25 years) did not affect crop productivity at all the places. Thus curtailing P dose in high P soils would enhance P efficiency. As per the FAI (2014) report approximately 3 million tonnes of P fertilizers are used in Haryana, Punjab and western Uttar Pradesh. Reduction in P application to half of the recommended dose would save 1 million tonnes of P which is equivalent to about Rs. 5,000 crore. Use of fertilizer prescription equations emanated from AICRP (STCR) will further help in saving of P-fertilizers in some specific situations. Thus adopting these technologies would enhance P use efficiency and reduce burden on government exchequer towards P fertilizer import.

(Ashok K. Patra)
Director

Research Highlights

Growth and metabolic profile of soybean with Fe, Cu and Zn nano-nutrient application

The effect of Fe, Cu and Zn nano-micronutrient fertilizer application on soybean plant growth and yield parameters were assessed. The highest dose (100%) of Fe and Zn, *i.e.* 54 µM and 2 µM nano particles (NPs), respectively; positively influenced plant biomass, grain yield and biochemical metabolism of soybean plants, while sub-optimal concentration (50% of optimal) positively influenced only root growth and gas exchange.

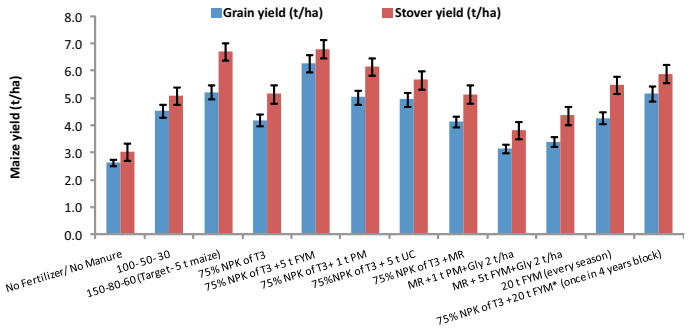


T1: Control; T2: FeNP100; T3: FeNP50; T4: Fe 50; T5: Cu NP100; T6: Cu NP50; T7: Cu 50; T8: Zn NP100; T9: Zn NP50; T10: Zn 50

Impact of Fe, Cu and Zn NP on Plant biomass of soybean

Productivity of maize – chickpea system under INM modules

Maize yield was significantly differed with the application of various integrated nutrient management (INM) modules in long- term fertilizer experiment. Among different INM modules, maize grain and stover yields were significantly increased with application of 75% NPK of STCR based dose and 25% nutrient substitution with FYM and followed by STCR based fertilizer module and other FYM based INM modules. Maize yield was increased with application of 75% NPK dose of STCR based fertilizer module with integration of different organic sources of nutrients.



Yield performance of maize under different integrated plant nutrient supply modules

Evaluation of modified urea materials and agronomic interventions on sustaining crop productivity

In a field experiment, application of neem coated urea recorded higher grain and stover yield of maize crop followed by biochar coated urea and pine oleoresin coated urea. Another study on best agronomic interventions *viz.*, split application of N, skipping of basal N dose and time of application; showed significantly higher maize productivity in the treatments where basal dose of N was skipped and total N was applied in two equal splits (60 kg N ha^{-1}) at 20 and 40 days after sowing.

Response of potassium application in rice crop in Vertisols

Though Vertisols are considered rich in K status, yet response to K application is being experienced at many locations. The results of experiments conducted at farmer's field (Gollapeta, Arapalli villages of Jagtial district in Telengana state) revealed that application of K resulted in increased grain yield of rice by 500 to 700 kg ha^{-1} over no K application.

Effect of Biochar and N application on maize

Biochar application in plough layer and maize crop grown with usual fertilizer application method resulted in grain yields between 1336 and 4363 kg ha^{-1}. The highest grain yield was recorded with application of 120 kg N + 10 t biochar ha^{-1}. Fertilizer application showed significant effect on seed and biomass yield. Biochar application along with N @ 120 kg ha^{-1} resulted in increased yield but significant increase could only be recorded with 5 and 10 t ha^{-1} biochar over application of 120 kg N ha^{-1} alone.

Evaluation of urease inhibitor product on wheat

Effect of different N sources on grain yield of wheat was carried out for two years. Nitrogen was applied in one, two or three splits through prilled urea, LIMUS urea or neem coated urea. There was slight improvement in the apparent N recovery by the wheat crop with LIMUS urea.

Performance of wheat through LIMUS urea

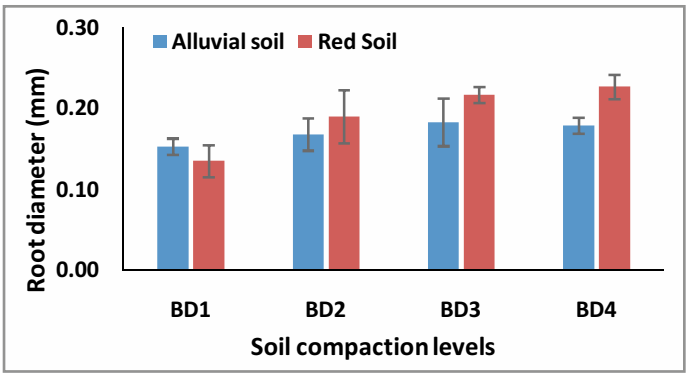
Evaluation cum demonstration of ICAR-IISS technologies under farmers' field

During third *rabi* season integrated assessment of some IISS technologies *viz.* Integrated Plant Nutrient Supply System (IPNS-I) *i.e.*, recommends use of FYM and biofertilizers along with chemical fertilizers; STCR based fertilizer dose for targeted yield (STCR); and use of Phospho-Sulpho-Nitro (PSN) compost in IPNS recommendation instead of FYM (IPNS-II); was carried out with wheat crop (GW 322) at Mengra Kalan village of Bhopal. All the technologies performed best in large farmers' fields with a mean yield of 4292, 4700 and 4617 kg ha^{-1} for IPNS-I, IPNS-II and STCR based fertilizer application respectively. These technologies performed poorly in medium farmers' fields with an average yield of 3533 kg ha^{-1} for IPNS-I, 3667 kg ha^{-1} for IPNS-II and 3613 kg ha^{-1} for STCR.

Soil sample collection after crop harvest

Root system architecture of wheat and chickpea as influenced by soil type and compaction levels

Plants behave differently by changing their rooting behavioral patterns when there is a stress. With Increase in bulk density (BD) the root diameter increased in both the soils and crops. In case of wheat, the increase in root diameter of wheat crops in alluvial and red soils was 17 and 68%, respectively while, it was 51 and 45% in case of chickpea roots due to impact of compactive stress.



The LSD to compare any two means in wheat is 0.023. BD: Bulk density (BD1: 1.2; BD2=1.4, BD3=1.5 and BD4=1.6 Mg/m^3, respectively)

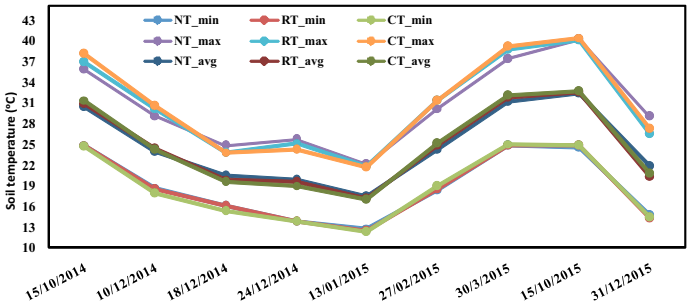
Mean root diameter of wheat cv Sujata

Development of plant crop coefficients of soybean (*Glycine max* L.) using APSIM computer simulation software

Crop coefficients for parameterisation and validation of soybean varieties JS-9560 and JS-9305 for central Indian conditions were derived through field experimentation using APSIM modelling and simulation software. These coefficients are useful for different scenarios analysis with respect to nutrients, water management and climate impact studies using APSIM model.

Effect of conservation agriculture on soil temperature

In a CA experiment, during summer season, the soil maximum daily temperature (0-5 cm surface layer) under no tillage management was found lower than conventionally tilled soil and vice versa in winter.



[Conventional tillage (CT), reduced tillage (RT), no-tillage (NT)]

Effect of conservation agriculture on soil temperature

Performance of different crop varieties under organic farming

Different varieties of soybean, maize, chickpea and wheat were evaluated for their yield potential under organic management practices for Vertisol of central India. Among the 12 varieties of each crops, soybean cultivars viz., RVS-2002-4, JS- 20-41 and JS-97-52; maize varieties viz.,

Kanchan 101, Proagro 4412 and JM-8; Chickpea JG-130, RVS-203 and JG-16 and wheat varieties viz., GW-366 and HI 8498, outperformed in terms of seed or grain yield.

Geo-referenced characterization of organic clusters

Geo-referenced survey of a organic cluster at Chandpur village in district Bhopal was carried out. Farmers in this cluster have their own irrigation facilities, integrated animal component for organic manures (1-10 t ha^{-1}), make organic pesticides at farmsted, and practice manual weeding and summer ploughing for weed management. The highest total land holding was 25 hectare while minimum was 2 hectare among the clusters. The major constraints reported in organic farming were slow response to organic inputs, non-availability of premium price, improper marketing facilities.

Biofertilzers for crops

- Various Bacterial isolates *viz. Microbacterium*, *Cellulosimicrobium*, *Paenibacillus* and *Azospirillum* were tested on black pepper and ginger by KAU center of AINP SBB. Inoculation with *Cellulosimicrobium* gave maximum number of berries per spike in blackpepper, *Paenibacillus* sp. perfomed best on ginger.
- In Achyutpur block of Puri district in Odisha, under farmers' livelihood improvement programmes, use of green manuring and azolla technology resul*ted in reductio*n of chemical fertilizers usage by 65%. Overall there was 25% savings in input costs coupled with improvement in soil health without compromising grain yields of rice.

Effect of imidacloprid and CO_2 on N_2O production and microbial activity

Complex interactive effect of the insecticide (imidacloprid) and climate change on N_2O production and soil microbial population was studied. N_2O production was significantly inhibited by imidacloprid. Elevated CO_2 inhibited N_2O production by decreasing the heterotrophic bacteria. N_2O production was positively correlated ($p< 0.01$) with heterotrophic bacterial population and negatively correlated ($p<0.05$) with actinomycetes population .

Smart delivery of Zn and Mo through nano porous zeolite

The nano-porous zeolite is one of the important means to increase nutrient use efficiency and to prevent loss of nutrient from soil. The results suggested that nano-porous synthetic zeolite could be used as carrier of two important micronutrients *viz.* Zn and Mo, for their smart delivery in the field.

Extractants for heavy metals in different soils

Screen house experiments conducted with alluvial soil (Rarha series; Sub-order: Udic Ustochrept); black soil (Jindakheri series; Sub-order: Typic Haplustert) and lateritic soil (Ranchi series; Sub-order: Typic Haplustalf) to find suitable extractant for determination of Cr and Pb. The result revealed that 0.01 *M* $CaCl_2$ was fairly good for plant available fractions of heavy metals in various soils. The content of Cr and Pb in soil was found in the order: alluvial>laterite>black for Cr; black>alluvial>laterite for Pb.

Geo-accumulation Index for tannery effluent contaminated area of Kanpur

Geo-accumulation index calculated for long-term (>50 years) tannery effluent irrigated area of Kanpur indicated that soil samples were unpolluted to moderately polluted with Cu, Ni, Zn, Pb and As; moderately polluted for Cd; and heavily to extremely polluted with Cr.

New Method for Assessment of Soil Quality in Tribal Areas (Jhabua, Alirajpur and Dhar) of MP

A new method of soil quality assessment was developed. The main factors considered for giving weight to the each indicator/parameter were (1) their relationship with yield (correlation co-efficient), (2) coefficient of variation, and (3) the percentage of samples under deficiency or lower classes. Then relative soil quality index (RSQI) calculated and soils were grouped under different categories. The results showed that 98.52, 95.37 and 89.78% soil samples showed moderately poor to poor soil quality index in soils of Jhabua, Alirajpur and Dhar, respectively.

Extension Activities

- *Mridaparikshak*, a mini-lab, developed by ICAR-IISS, Bhopal, was demonstrated at 36th India

International Trade Fair (IITF) 2016 at *Pragati Maidan*, New Delhi. The *Mridaparikshak* stall was also visited by Hon'ble Shri Radha Mohan Singh, Union Minister of Agriculture and Farmers Welfare, Govt. of India on November 15, 2016.

- Under AINP-SBB, training programmes were organized at three locations (Pallavayal, Mattappara and Kuppamudi) on importance and use of biofertilizers.
- A total of 1234 kg of quality biofertilizers including *Azotobacter chroococcum*, *Azospirillum lipoferum,* and Plant Growth Promoting Rhizobacteria (PGPR) Mix-1 were distributed to 150 beneficiaries in twelve tribal settlements in Wayanad district of Kerala.

Awards/Recognition

- Drs Pramod Jha, Brij Lal Lakaria and Ritesh Saha received "ISSS-Dr JSP Yadav Award for Excellence in Soil Science" in October, 2016 from the Indian Society of Soil Science, New Delhi.
- Drs ML Dotaniya and Rajendiran S received "Young Scientist Award-2016" by Samgra Vikas Welfare Society, Lucknow.
- Dr SR Mohanty received "Excellence in Research Award" from Samagra Vikas Welfare Society Lucknow in September, 2016.
- Dr Brij Lal Lakaria received "Reviewer Excellence Award" from Legume Research- An International Journal, Agricultural Research Communication Centre (ARCC) in November, 2016.
- Dr M Vassanda Coumar received Post Doctoral Endeavour Fellowship-2016 from Govt. of Australia.
- Drs BP Meena, AK Shukla, AK Biswas and Mr Sahab Sidiqqui received Shri Ram Purskar, for "Best Article" in Khad Patrika, FAI during November 30 to December 02, 2016 at New Delhi.

Major Events

National Seminar on soil health assessment with *Mridaparikshak*

A National Seminar on "Soil Health Assessment with Mridaparikshak" was organized during November 4-5, 2016. Around 150 participants attended the National Seminar. Dr AK Singh, Vice-Chancellor, RVSKVV, Gwalior was the Chief Guest of the Inaugural function.

A brainstorming session on "Efficient utilization of soil test kits for the assessment of soil health" was also organized. The session was chaired by Dr SK Chaudhari, ADG (SWM), NRM, ICAR.

Launch meeting of India-UK collaborative project

The launch meeting of international project "India-UK nitrogen fixation centre" was organized at IISS, Bhopal during 6-7 October, 2016. This Institute is Virtual Joint Centres (VJC) on Agricultural Nitrogen funded by DBT-India and BBSRC-UK under the Newton- Bhabha Fund. There are 3 VJC's on Nitrogen Fixation in UK (University of Oxford, UK; John Innes Centre, Norwich; James Hutton Institute, Dundee) and 7 in India (IISS, Bhopal; M.S. University of Baroda; NBAIM, Mau; University of Calcutta, University of Hyderabad; IARI, New Delhi and TERI, New Delhi). Director General (ICAR), Dr. Trilochan Mohapatra, launched the India-UK Nitrogen Fixation Centre (IUNFC) at IISS, Bhopal on October 6, 2016.

Group Meeting of All India Network Project on Soil Biodiversity-Biofertilizers

The group meeting of the AINP on Soil Biodiversity-Biofertilizers was held at the OUAT, Bhubaneswar from 20-21 August, 2016. During this meeting emphasis was given on exploitation of soil biodiversity for improving availability of nutrients in soil.

11th Annual Group Meeting (AGM) of Network Project on Organic Farming

The 11th annual group meeting of NPOF was organized at ICAR-IISS, Bhopal during 17-19 August, 2016. During this meeting, review of centre wise performance, round table discussion on Integrated Organic Farming Systems (IOFS) and interface meeting of NPOF and AICRP on IFS (selected 7 centres) and meeting with ICAR- Directorate of Weed Research, Jabalpur for formulation of experiment on weed management under organic farming were taken up.

World Soil Day and International Year of pulses-2016

World Soil Day was celebrated with gaiety and fervor at the institute on 05 December, 2016 with the theme on "**Soils and Pulses**". The programme was graced by Dr RP Mishra, IAS and Director, Water and Land Management Institute (WALMI), Bhopal; Dr AK Tiwari, Director of Pulse Development, DAC, Madhya Pradesh and Shri BM Sahare, Additional Director, Department of Farmers Welfare and Agriculture Development, M.P. In this programme, school children and farmers interacted with the scientists of the institute about research & extension activities. Soil health cards were also distributed to farmers.

Summer School/Winter School/ MTC Organized

- ICAR sponsored short course on *Advances in Soil Testing and Soil Test Crop Response (STCR) Based Fertilizer Management* at ICAR-IISS, Bhopal from

August 23rd -Sept 01st , 2016. (*Drs Sanjay Srivastava, Pradip Dey and KC Shinogi*)

- DAC sponsored model training course (MTC) on *Best Nutrient management practices for enhancing input use efficiency and soil health* from 30th August – 6th September, 2016. *(Drs Brij Lal Lakaria, Pramod Jha, BP Meena and AK Biswas)*

- ICAR sponsored winter school on *Assessing natural resource management, climate risk and environmental sustainability using simulation models* from 08-28th November, 2016. *(Drs M Mohanty, RS Chaudhary, J Somasundaram and NK Sinha)*

Training Programme Organized

- Training on *Organic Farming* for 32 B.Sc. (Horticulture) students of Sam Higginbottom Institute of Agriculture Technology and Sciences, Allahabad, Uttar Pradesh from November 08-12th , 2016. (Dr AB Singh)
- ICAR staff training on *Use and Maintenance of Advanced Instruments in Soil and Plant Analysis* from 08-13th August 2016. (Drs JK Saha, ML Dotaniya and KM Hati)

- SAARC regional training on *Climate Change Impact on Soil Carbon Storage and Turnover under Different Land Use Systems and Adaptation Strategies* from 16 -23rd August, 2016. (Drs S Lenka, NK Lenka, JK Saha and AK Patra)

- One day workshop on *Safe Utilization of Flyash in Agriculture* sponsored by NTPC and organized by IISS, Bhopal on 30 August, 2016. (Drs AK Patra, JK Saha, S Kundu, Ajay, NK Lenka, ML Dotaniya and S Rajendiran)

- A short training course on *Soil Testing Technologies* for B. Tech. (Agri.) students of RKDF University, Bhopal from 26th September – 03rd October, 2016. (Drs S Kundu, KM Hati, Promod Jha, K Bharati)
- A training programme on *Soil Testing for Soil Health Assessment* for officials of Department of Farmers' Welfare & Agriculture Development (Hoshangabad), Govt. of M.P. from July 4-8th, 2016 (Drs Pramod Jha, Brij Lal Lakaria and Abhay O Shirale)

- A training programme on *Soil Health Assessment and Management* sponsored by Department of Farmers' Welfare and Agriculture Development, (ATMA) Jhabua for official from state department of

agriculture, Khandwa from 16-20th August 2016, MP. (Drs R Elanchezhian, K Ramesh and BP Meena)

International Cooperation

- Dr AK Patra, Director ICAR-IISS participated in the Global Open Data for Agriculture and Nutrition (GODAN) Summit at New York, USA during September 15-16, 2016.
- Dr M Vassanda Coumar availed Endeavour Research Fellowship at Global Centre for Environmental Remediation University of Newcastle, Australia during June 01, 2016 to November 30, 2016.
- Drs Pradip Dey, RS Chaudhary, KM Hati and NK Sinha visited World Agroforestry Centre, Nairobi, Kenya to attend centralized spectroscopy training from November 21-25, 2016.

Other Activities

Independence Day

All the institute staff celebrated 70th Independence Day with great enthusiasm and fervor. On this occasion, several sporting and cultural events for the children, women and men were organized. A basket ball match was also played between the staff teams.

ICAR-IISS Bhopal participates in Central zone sports meet

IISS Sports contingent participated in the ICAR central zonal sports at IARI, New Delhi during 7-11 November 2016.

Vigilance Week

Vigilance week was celebrated during 31st October to 5 November 2016. The theme of the programme was on public participation in promotion of integrity and eradicating corruption.

Swachhta Pakhwada

Swachhta Pakhwada was celebrated during 16-30 October 2016 at ICAR-IISS with great enthusiasm; and many activities were taken up. During this pakhawada brooming and cleaning was done at various places both on campus and off campus in which besides Scientists & Staff, students, farmers (Pawarkheda village) and citizens actively participated. The ICAR-IISS also organized several program such as ''कितना साफ घर के आस-पास'' to create awareness among the residents of the campus.

Distinguished Visitors

Name	Organization	Date
Dr Trilochan Mohapatra	Secretary DARE and DG ICAR, New Delhi	06 October, 2016
Dr SK Chaudhari	ADG (Soil and Water Management), ICAR	06 October, 2016
Professor Ray Dixon, FRS,	John Innes Centre, Norwich	06 -07 October, 2016
Prof Philip S Poole	University of Oxford, UK	06 – 07 October, 2016
Ms Swati Saxena	Senior Science and Innovation Advisor, British High Commission, India	09 November, 2016
Prof Mark Swainson	University of Lincoln	09 November, 2016
Prof Mark Rutter	The National Centre for Precision Farming, Harper Adams University, UK	09 November, 2016
Dr VN Sharda	Member, ASRB, New Delhi	01 December, 2016

Staff News

Promotion

- Dr I Rashmi, Scientist was promoted from RGP 6000 to 7000 w.e.f. 09 October, 2013 in the DPC meeting held on 19 October, 2016.
- Dr ML Dotaniya, Scientist was promoted from RGP 6000 to 7000 w.e.f. 20 April, 2014 in the DPC meeting held on 19 October, 2016.
- Dr Asha Sahu, Scientist was promoted from RGP 6000 to 7000 w.e.f. 03 May, 2014 in the DPC meeting held on 19 October, 2016.
- Dr Rajendiran S, Scientist was promoted from RGP 6000 to 7000 w.e.f. 02 September, 2014 in the DPC meeting held on 19 October, 2016.
- Shri Hukum Singh, Technical Assistant was promoted to Senior Technical Assistant w.e.f. 30 October, 2015 in the DPC Meeting held on 07 September 2016.
- Shri Vinod Choudhary, Technical Assistant was promoted to Senior Technical Assistant w.e.f. 30 October, 2016 in the DPC meeting held on 25 August, 2016.

Retirement

- Dr DLN Rao, Principal Scientist and In-Charge Network Project on BNF retired from ICAR Service on 30 November, 2016.

Scientists 'Participation in Conference/Seminar/Training/Workshop/group' Discussion

Name	Programme	Venue	Date
Dr Gurav Priya Pandurang	Professional attachment training	Division of SSAC, IARI, New Delhi	12 May -11 August, 2016
Dr Sonalika Sahoo	Professional attachment training	CESCRA, ICAR-IARI, New Delhi	12 May -26 August, 2016
Dr KM Hati	Workshop on 'Sensors for Agriculture and Food Technology'	IIT Madras, Chennai	14-15 July, 2016.
Dr Sudeshna Bhattacharjya	SAARC Regional Training on "Climate Change Impact on Soil Carbon Storage and Turnover under Different Land Use Systems and Adaptation Strategies"	ICAR-IISS, Bhopal	16-23 August, 2016
Dr Muneshwar Singh	Annual Workshop of BNF	OUAT, Bhubaneswar	20-21 August, 2016
Drs Ashok K Patra, S R Mohanty and Dr K Bharati	Group Meeting of AINP on Soil Biodiversity-Biofertilizers	OUAT Bhubaneswar	20-22 August, 2016
Dr Gurav Priya Pandurang	10 days training programme on " Advances in Soil Testing and Soil Test Crop Response (STCR) based Fertilizer Management"	ICAR IISS, Bhopal	23 August 01 September, 2016
Drs Ashok K Patra and Muneshwar Singh	24th Meeting of ICAR Regional Committee (Region No. VII)	ICAR - CCARI, Goa	8-9 September, 2016
Dr Ashok K Patra	Global Open Data for Agriculture and Nutrition (GODAN) summit	New York, USA	15-16 September, 2016
Drs DLN Rao and SR Mohanty	Launch meeting of DBT-BBSRC Bhava Newton Fund project "India-UK Nitrogen Fixation Centre"	IISS, Bhopal	6-7 October, 2016
Drs AK Patra, Pradip Dey, AK Shukla, AK Biswas, AK Tripathi AB Singh, BL Lakaria, Pramod Jha , BP Meena, M Vassanda Coumar, ML Dotaniya, Rajendiran S, Gurav Priya Pandurang	National Seminar on "Developments in Soil Science 2016" organized by Indian Society of Soil Science	RVSKVV, Gwalior	20-23 October, 2016
Drs RS Chaudhary, AK Vishwakarma and J Somasundaram	Mid-Term Review meeting of CRP	ICAR, New Delhi	25 October, 2016
Dr Ashok K Patra	Creating wealth from waste: Key ICAR Technologies	KVK Sikohpur, Gurugram	27 October, 2016
Dr Muneshwar Singh	Site selection committee meeting for establishment of new KVK	Agar Malwa, Alirajpur and Dhar in Madhya Pradesh	25 – 27 October, 2016
All Scientists	National Seminar on Soil Health Assessment with Mridaparikshak	ICAR-IISS	4-5 November, 2016
Dr AB Singh	National Science Seminar on *Prachin Evam Aadhuneek Bharat Mein Vigyan Evam Urja ke Aayam*	Atal Bihari Vajpayee Hindi Vishwavidyalaya, Bhopal	09-11 November, 2016

Name	Programme	Venue	Date
Dr RH Wanjari	First International Agrobiodiversity Congress	IARI, New Delhi	6-9 November, 2016
Dr M Mohanty	Indo-UK Roundtable Workshop on Precision Farming at India Habitat Centre	British High Commission, New Delhi	7 November, 2016
Drs AO Shirale and Gurav Priya Pandurang	International conference on "Integrated Land Use Planning for Smart Agriculture-An Agenda for Sustainable Land Management" organized by ISSLUP Nagpur.	ICAR-NBSS & LUP, Nagpur	10-13 November, 2016
Drs RH Wanjari and BP Meena	Attended 4th International Agronomy Congress on "Agronomy for Sustainable Management of Natural Resources, Environment, Energy and Livelihood Security to Achieve Zero Hunger Challenge"	ICAR-IARI, New Delhi	22–26 November, 2016
Dr Ashok K Patra	A meeting on administrative and financial matter	CIFE, Mumbai	24 November, 2016
Dr SR Mohanty	6th Meeting of the Programme Advisory Committee on Plant Sciences under Science & Engineering Research Board (SERB)	VIT University, Chennai	28 November, 2016
Dr RK Singh and Mr RK Mandloi	Regional Agriculture Fair (Krishi Kumbh - 2016) at Numaish Ground, Muzaffarnagar	ICAR-IIFSR, Modipuram, Meerut	28-30 November, 2016
Dr M Mohanty	Workshop of Virtual Modelling Group under NICAR project	CESCRA, NRL Building, IARI, Pusa	30 November, 2016
Drs AK Shukla, AK Biswas and BP Meena	FAI Annual Seminar	New Delhi	30 November - 02 December, 2016
Dr Ashok K Patra	National Symposium on Managing Agriculture in a changing environment	IARI, New Delhi	02 December, 2016
Drs Ashok K Patra and Pradip Dey	Review workshop of AICRP (STCR)	MPKV, Rahuri	03 December, 2016
Drs AB Singh and Brij Lal Lakaria	National Summit for Farmer Producer Organizations and Agri-startups 2016 powered by Asian consortium of Farmers Producers Company Ltd. And Associated Organizations	State Institute of Agriculture Extension and Training, Govt. of M.P., Bhopal.	15-16 December, 2016
Dr AB Singh	International Conference on Environment and Agriculture in UN Sustainable Development Goals	Noor-us-Sabha, Bhopal	17-19 December, 2016
Dr Ajay	Strategies fostering systematic & sustainable growth in non-ferrous mineral industry	Malanjkhand	18 December, 2016
Dr JK Saha	Site selection committee meeting for establishment of new KVK	Anuppur and Singrauli of MP and Sarguja of Chhattisgarh	26 – 31 December, 2016

Published by

Dr Ashok K Patra

Director

ICAR-Indian Institute of Soil Science

Nabibagh, Berasia Road, Bhopal, Madhya Pradesh-462 038

Web: http://www.iiss.nic.in, Email: director@iiss.res.in,

Phone : +91755 2730946, Fax : + 91755 2733310