Silver Jubilee Year of IISS (1988-2013)

IISS Newsletter

Volume 15, Number 2 July - December 2012

New Publications

In This Issue

Forth Coming Events

- Western Region agriculture fair 28th – 31st January, 2013
- ATMA training for the farmers of Bihar
- Silver Jubilee Celebration of the Institute on 15-16 April, 2013

Directors Desk

The Future of Soil Science

The study of soil will endure as long as the soil and the civilization that depend on the soil endure. Soil science is, however losing its primary focus in the recent years. In the developed world, soil science department are changing its name to one in which the word "soil" no longer appears. Human civilization is deeply rooted in the use of soils, but soil science as a discipline is quite young, less than two hundred years. Soil science is closely linked to chemistry, geology and also with geography and botanical sciences. The role of soils as a medium for plant growth and food grain production soon became the focus of soil science, establishing one of the pillars of agricultural sciences. Soil science was in part integrated more closely with the science of agronomy and plant nutrition. During last 100 years, great advancement was made within the many sub discipline of soil science, such as in soil chemistry, soil physics, soil mineralogy, soil genesis, soil conservation, soil biology and plant nutrition - and food security was achieved in the developed countries. Sufficient food production was also ensured by diverting other national resources to agriculture through various forms of subsidies in many developing countries. This effort has not ensured food for all people; probably because of distribution and storage problems. It leads to negative effect on agriculture in many less developed countries, because of imbalanced use of inputs.

The role and status of soil science as an independent discipline is currently a major concern. There are perhaps reasons for concern; the number of students entering agricultural university programmes is declining in many states. Subjects that require knowledge of soils in various water/hydrology and environmental sciences, and tasks are being addressed by experts other than soil scientists. A sign of a negative spiral has emerged in universities, a dwindling number of students with a decreasing number of soil science faculties.

When food production was no longer a security issue in the western countries, the crop-oriented soil science programmes were slow to respond. Soil science as a profession has not shown sufficient dynamism to adjust to changing needs. In part at least; soil science was slow to embrace its role as an environmental science. As many believe Soil science has somewhat been stuck in the agronomic paradigm, perhaps understandably so, crop production being by far the biggest expertise in the world and one of the foundations of our culture and society. Soil science, however, regards the soil as an entity in itself, rather than as a part of ecosystems that provide services to mankind, such as the clean water and air.

It is worth noting how the soil as a resource is poorly cared for under international conventions, such as UN Convention on desertification (CCD), in spite of its importance. Soils are extremely important in the global cycle of carbon. Still, consideration of soils was slow to emerge in the context of the UN Framework Convention of Climate Change (UNFCCC). Soil scientists will undoubtedly play an increasingly important role in understanding the global carbon cycle and to point out ways to reduce carbon dioxide levels in the atmosphere by sequestering carbon in ecosystems. But the soil science community needs also to increase the visibility of soils in international environmental and climate change context.

What lies in the future for soil science? The time has come for soil science to mature, to cut the umbilical cord that ties soil science to agronomy. Soil science deserves a place as an academic discipline in itself in the university system. As such, it can meet the multiple needs of many other disciplines for soil science knowledge. New frontiers include microbiology and biochemistry, which are casting new light on biodiversity, soil-plant interactions and the fate of chemicals in ecosystems. Human health issues call for increased activity linking soils and geochemistry, while soil- and water conservation issues are already demanding more attention in most parts of the world. With severely degraded areas growing each day, ecological restoration, one of the fastest growing subject of science today, will become more important a discipline where soil science plays a major role. Soil science will continue to be important for dealing with ecosystem services, global climate change and maintaining biodiversity.

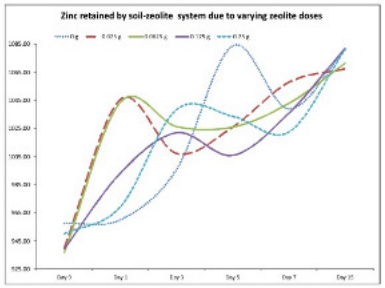
One important aspect is that the human pressure on soil and water resources and biological systems will increase with a growing population. The threats are numerous and well documented and include loss of soil organic matter biodiversity and fertility, soil erosion, soil and water pollution, soil losses to urban development, losses of soil functions and services such as water storage and nutrient cycling. Even though the soil scientists have done well in characterizing these problems, they have not done as well in getting the message clear to the general public and administrators. The future health of soils calls for more involvement of soil scientists towards sustainable development of the country rather than mere research publications. The future of soil science will open up new horizons of scientific endeavors as well as services to the inhabitants of our planet Earth. Also, the future calls for more interaction of community of soil scientists with professionals of other disciplines for obtaining more comprehensive understanding of the Earth's ecosystems.

(A. Subba Rao)

Research Highlights:

Nanoporous zeolites for soil and crop management

Zeolites are porous crystals with the ability to exchange ions and catalyze reactions owing to fixed pore sizes and active sites in the crystal lattice. The zinc sorption studies have shown that the sorption of zinc would continue beyond 15 days due to the complex soil system and make zinc available to the plants.



Temporal release of Zinc from soil-zeolite complex

Mechanical weeding for broad bed furrow planted red gram

A tractor based mechanical weeding technology was fine tuned by adjusting the tine spacing in the cultivator at a spacing of 90 cm. The original 9 tined cultivator was modified to three tines. The advantages of this technology are, First weeding (25-30 DAS) can be completed by mechanical means within a short span of time; Second weeding (60 DAS) can also be carried out until the height of the plants reach 1.5 feet and there is no damage to the plants during weeding; Saves extensive labor requirement; Effective completion of weeding operations in the short operational window in the rain fed regions of the country.

Tractor based weeding

Strip row intercropping

The shifting/irregular weather pattern has forced farmers to rethink choice of crop during the rainy season. Farmers having assured well water resource resort to summer/*kharif* maize followed by wheat/chickpea/mustard during the post rainy season. Under these circumstances, cultivation of red gram has ensured good returns over the past few years. Although cultivation of red gram occupies the land for almost seven months, post rainy season crop can't be taken up and the land remains fallow for nearly four months. To ensure fullest utilization of the season, a strip row inter cropping has been developed with red gram, soybean and/or maize. The strip with red gram will have single crop in a year while the adjoining strip will have maize/soybean during rainy season and wheat/mustard during post rainy season.

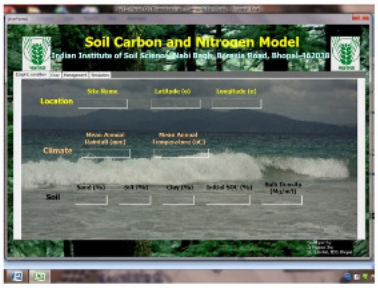
Red Gram + Soybean(Kharif)/Gram (Rabi) strip row intercropping model

Biochar preparation and characterization

Total N content in biochar prepared from subabool feedstock varied widely with temperature and duration of pyrolysis. With increased in temperature from 250° to 350°C the N content improved from 0.85% in raw feedstock to 1.35%. pyrolysis time for biochar preparation also influenced the N content in biochar. There was a decline in N recovery with increase in temperature (0.85 g/100g in raw material to 0.42 g/100g). Similarly, total P recovery from the biochar varied between 0.028 and 0.045 g/100g feedstock. P recovery at 250, 300 and 350°C was almost similar and further decreased at 400°C. The potassium recovery from feedstock varied from 0.22 to 0.38 g/100g against 0.47% in the raw material. The mean recovery was the highest at 250°C temperature which decreased with increase in temperature to 0.20 g/100g feedstock. This indicates that the K recovery of the feedstock can be up to 50.8% and 43.0% at 350 and 400°C temperatures. Hence the biochar prepared under these temperatures would supply at least half of the potassium contained in the original subabool feedstock which is otherwise not being recycled into the soil.

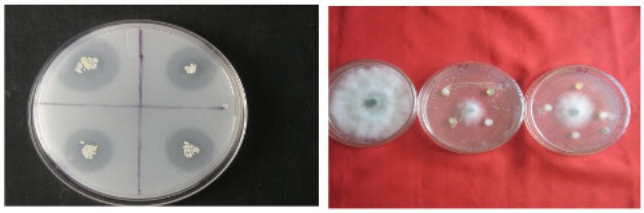
Soil Carbon and Nitrogen Turnover Model

A new soil carbon and nitrogen turnover model has been developed by using the soil and crop dataset of long term fertilizer experiments of India. Soil carbon and nitrogen prediction model is controlled primarily by net primary production (yield), mean annual rainfall and temperature, texture (sand, silt, clay content), bulk density and soil initial carbon content. The model includes two soil organic matter pools (active plus slow, and passive) with different potential decomposition rates. The model simulates soil carbon dynamics for different annual crops and plant communities and works on the principle of soil carbon saturation theory, which suggests soil carbon sequestration rate decreases as the soil carbon content increases and vice-versa. The model computes total organic carbon, Walkley & Black C content, carbon in resistant (passive) and mineralizable (active plus slow) pools, carbon stocks, total N, and available N. It uses a yearly time step and the users have to define only initial soil carbon content. The model itself determines the relative allocation of carbon in different pools. This model has the partitioning of soil, climate and vegetation pools. Model assumes soil carbon sequestration rate is the function of soil carbon content, net primary productivity, soil texture, rainfall, temperature and C: N ratio of residue. The model automatically computes the carbon and nitrogen turnover based upon these parameters and model output displayed in excel sheet.



Biocontrol ability of Actinomycetes

Forty one strains of actinomycetes (*Streptomyces, Nocardia, Micromonospora*) isolated from arid and semi-arid soils were characterized for physiological and biochemical attributes. 50% of the isolates showed solubilization of insoluble phosphate. 68% showed biocontrol potential against fungal pathogens- *Macrophomina phaseolina*, *Sclerotiun rolfsii* and *Rhizoctonia solani,* while only 5% were antagonistic to *Fusarium oxysporun*. 17 strains effective in promoting growth of maize and chickpea in net house screenings were field tested in Vertisol. 4 strains were found promising for maize; screening on chickpea is under progress.



***Streptomyces* sp. - P solubilization (L), antagonistic action on *Macrophomina* (R)**

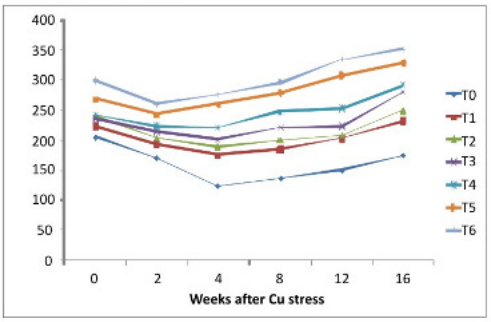
Participatory assessment of qualitative parameters for categorizing different degrees of soil quality to enhance the soil health and productivity

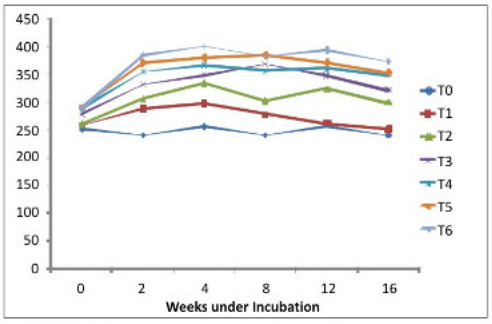
In order to backstop the soil health categories assessed by field tools, the laboratory analysis for selected quality parameters was carried out. The data reveals that the soil pH under organic and integrated farming was higher i.e. 8.07-8.12 in comparison to inorganic farming where it ranged from 7.78- 7.89. Similarly the electrical conductivity was higher in organic farming systems (0.24 dS m^{-1}) than former two systems (0.18 – 0.22 dS m^{-1}). After harvest of wheat, the soil analysis showed that the available N was high in inorganic (273 kg ha^{-1}) but least (201 kg ha^{-1}) in inorganic system in Parwalia, where as reverse happened in Vaidakhedi village. Like available N in Parvalia village, available P followed the same trend (similar) in both the villages. Wheat yield was highest under integrated farming systems (5170 to 5395 kg ha^{-1}) and lower in organic and inorganic systems.

Spectral reflectance, soil adjusted vegetation indices for prediction of LAI and yield of wheat

To study the effect of nitrogen stress on spectral reflectance and vegetation indices of wheat a field experiment was conducted with wheat crop grown at four nitrogen and two irrigation levels. Among the broadband vegetation indices compared, normalized difference vegetation index (NDVI) was found to be a good predictor for the LAI and biomass of

wheat at the early vegetation stage but during the full vegetation stage (when LAI value exceeded the value 1.7) Green Normalized Difference Vegetative Index (GNDVI) was found to be a better predictor for LAI and biomass than NDVI. LAI of wheat reached its maximum value at 75 DAS and after that it decreased. LAI was higher at higher nitrogen and irrigation level. Maximum LAI of 4.8 was recorded in I2N150% at 75 DAS. To reduce the soil background effect on spectral indices during the early growth phase of crop, a soil reflection line for Vertisols was developed. Perpendicular vegetation index (PVI) and Transformed soil adjusted vegetation index (TSAVI) calculated using the Soil Reflection Line was found to improve the LAI and biomass prediction in wheat during the early growth stage.



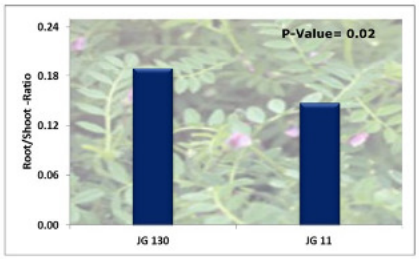


Effect of FYM management practices on recovery rate (Soil resilience) in Vertisol

An incubation study was carried out ascribed the recovery rate of Vertisol under various doses of fully decomposed FYM. Cu stress is given for reducing the short-term decomposition and to find the recovery rate under various FYM management (@ 5- 50 g kg^{-1} of soil) practices. The result from the incubation study revealed that Cu stress significantly (17.98- 29.30%) reduced the soil microbial biomass C (SMBC) and the enzymatic activities as compared to untreated soils (without Cu stress). Among the various treatments, soil without FYM showed the lower resistance, hence higher reduction in SMBC (70.70%) followed by other FYM treated soils (range 56.56 to 66.34%) at the end of 2- 4 weeks after incubation. At the end of incubation period (16^{th} week), microbial biomass carbon (SMBC) ranged from 173.76 to 352.66 mg kg^{-1} of soil under Cu stress and 239.04 to 371.33 mg kg^{-1} of soil under unstressed soil. In genreal, SMBC showed its recovery after 4 weeks of incubation period under Cu stressed condition. However, it showed recovery after 2 weeks only in case of higher doses of FYM application. The study suggests that there is a significant effect of organic management practices on recovery rate. Soil amended with higher doses of fully decomposed FYM are more resistant to copper stress and much faster to recover its initial status than the untreated soil.

Characterizing rooting behavior of chickpea under different tillage system

Influence of different tillage systems on rooting behavior of chickpea was studied. Result showed that RLD was progressively increased from sowing to flowering in both cultivars and both the tillage systems viz No-tillage and Conventional tillage and the highest RLD was observed at the flowering stage followed by the pod-setting/filling. It has been also observed that conventional tillage enhances the root development of chickpea. The differences between tillage systems became remarkable at the beginning of flowering stage. These differences are attributed to higher soil temperature and water availability during the flowering and grain-filling stages under conventional tillage compared with No-Tillage. Analysis of root: shoot biomass ratio indicates that JG 130 is more drought resistant than the JG 11.



Interactive effect of temperature, hydrological regimes and microbiological activities on soil carbon mineralization under long-term fertilizer and manure application

The effect of long-term application of manure and fertilizers on the dynamics of soil organic carbon (SOC) pools and soil physical properties was studied in a soybean-wheat system. The temperature sensitivity of C pools and the alterations in microbial composition were determined at 25, 35, and 45°C. Higher levels of microbial biomass C (MBC) and nitrogen (MBN), water soluble carbon (WSC), acid hydrolysable carbohydrates (AHC), particulate organic matter carbon (POMC) and nitrogen (POMN) were observed in the NPK+ FYM at a depth of 0- 15 cm. Irrespective of the treatment, micro aggregates (53- 250 µm) were a major aggregate size class, comprising 45- 57% of the total soil aggregates, followed by macro aggregates (250- 2000 µm at 37.8- 45%). Microbial respiration rate increased by 13.9% in most recalcitrant pools (<53 µm) at 45°C than at 25°C. Furthermore, data on labile Carbon revealed a 4.9-55.4%

increase in the substrate pools and a 10.5-32.5% increase in mineralization rate (k) with these treatments at 25- 45 °C in 250- 2000 µm aggregates. AHC and POMC content decreased by 23- 37% and 12- 23% of SOC, respectively, when the temperature was raised from 25 to 45°C. It is concluded the gradual depletion of nutrients, structural degradation and changes in microbial composition might have collectively contributed to the decline in crop yields. Seasonal rainfall, maximum and minimum temperature and SOC had jointly explained 12- 41% of variation in soybean production in NP, NPK and NPK+ FYM treatments. However, balanced use of NPK plus FYM is an important management option to arrest the decline of crop yield.

Structural and functional biodiversity in rhizosphere soil

Diversity of functional microbes to agro-ecosystems under different fertilizer managements explored and found that microbial groups involved in nutrient cycling were prevalent in organic amended soil followed by integrated and inorganic fertilizer fields. Spatial variation of the nutrient cycling microbial population in the rhizophrese of bioenergy crops revealed that these microbes are highly abounded in the rhizoplane followed by rhizospheric soil. The cultural biodiversity and biochemical activities such as soil microbial biomass carbon, soil respiration, dehydrogenase, fluorescin di-acetate, and glomalin were relatively greater in bt-cotton based cropping system as compared to non-bt-cotton system at ball formation stage.

Crop yield and soil health under organic farming

Under organic farming, application of organic manures (3 t ha^{-1}) along with the panchgavya (3%, v/v) and biodynamic preparations BD 500 (75 g ha^{-1}) and BD 501 (2.5g ha^{-1}) increased 22.2% grain yield of soybean compared to organic manure application alone. After 4 years of combined application of Panchagavya, Biodynamic Preparations and organic manures substantially improved soil biological activities in legume-legume based cropping system as compared to cereal intercropping cowpea/gram system.

Effect on Zn bio-assimilation in rats fed with Zn enriched feed

Treatments	Zn content in grain fed to animal (mg kg^{-1})	Zn content (µg mL^{-1}) in blood serum(Days after feeding)		
		0 Days	50 days	75 days
Control (without Zn)	32.9	24.3±2.6	36.1±3.4	37.7±2.2
Zn application (Soil + foliar)	45.3	24.5±2.5	42.1±3.9	44.4±1.8

Well documented Zn deficiencies are important soil constraint to crop production as well as to animal and human health. There are several solutions such as food fortification, micronutrient supplementation and biofortification to address the problem of micronutrient malnutrition. However, most of the solutions confined to large income group people. We have tried agronomic approaches- the most effective and sustainable and cost effective solution for alleviating food chain micronutrient deficiencies, to enrich the food grain with Zn. Bio-assimilation of enriched food grain were tested in two groups of rats, one with control-normal (Zn content 32.9 mg/kg) and another group fed with Zn enriched food (About 20% of the diet was replaced with enriched grain containing Zn 45.3 mg/kg). It was observed that Zn content increased in blood serum of rats fed with Zn enriched grain after 50days. In this study a close relationship between protein and high grain Zn content was also observed.

Dynamics and apparent balance of K in 40 years old Rice-Wheat system grown on Mollisols of Pantnagar

Potassium is third most important nutrient required in large quantity by crop. Rice-wheat is an important cropping system in IGP and terai belt which contributes to very large extent to food basket of country. Increase in price of K fertilizer further increased the importance of this element because country depends entirely on import. Therefore, it has become important to monitor the K status in intensively cultivated systems of the country.

Data clearly demonstrated that removal of K is much larger than K applied. This has resulted negative balance of K in rice-wheat system to the extent 47 to 127 kg ha^{-1} yr^{-1} in all treatments except NPK+FYM. On the other side, very little change in total K in soil was observed. However, the studies further indicate little decline in non-exchangeable K in all treatment except NPK+FYM. This suggests that this pool of K is acting as feeder pool to crop through exchangeable pool. On contrary balanced application of nutrient resulted improvement total K in soil (0-30cm).

Nutrient recovery from untreated sewage effluent

Residential area of Indian cities generates considerable amount of sewage effluent carrying significant quantity of plant nutrients which results in eutrophication of surface water bodies. Field experiment was conducted on Vertisol of central India for six years with the objective of investigating recovery of nutrient by aboveground biomass of wheat-soybean cropping system from untreated sewage effluent (SE) used as source of irrigation. Two sources of irrigation (groundwater and sewage effluent) and four

levels of nutrients [control (F_0), 100% of recommended doses of NPK (RD) (F_1), 50% RD (F_2) and 50% RD + FYM @10 Mg/ha (F_3)] were used as treatments to wheat only. Soybean was grown rainfed with general recommended doses nutrients. Results indicated that recoveries of nutrients from SE were the highest when crops were grown with their no additional nutrient application. Above-ground biomass of all the crops removed about 80% of N, 40% of P and 87% of K supplied through SE irrigation. Recovery of nutrients from SE were the highest by wheat grain for N and by soybean straw for P and K. Straw portion of the crops, which is generally recycled back into the agricultural land, recovered about 31% N, 22% P and 69% K supplied through SE. As available status of these nutrients in soil has increased with continuous SE irrigation, extent of their recovery is expected to increase with the progress of sewage farming. The study concluded that sewage farming can be promoted as a way for nutrient recovery through wheat-soybean cropping system, which is predominantly followed in central India.

Bio-fortification of grain sorghum and finger millet varieties with zinc through agronomic measures

Among the sorghum varieties, the CSV 1955 and Pant chari 3 have recorded higher zinc content - 40ppm due to application of $ZnSO_4$ against 29 ppm in control. Similarly, among the finger millet varieties, Paiyur-1 showed higher value of Zn - 32ppm against 27 ppm in control. Among the treatments, the foliar application was found to enhance the Zn content in grain in finger millet, while soil and foliar applications enhance the Sorghums by over 10%. The higher zinc contents have shown the positive correlation with thiol group (-SH), higher amino acids secretion, but not with phenolic content in phytosiderophores, implying the binding capability of these compounds for Zn.

Awards and Honours

1. Dr. S. Kundu, Head, Division of Environmental Soil Science, has been elected as Fellow of the National Academy of Agricultural Sciences, w.e.f. 1st January, 2013.
2. Dr. S. Kundu, Head, Division of Environmental Soil Science, has been admitted as Fellow of the Indian Society of Soil Sciences, w.e.f. December, 2012.
3. Dr. A.K. Biswas, K.M. Hati, S. Ramana, A.B. Singh received the ISSS- Dr. J.S.P. Yadav Memorial Award for Excellence in Soil Science in 2012.
4. Dr. R. S .Chaudhary received Bharat Jyoti Award 2012 by IIFS, New Delhi.
5. Dr. Ritesh Saha received the Indian Society of Soil Science (ISSS) Golden Jubilee Commemoration Young Scientist award for the year 2012.
6. Dr. S. Kundu, Dr.Tapan Adhikari, Dr. M. Vassanda Coumar, Dr. S. Rajendiran, Dr. J.K. Saha, Dr. A. K. Biswas, Dr. A.Subba Rao, received Third Prize for their poster entitled Pine Oleoresin Coated Slow Release Urea presented in the National Seminar on Advance in Agricultural Research towards Food Security and Environmental Sustenance held in Visva-Bharti, Sriniketan during 1st -3rd September, 2012.
7. Dr. K.N. Singh, A. Rathore, A.K. Tripathi, A. Subba Rao and Salman received a Best Paper Award and cash prize of Rs. 2500/- by the Indian Society of Agriculturist Statistics, New Delhi for the paper entitled 'Soil Fertility Mapping and its Validation using Spatial Prediction Techniques'.
8. Dr. N. K. Sinha, Scientist (Soil Physics) received Best Poster Award in Third International Agronomy Congress on Agriculture diversification, Climate Change Management and Livelihoods.
9. Dr. A. K. Tripathi, A.K. Shukla, A. B. Singh and A. Subba Rao received a Shri Ram Khad Patrika Award, third prize of Rs. 5000/- for the Best article published in Khad Patrika, August 2012 issue entitled Saghan Krishi Mein Jasta Prabandh.
10. Dr. Asha Sahu received Gold Medal as ISSS Best Doctoral Research Presentation Award at 77th Annual Convention of Indian Society of Soil Science, PAU, Ludhiana, during 3rd -5th December, 2012.

Seminar/Training/Workshop/Meeting organized in the institute/Extension activities

1 6th CAC and CIC meeting of NAIP sub project C4/C30022 was held at AAU, Anand, Gujarat from 30-31 july, 2012.

2. J. Somsundaram, R.S. Chaudhary and K. M. Hati conducted a Model Training Course on "Conservation

Agriculture for Sustaining Soil Carbon, Quality and Productivity in Rain fed Region" from 10th – 17th September, 2012.

3. Tapan Adikari and S. Kundu organized Short Course on "Application of Nanotechnology in Soil Science and Plant Nutrition Research" from 18th - 27th September, 2012.
4. A.B. Singh and A.K. Tripathi organized 3-6 days ATMA trainings for the farmers of Bihar, Madhya Pradesh and Rajasthan during September, November and December, 2012.
5. Workshop-cum training on soil testing and soil health for KVK personnel of MP and Chhattisgarh was organized in collaboration with Zonal Project Directorate, Zone- VII Jabalpur during 9th – 10th October, 2012.
6. M. Mohanty, S. Lenka and R.S. Chaudhary organized a Short Course on "Use of Simulation Modeling in Climate Change Research: Special Reference to NRM" was held from 3rd - 12th October, 2012.
7. M.C. Manna, J.K. Saha and Brij Lal Lakaria organized Model Training Course on "Organic and Agricultural Waste Management for Enhancing Nutrient Use Efficiency" during 15th - 22nd October, 2012.
8. The final meeting of the QRT of IISS and the AICRPs on LTFE, STCR, Micronutrients and Network on Biofertilizers for the period 2007-12 was held during 22nd - 25th November, 2012.
9. National Seminar on Strategies to Rationalize and Reduce Consumption of Water Soluble Phosphorus and Potassium in the Country to Minimize Imports during 18-19 Dec, 2012.
10. A National Consultation Meeting organized on "Developing Roadmap for Soil Research in India" on 20th December 2012.

Major events

Independence Day : The Staff Recreation Club (SRC) celebrated the Independence Day on 15th August, 2012 with great gaiety and honour. On that day various cultural and sports programs were held for the family members of the staff.

Hindi Celebration : Hindi Week has been celebrated from 14th to 20th Sept. with many competitions.

Aris Cell : Institute has been brought under National Knowledge Network (NKN) grid having high speed (100 MBPS) internet connectivity under NKN-NIC during period.

Research Instruments added : Auto clave, BOD incubator, Refrigerated High Speed Centrifuge and Particle Size Analyzer.

Staff news

New Appointments / Joining

Shri Shaurav Kumar appointed as Assistant from 22nd October, 2012.

Sports News

(ICAR sports meet 26th Sep to 30th Sep, at IARI, N. Delhi). Mr. S. Rajendiran Long jump – Ist position, Ms Neenu S long jump – Ist position, High jump – 2nd, discuss throw- 3rd. Dr Mrs K Bharti Discuss throw – 2nd, Shot put – 2nd and Basket ball team – runners up.

Promotions

Dr. Sanjay Srivastava promoted to Principal Scientist in the discipline of Soil Chem/Fertil./Micro. with effect from 10th March, 2009.

Dr. K. M. Hati promoted to Principal Scientist in the discipline of Soil Physics with effect from 27th December, 2011.

Dr. S. Ramana promoted to Principal Scientist in the discipline of Plant Physiology with effect from 6th February, 2012.

Shri. C.T. Wankhede (T-4) promoted to T-5 on 3rd August, 2012.

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

Name	Programme	Venue	Duration
Dr. M. Vassanda Coumar	Training Course on Introductory SWAT workshop	IIT, Delhi	16th - 17th July 2012
Dr. Sanjay Srivastava	Meeting on Soil Fertility Mapping at DAC	Krishi Bhavan, New Delhi	3rd Aug, 2012
Dr. Pradip Dey	QRT Meeting of East Zone	KAU, Kalyani	5th - 9th Aug, 2012
Dr. R. H. Wanjari	Training on Forecast Modelling in Crops Using Weather and Geo-informatics	IASRI, New Delh	22nd Aug - 4th Sep, 2012
Dr. M. Vassanda Coumar	Summer Training (21 days) on Geospatial Technologies and Applications	TNAU, Coimbatore	22nd Aug - 11th Sep, 2012
Dr. Pradip Dey and Mr. Rajendiran S	Golden Jubilee National Seminar on Advances in Agricultural Research towards Food Security and Environmental Sustenance	Pali Siksha Bhawan, Sriniketan	1st - 3rd Sep, 1012
Dr. Pradip Dey and Dr. Sanjay Srivastava	Zonal Conference on Agricultural Inputs for Rabi 2012-13 for South and West Zones	NCUI Auditorium New Delhi	10th - 11th Sep, 2012
Dr. Pradip Dey	Zonal conference on Agricultural Inputs for Rabi 2012-13 for East and North Zones	NCUI Auditorium New Delhi	13th - 15th Sep, 2012
Mr. Vasudev Meena	Short course training on Application of Nanotechnology in Soil Science and Plant Nutrition Research	IISS, Bhopal	18th - 27th Sep, 2012.
Dr. Pradip Dey	QRT Meeting of West Zone	MPUAT, Udaipur	20th - 22nd Sep, 2012
Mr. Rajendiran S	CAFT (21 days) on Recent Advances in Sample Survey and Analysis of Survey Data Using Statistical Softwares	IASRI, New Delhi	3rd - 23rd Oct, 2012
Dr. Brij Lal Lakaria	8th International Symposium on Plant Soil Interaction at Low pH	UAS, Bengaluru	18th - 22nd Oct, 2012
Dr. K. Ramesh	ASA, CSSA and SSSA International Annual Meeting	Cincinnati, Ohio	21st - 24th Oct, 2012
Dr. R. H. Wanjari	Training on Advances in Weed Management	DWSR, Jabalpur	31st Oct - 9th Nov, 2012
Dr. R. Elanchezhian	3rd National Symposium on Agricultural Production and protection in the context of climate change	BAU, Ranchi	3rd - 5th Nov, 2012
Dr. Sanjay Srivastava	Meeting Convened by Joint Secretary, INM, DAC, Ministry Of Agriculture to Finalize the Specifications and Rates of the Instruments/Equipments to be Used by Various State Soil Testing Laboratories	Krishi Bhawan, New Delhi	7th - 9th Nov, 2012
Dr. Pradip Dey	22nd Regional Committee VII Meeting	GIC, Goa	9th - 10th Nov, 2012
Dr. Brij Lal Lakaria	Meeting of RFD Nodal Officers	IASRI, New Delhi	19th Nov, 2012
Drs. M. Mohanty and Sangeeta Lenka	12th Plan NICRA EFC document meeting and presentation of technical program for the new project	CRIDA, Hyderabad	26th - 27th Nov, 2012
Dr. R. Elanchezhian	International Conference of Agri-biotechnology - Industrial Relevance of Genomics and Nano-biotechnology	IHC, CII, New Delhi	27th Nov, 2012
Drs. R.H. Wanjari, K. Ramesh, J. Somasundaram, R. K. Singh, N. K. Sinha and B. P. Meena	3rd International Agronomy Congress on Agriculture Diversification, Climate Change Management and Livelihoods	IARI, New Delhi	27th - 29th Nov, 2012
Drs. R. S. Chaudhary and Ritesh Saha	Brainstorming Session on Pilot Basin Studies for IWRM in Bina River Sub Basin	NIH, GPSRC, Bhopal	29th Nov, 2012
Dr. Ritesh Saha	National Seminar on Science for Shaping the Future of India	MPCST, Bhopal	30th - 31st Nov, 2012
Drs. A. Subba Rao, S. Kundu, A. K. Biswas, Tapan Adhikari, K. M. Hati Ritesh Saha, Promod Jha, M. Vassanda Coumar, A. Mandal , Asha Sahu and Ms. S. Neenu	77th Annual Convention of Indian Society of Soil Science	PAU, Ludhiana	3th - 7th Dec, 2012
Dr. K. Ramesh	5th International Conference on Nanotechnology Creating Better Tomorrow for India and for the World	Banglore -Nano, Bangaluru	5th - 7th Dec, 2012
Dr. Pradip Dey	International Symposium on Food Security Dilemma: Plant Health and Climate Change Issues	FTC, Kalyani	7th - 9th Dec, 2012
Dr. Brij Lal Lakaria	Meeting of PME Cell In-Charges of ICAR Institutes	NDRI, Karnal	8th Dec, 2012
Drs. Ajay and R. Elanchezhian	National Seminar of Plant Physiology on Physiological and Molecular Approaches for Development of Climate Resilient Crops	ANGRAU Hyderabad	12th - 14th Dec, 2012
Dr. Sanjay Srivastava	Technical Group Meeting to Examine the Proposal of Various Companies for Notifying One Grade of Customized Fertilizers for more than 6 Districts	Krishi Bhavan, New Delhi	14th Dec, 2012
Dr. M. Mohanty	Workshop on Crop Modelling	CRIDA, Hyderabad	15th - 16th Dec, 2012
All Scientists of the Institute	National Seminar on Strategies to Rationalize and Reduce Consumption of Water Soluble Phosphorus and Potassium in the Country to Minimize Import	IISS, Bhopal	18th - 19th Dec, 2012
Dr. Pradip Dey	Workshop for Reviewing the Progress and Performance under the National Project on Management of Soil Health and Fertility	MANAGE, Hyderabad	19th Dec, 2012
All Scientist of the Institute	National Consultation Meeting for Developing Roadmaps for Soil Research of India	IISS, Bhopal	20th Dec, 2012

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For feedback please contact,

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