भाकृअनुप
ICAR

IISS Newsletter

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New Director Joins

Dr. C.L. Acharya joined as Director of the Institute on May 16, 1998. Earlier to this assignment, he was the Chief Scientist & Head, Dept. of Soil Science at H.P. Krishi Vishvavidhya-laya, Palampur (H.P.)

In this Issue

Editors
D. L.N. Rao
D. Damodar Reddy
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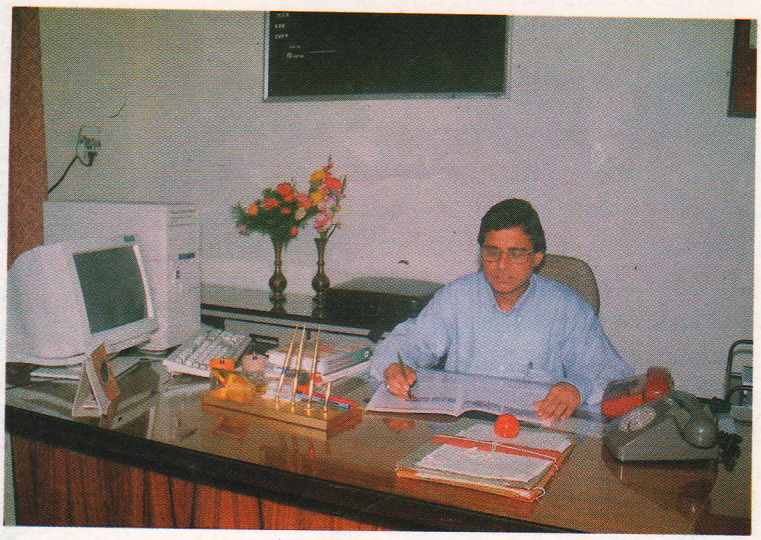
Design & Scheme
A.K. Sharma

Published by
C.L. Acharya, Director

From the Director's Desk...



IPNS- An Environmentally Benign Approach

The potentiality of a good quality seed is fully expressed only when adequate supply of plant nutrient is made in the presence of adequate moisture. Any management practice recommended to achieve the goal must ensure the long-term sustainability of crop yields and soil productivity with least impairment of soil quality and environment. With the increasing cost of fertiliser we can hardly afford to follow any ad-hocism in nutrient use. This has to be crop and location specific keeping in mind the basic principles of nutrient-crop yield relations, nutrient behaviour in soil and nutrient interactions. Exhaustive cropping systems are hastening the pace of degeneration of soil quality by excessive mining of native fertility without any addition of residues. Integrated Plant Nutrient Supply (IPNS) systems through the conjunctive use of organic and inorganic fertilisers is the only economically viable and socially acceptable way for sustaining the biological productivity of the soil. Therefore, emphasis has to be given on IPNS approach which is also an environmentally benign production technology. The IISS, Bhopal has made good headway and generated useful information in this direction.

This Newsletter is the first of the Institute. I congratulate the Scientists of IISS, Bhopal for this effort. I hope that the readers will find it useful and help the institute to improve it further through their suggestions.

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Inaugural Session of LTFE Workshop

LTFE Workshop

A national workshop on Long term soil fertility management through Integrated Plant Nutrient Supply system was held from April 2-4, 1998. Seventy delegates from India and abroad (IACR Rothamsted; IRRI, ICRISAT and CIMMYT) deliberated on emerging soil fertility management issues under rainfed and irrigated systems. The workshop emphasised the need to continue long term fertiliser experiments in the network mode and develop eco-region specific IPNS strategies for sustainable crop production.

The following recommendations emerged at the workshop-

- Long term fertiliser experiments under various projects in the same agroeco-regions may be consolidated under AICRP on LTFE.
- Guidelines for management of LTFEs should be developed.
- A collaborative research project should be developed betwen the ICAR and DFID-NRSP, UK.
- The workshop proceedings should be published.

Scientific Activities

Integrated Plant Nutrient Management System for Soybean - Wheat

A package for integrated nutrient management for soybean-wheat system on Vertisols was developed to provide the farmers with different options depending upon the availability of farmyard manure and fertilizer resources to achieve 2 t ha^{-1} or more soybean seed under rainfed and 3.5 t ha^{-1} or more wheat grain under irrigated conditions.

Nitrogen Management for Soybean-Wheat and Rice-Wheat in Vertisols

Use of farmyard manure (4-16 t ha^{-1}) resulted in a net saving of 50-115 kg N ha^{-1} in soybean-wheat system in Vertisols. To sustain the productivity of rice or wheat at 4.5 t ha^{-1}, 135 kg N ha^{-1} is needed; incorporation of 5t of FYM or 3t of green manure (*Parthenium* weed), saved 50 and 35 kg N ha^{-1} respectively in rice and also saved 30 and 10 kg N ha^{-1} for wheat through residual effect. Thus application of FYM and green manure saved nearly 45 to 80 kg N ha^{-1} yr^{-1} in rice-wheat system.

Phosphorus management in Vertisols

In soybean - wheat system on Vertisols, fertilizer P applied to wheat gave better long term benefits and use efficiency than application to soybean.

A long term study on P dynamics in a vertisol indicated that the P required to be added to raise plant available P by 1 mg kg^{-1} was 17.9 kg P ha^{-1} in unmanured plot and 5.6 kg ha^{-1} in manured (16 t ha^{-1}) plots.

Fixation and adsorption of P in mineralogically variant soils

In contrast to the general notion that Vertisols fix high amounts of P, research findings showed that in smectite dominant Vertisols, most of the added P is sorbed as outersphere complexes with weak bond energies, which was available to crops. In Kaolinite dominant ultisols and oxisols, on the contrary, amount of P sorbed by ligand exchange is almost equivalent to P fixed.

Potassium Availability in Relation to Soil Mineralogy

Major benchmark soils of India were characterized for their potassium supplying capacity in relation to soil mineralogy. Nature of soil mineralogy governed K release to a greater extent than clay content of soils. Evaluation of different soil test methods showed that multinutrient extractants were as efficient as 1 N ammonium acetate for reliable prediction of K availability in soils.

Front Line Demonstrations on Soil-Test Based Crop Response

Front line demonstrations initiated in farmers fields in 10 states during 1996 under

the aegis of the STCR project were continued in *rabi* 1997-98 by laying out 115 demonstrations. In six states (Haryana, M.P., Delhi, Bihar, T.N. and A.P.), fertiliser application based on targeted yield equations helped to obtain target yield, high response ratio and profit to farmers. In many cases fertiliser rates applied were lower than recommended dose though yield was similar in both cases. These demonstrations clearly showed that considerable saving of fertilisers can be made if recommendations are based on soil tests.

Composting Technology Demonstrated

The production of phospho-nitro compost from tree leaves, grasses and other waste materials available in forest areas alongwith inoculation of cellulose decomposers and P-solubilizers was demonstrated to farmers of Sehore district.

Mycorrhiza In Soybean-Wheat System

Maximum levels of vesicular-arbuscular mycorrhiza (VAM) infection was observed in August for soybean and in January for wheat. Infection was two fold higher in soybean than in wheat. VAM infection increased significantly by application of FYM.

Tillage and Residue Effects on Soil Physical Properties

Tillage operations creating coarse tilth were found to reduce cracking intensity in Vertisols. Depth of tillage was inversely related to both run-off and sediment loss, thereby justifying deep ploughing before onset of rains in Vertisols. The run-off and resulting sediment loss was significantly reduced with application of organic residues at the surface as mulches.

Research Initiatives

Technical Programme of AICRP-Tillage Finalised

The technical programmes of co-operating centres of AICRP on tillage requirement of major Indian soils for different cropping systems - Delhi, Hisar, Jobner, Ludhiana, Sabour, Jabalpur, Parbhani, Bhubaneswar, Coimbatore, Hyderabad, Kharagpur, Vellayani, and Palampur were decided at meetings held at IARI, New Delhi (April 29-30, 1998); JNKVV, Jabalpur (May 5, 1998); and ANGRAU, Hyderadad (May 25-26, 1998). For these programmes, valuable guidance and advice was received from Dr. G.B. Singh, DDG (NRM), Dr. R.N. Prasad, ADG (Soils), Dr. B.P. Ghildiyal and Dr. R.K. Gupta, Director of Research, JNKVV, Jabalpur. Three core programmes- Tillage management for major cropping systems, Residue management in cropping systems, and Testing of machines, in an interdisciplinary approach involving soil physicists, agronomists and agricultural engineers were finalised.

Group Meeting on Micronutrients

A Group meeting of the officers- in-charge of various centers of the All India Coordinated Research Project of Micro and Secondary Nutrients and Pollutant Elements in Soils and Plants was organised at IISS, Bhopal on May 5-6, 1998 to review the progress of research and to develop future action plan.

Research Review

QRT Completed

The Quinquennial Review Team (QRT) of the AICRP on Microbiological Decomposition and Recycling of Farm and City Wastes has completed most of the review work. The report would be submitted shortly.

Awards and Honours

Institute Scientists win Laurels

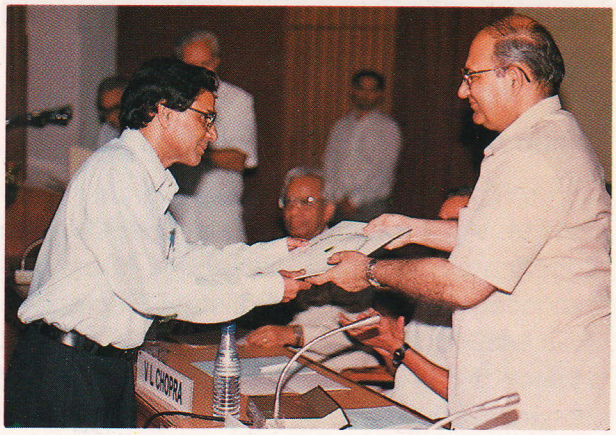
Dr. P.N. Takkar, Former Director of IISS has been awarded the "S.N. Ranade Memorial Life Time Achievement Award for Excellence in Micronutrient Research" for the year 1998-99 for his outstanding contributions in the field of Micronutrient research for more than 25 years. The award carries a value of Rs. 81,000 and a citation of achievements.

Dr. J.K. Saha, Scientist has been awarded the "S.N. Ranade Memorial Junior Scientist Award for Excellence in Micronutrient Research" for the year 1998-99 for his outstanding contributions in the field of methods of micronutrient analysis and

transformation of micronutrients in laterite soils. The award carries a value of Rs. 31,000 and a citation of achievements.

Fellowship Awarded

Dr. C.L. Acharya, Director of the institute was admitted to the fellowship of the National Academy of Agricultural Sciences on June 5, 1998 at the Fifth Annual General Meeting of the Academy at New Delhi.



Dr. C.L. Acharya receiving Fellowship of the NAAS from Dr. R.S. Paroda, President of the Academy

Visitors

1. Dr. R.L. Yadav, PD, Project Directorate for Cropping Systems Research, Modipuram, Meerut, January 6.
2. Dr. P.S. Lamba, Ex-VC, HAU, Hisar, January 16.
3. Dr. V.S. Tomar,Dean, JNKVV, Sehore, January 16.
4. Dr. A.S. Raju, Head, Department of Soil Science, APAU, Hyderabad, January 16.
5. Dr. R.N. Prasad, ADG(S), ICAR, January 16.
6. Shri K. Shankarnarayan, Agricultural Production Commissioner, Govt. of MP., Bhopal, February 26.
7. Shri M.K. Roy, Secretary (Agriculture), MP, Bhopal, February 26.
8. Dr. G.S. Kaushal, Director of Agriculture, MP, Bhopal, February 26.
9. Shri P.D. Sudhakar, Jt. Sec., Govt of India, Deptt. of Agri. & Co-operation, June 29.

April 2-4, 1998

10. Dr. J.S. Kanwar, DDG (Emeritus), ICRISAT, Hyderabad.
11. Dr. G.B. Singh, DDG (NRM), ICAR.
12. Dr. R.N. Prasad, ADG (S), ICAR.
13. Dr. B.R. Sharma, ADG (WM), ICAR.
14. Dr. R.J.K. Myers, ICRISAT, Patancheru.
15. Dr. M.Velayutham, Director, NBSS & LUP, Nagpur.
16. Dr. D.S. Powlson, Head, Soil Science Department, IACR-Rothamsted, UK.
17. Dr. John L. Gaunt, Soil Science Department, IACR-Rothamsted, UK.
18. Dr. Stephen Walker, Soil Science Department, IACR- Rothamsted, UK.
19. Dr. Peter Hobbs, Wheat Agronomist, Nepal.
20. Dr. Kevin Bronson, IRRI, Philippines.

Personnel

New Staff Joining the Institute

1. Shri A.K. Singh, AO, February 26.
2. Shri Venny Joy, Jr. Steno, March 23.
3. Dr. R.B.R. Yadava, Principal Scientist, April 3.
4. Dr. C.L. Acharya, Director, May 16.
5. Shri V.A. Padmanabha, Assistant, May 26.
6. Dr. D.L.N. Rao, PC (BNF), June 25.

Staff Left the Institute

1. Dr. A.N.Ganeshamurthy, CARI, Port Blair, January 22.
2. Shri G.T. Daniel, Assistant, CIAE, Bhopal, March 31.
3. Dr. R.P. Yadav, Scientist, CSWRTI, Regional Station, Chandigarh, May 19.

Events

In the ICAR Inter-institutional Zone-2 Sports Meet held at CIAE, Bhopal from February 4-7 1998 IISS secured overall 6th position out of 29 institutes. Km. Poonam Jethani and Km. Yojana Khaparde were the runners up in the badminton and Shri Sanjay Katenga was the runner up in high jump.