



Soil Science News

Quarterly newsletter of **Soil Science Society of Pakistan**

Editor: Dr. M. Mahmood-ul-Hassan

Associate Editor: Dr. A. Rashid

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EDITORIAL

Management of Natural Resources for Food Security

The country is faced with a gigantic task of food security for an ever-increasing population — rather at a fast rate. Contrarily, the pivotal natural resources for agricultural productivity, i.e., soil and water, are not only limited but also are plagued with a host of problems. For example, not only the per unit cultivated land is shrinking rapidly, but also cultivated soils of the country have been degraded by way of erosion, organic matter depletion, fertility decline, high salt content, compaction, and so on. Also, the country is faced with an acute shortage of irrigation water.

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NEWS AND VIEWS

Special Seminars

The Soil Science Society of Pakistan organized two special seminars at its General Body meeting held on October 21, 2003 at Ayub Agricultural Research Institute, Faisalabad. **Prof. Dr. Aman Ullah Bhatti**, Chairman, Department of Soil and Environmental Sciences, NWFP Agricultural University, Peshawar made a presentation on “Spatial Variability of Soil Properties and Crop Yields” and **Dr. Muhammad Rashid**, Director, Soil and Water Conservation Institute, Chakwal on “Soil and Water Conservation.”

Professor Bhatti highlighted the influence of soil spatial variability on crop productivity. He emphasized that, as an end result of soil forming factors operating and interacting over a continuum of

10th Congress of Soil Science March 16—19, 2004

Final Call for Abstracts, Registration and Accommodation

Deadline for Abstracts has been extended to **January 20, 2004**. The intending participants are requested to submit their **Abstracts** and **Registration Fee** (Rs. 300 for members and Rs. 700 for non-members) through bank draft in the name of Soil Science Society of Pakistan, Ayub Agricultural Research Institute Branch, Faisalabad (Code 0560) or money order. Personal cheques are not acceptable. Those desiring to avail Post Congress Tour must also pay Rs.150. Registration Fee for a foreign participant is US\$ 60 (or equivalent in Pak currency) payable in advance or at the Congress. The abstracts and fee may be sent to:

Dr. Mohammad Ibrahim, Convener, Technical Committee/Agri. Chemist (Soils), Ayub Agricultural Research Institute, Faisalabad. **Email:** soilchem@fsd.paknet.com.pk

Accommodation Request Forms, duly filled in, may please be sent latest by **January 31, 2004** to:

Dr. Kazi Suleman Memon, Professor, Department of Soil Science, Sindh Agriculture University, Tandojam, Sindh. **Email:** ksmemon@hyd.paknet.com.pk

1. Details of the Hotel and Guesthouse accommodation available at Hyderabad are as below:

Category	Hotel/Guesthouse Room Rent (Rs.)				
	Indus	City Gate	Faran	Executive	Shelton
Single	1225	1100	1000	1200	1000
Double	1837	1400	1400	1500	1200
Deluxe	2450	2000	-	-	1400

Note: The above rates are inclusive of all taxes and cover complimentary breakfast as well.

2. Limited hostel (student-type) and guesthouse accommodation is available at Tandojam campus (rates applicable as per policy of each institute), which would be allocated on first come first serve basis.

spatial and temporal scales, soils are not homogenous, but rather are inherently variable. Soil spatial variability causes uneven crop growth, confounds treatment effects in field experiments by impairing the effect of uniform fertilizer or amendment application within a field. Thus, understanding the magnitude and pattern of soil variability is necessary for improving the management options. As soil variability may not be visually apparent, researchers are frequently mistaken in assuming that flat fields are devoid of heterogeneity. Even in such situations, in soil many properties, like A-horizon depth, hydraulic conductivity, moisture content, soil EC, P and K levels, or gypsum requirement, may be appreciably variable. Thus, a sampling scheme must be devised to characterize the magnitude and pattern of heterogeneity within the sampling area. Though soil variability is generally assumed to be random, in actuality it has a component of spatial variability. Soil variability can be described by classical statistical analysis, geostatistical techniques, uniformity trials (contour mapping), 3-dimensional plots of soil properties, and soil survey and classification. For determining soil variability, field sampling or measurements are needed. However, sampling schemes involving expensive labour and equipment are undesirable.

Speaking on the subject of soil and water conservation, Dr. Rashid told total erosion-affected area in the country is 19 Mha, of which 13 Mha is water-eroded. He stated that some of the conventional erosion control measures are very expensive and, hence, not adoptable by farmers. Therefore, the Soil & Water Conservation Research Institute (SAWCRI), Chakwal is developing cost-effective and sustainable technologies for soil erosion control and moisture conservation, and, in fact, has made a considerable headway in this direction. According to him, salient achievements of the Institute are: (i) Developed & standardized farm water control structures which are 10-time economical than conventional masonry structures. The technology is being disseminated. Also, structures for >8 feet field to field fall are being developed and standardized. (ii) As gullied land management with bulldozer is very expensive and also buries fertile topsoil, a technology is being standardized for growing a variety of fruit plants in gullied areas without land levelling. The initial results are promising. (iii) Water, an expensive and rare commodity in rainfed Potwar, is used for arable cropping. For more beneficial use of this precious resource, SAWCRI is developing technologies for using stored rainwater for high value fruit plants. (iv) For conserving monsoon rainwater, gypsum use, legume crop soil cover and mulching have proved very effective. Also, miraculous improvement in wheat production occurs with gypsum use.

TRAINING LECTURES

Prof. Dr. Aman Ullah Bhatti lectured on “Soil pH and its role in nutrient availability” and “Fate of NPK fertilizers in soil” at a training course for Field Technicians of Pakistan Tobacco Company, Akora Khattak, Newshehra held on 18—19 Dec., 2003.

HONOURS AND AWARDS

Dr. Muhammad Ibrahim, A.C.(Soils) AARI., Faisalabad **Dr. Dil Fayaz Khan**, Research Officer, Directorate of Soil & Plant Nutrition Agriculture Research Institute, Tarnab, Peshawar, and **Dr. Naitmatullah Bughio**, SSO & **Dr. M. Mahmood-ul-Hassan**, SSO, Land Resources Research Program, NARC, Islamabad have been awarded **Research Productivity Allowance - 2002** by the Pakistan Council for Science and Technology, Ministry of Science and Technology.

Congratulations to all for earning this professional distinction!

PROMOTIONS, APPOINTMENTS, POSTINGS

Mr. Haq Nawaz Khan, PSO (Soils), NIFA, Tarnab, Peshawar has been appointed Head, Soil Science Division, NIFA.

Mr. Mukhtiar Ali Channa, Assistant Research Officer, Agricultural Research Institute, Tandojam has taken over the charge of Soil Fertility Officer on the retirement of Mr. Khet Khemani.

Dr. M. Abid Kharal, Assistant Professor, Soil Science, University College of Agriculture, Multan has been elected as Vice President of Teaching Staff Association of Bahauddin Zakaria University, Multan.

Congratulations to all from Soil Science News!

VISITS AND FELLOWSHIPS

Dr. Abdul Rashid, CSO & Program Leader, **Dr. Fayyaz Hussain**, SSO, Land Resources Research



Dr. Fayyaz Hussain, Dr. A. Rashid, and Mr. Ahmad Sami Ullah with Dr. R.R. Weil (Co-author of the book Nature and Properties of Soils).

Program, NARC and **Mr. Ahmad Sami Ullah**, SSO, AZRC, Quetta participated in Annual Meetings of the American Society of Agronomy-Soil Science Society of America held on 3-6 Nov 2003 at Denver, Colorado. At the Meetings, Dr. Rashid presented two papers pertaining to NARC research: (i) Boron deficiency in calcareous soils reduces paddy yield and impairs grain quality, by A. Rashid, M. Yasin, M. Ashraf, and R. A. Mann; (ii) Zinc deficiency in rainfed wheat in Pakistan: Spatial variability, fertilizer requirement, and plant analysis diagnostic criteria, by E. Rafique, A. Rashid, J. Ryan, and A.U. Bhatti.

Dr. Farmanullah Khan, Associate Professor, Department of Soil & Environmental Sciences, NWFP Agricultural University, Peshawar has been awarded a Post Doctoral Fellowship—2003 by Higher Education Commission, Islamabad.

Miss. Samia Naheed Akhtar, on returning from USA, has joined Soil Chemistry Section, Ayub Agricultural Research Institute, Faisalabad.

Mr. Jam Niaz Ahmad, Agricultural Research Officer, Soil and Water Testing Lab. Multan has passed the Scholarship Test for Indigenous Ph.D. Programme of the Higher Education Commission.

RESEARCH GRANTS

The following scientists have earned 3-year research grants out of the **Agricultural Linkages Program (ALP)** being administered by PARC:

- **Dr. M. Shafiq**, PSO, Water Resources Research Program, NARC on “Increasing and Sustaining Crop Productivity of Water-eroded Lands through Rainwater and Soil Fertility Management” worth Rs. 7.500 million.
- **Dr. Ghulam Murtaza**, Assistant Professor, Deptt. of Soil Science, UAF, Faisalabad on “Sustainable rice-wheat farming system on salt-affected soils using brackish water and amendments” worth Rs. 2.924 million.
- **Dr. Muhammad Yaseen**, Assistant Professor, Deptt. of Soil Science, UAF, Faisalabad on “Evaluation and formulation of calcium carbide based soil amendment for improving crop production” worth Rs. 2.993 million.
- **Dr. Rahmatullah**, Associate Professor, Deptt. of Soil Science, UAF, Faisalabad on “Silicon Nutrition for Enhancing Crop Productivity worth” worth Rs. 3.431 million.
- **Mrs. Shahida Nasreen Khokhar**, SSO, Soil Biology, NARC, Islamabad on “Improving Root-association of Diazotrophs [*Azorhizobium Spp.* & *Azospirillum spp.*] In rainfed wheat” worth Rs. 2.233 million.
- **Dr. Mahmood-ul-Hassan**, SSO, LRRP, NARC, Islamabad on “Modeling leaching losses of fertilizer nutrient from root zone and

environmental implications” worth Rs. 2.485 million.

- **Dr. Riaz A Khattak**, Professor, Deptt. of Soil NWFP Agri. University, Peshawar on “Increasing crop production through humic acid in rain fed and salt-affected soils in Kohat division (NWFP)” worth Rs. 4.179 million.
- **Dr. Ashfaq Ahmed Sheikh**, Dy. Director, Pakistan Council of Research in Water Resources, Islamabad on “Use of low quality ground water for sustainable crop production” worth Rs. 1.700 million.
- **Mr. Sultan Muhammad**, Agri. Chemist, Soil Chemistry Section, Agri. Research Station, Baffa on “Micronutrients studies for sustainable fruit productivity” worth Rs. 5.800.
- **Dr. Maqbool Akhtar**, SSO, Sugar Crop Program, IFSHC, NARC, Islamabad on “Nutrient indexing and integrated nutrient management for sustaining sugarcane yields” worth Rs. 5.800 million.
- **Dr. Muhammad Sharif**, Assistant Professor, Deptt. of Soil & Environment, NWFP Agri. University, Peshawar on “Field evaluation of vesicular arbuscular mycorrhizal fungi and their significance in wheat-maize cropping system under different soil series of NWFP” worth Rs. 1.411 million.
- **Dr. Muhammad Tariq Jan**, Associate Professor, Deptt. of Agronomy, NWFP Agri. University, Peshawar on “Improving yields and nitrogen use efficiency in cereal based cropping system” worth Rs. 1.234 million.
- **Dr. Sabir Hussain Shah**, Soil Microbiologist, Soil and Plant Nutrition Directorate, Agri. Research Institute, Tarnab, Peshawar on “Improvement of groundnut production through rhizobial inoculation in NWFP” worth Rs. 1.701 million.
- **Dr. Muhammad Aslam**, SSO, LRRP, NARC, Islamabad on “Use of nitrogen fixing, plant growth promoting rhizobacteria for development of bio-fertilizer for crop of economics” worth Rs. 9.800 million.

Congratulations to all from Soil Science News!

HAPPY MARRAIGE

Mr. Mahmood Sadiq, ARO, Soil & Water Testing Lab., Thokar Niaz Beg, Lahore, has got married.

Congratulations for a happy & prosperous married life!

RETIREMENT

Dr. Muhammad Saleem Saif, Professor of Soil Science, Sindh Agriculture University, Tandojam retired on 06 December, 2003 after more than 39

years' service. Dr. Saif did B.Sc. (Agri.) in 1964 and M.Sc. (Agri. Chemistry) in 1967 at Sindh Agriculture College, Tandojam, and Ph.D. (Soil Science) in 1977 from University of Agriculture, Faisalabad. He has served the Soil Science Society of Pakistan in many capacities: Editor, Pakistan Journal of Soil Science, 1987—1989; Vice President (Sindh), 1995—1996; and Councillor for 8 years. Dr. Saif has 30 research publications to his credit.

We pray for his good health and prosperous retired life.

OBITUARY

The Soil Science Society of Pakistan records with a deep sense of grief and sorrow the sad demise of **Mr. Ghulam Abbas Khuro**, Director, Rice Research Institute, Dhokri, District Larkana, Sindh in August 2003.

May Allah Almighty bless the departed soul with forgiveness and eternal peace.

PUBLICATIONS

National Fertilizer Development Centre (NFDC) and FAO have jointly revised and updated Guide on "**Fertilizers and Their Use in Pakistan**". The book consists of 240 pages and incorporates the latest developments in fertilizers and their use with special reference to Pakistan. A complementary copy would be available on request to those involved in Agricultural Extension, particularly in guiding the farmers. For others, the cost is Rs. 250/- per copy. Please contact: NFDC, Street 1, H-8/1, Islamabad.

NATIONAL DIRECTORY OF SOIL SCIENTISTS, 6th Edition

The updated directory will be published in February 2004. Up-to-date information or new entries, if any, may be communicated using the provided Performa – lasted by 31 January 2004.

EDITORIAL: From page 1

Management of Natural Resources for Food Security

Whereas river/canal water supply is shrinking rapidly, most of the ground water is brackish, and

hence unsuitable for irrigation. In this scenario, the challenges for agricultural research in general and soil science in particular are: (1) enhancing and sustaining agricultural productivity for ensuring food security; and (2) protecting and improving soil and water environmental quality. Tackling of these serious issues, of national significance, in a wise manner requires well thought of multi- and interdisciplinary R&D efforts. For achieving these goals, not only we need relevant scientific knowledge regarding the soils and soil processes, waters and water dynamics, and climatological processes and crop growth in relation to soil health and climate, but also this scientific knowledge must be translated into everyday farming practices and into food processing.

For illustration purposes let us take the example of nutrient management. Soil fertility replenishment is a key area for achieving food security, poverty alleviation, and preserving the environment. Whereas nutrient depletion is a serious constraint to agricultural productivity, chemical fertilizer is an expensive farm input. Moreover, balanced nutrient management — an essential prerequisite for optimum agricultural productivity — is a complex task to achieve. Also, there are serious environmental concerns associated with unwise fertilizer use. It is well proven that judicious, efficient, and integrated use of organic and inorganic fertilizers, along with other inputs and best management practices, could play a crucial role in improving and sustaining soil productivity with the overall objective of ensured food supplies.

Similarly, water scarcity and its equitable distribution, coupled with its efficient conveyance to the farm gate and utilization by the crop plants, are alarming problems of practical significance. During monsoon seasons huge quantities of rainwater get lost and during other months of the year we suffer with extreme water shortages. As this situation is getting worse day by day, our glorious fertile lands may turn into barren lands unless this precious natural resource – water – is managed and conserved wisely. In short, only rational management and preservation of soil and water resources can safeguard and sustain agricultural production and assure long-term food security in the country.

News and Views, for next issue of the **Soil Science News**, may be conveyed to:

- **Dr. M. Mahmood-ul-Hassan**, SSO/Editor, **Soil Science News**, Land Resources Research Program, NARC, Islamabad-45500. **E-mail:** mmh@isb.comsats.net.pk
- **Dr. Kazi Suleman Memon**, Professor, Department of Soil Science, Sindh Agricultural University, Tandojam, Sindh. **Email:** ksmemon@hyd.paknet.com.pk
- **Dr. M. Ibrahim**, Agricultural Chemist, Soil Chemistry Section, Ayub Agricultural Research Institute, Faisalabad. **E-mail:** soilchem@fsd.paknet.com.pk
- **Dr. Amanullah Bhatti**, Professor & Chairman, Deptt. of Soil & Environmental Sciences, NWFP Agricultural University, Peshawar. **E-mail:** drbhatti@brain.net.pk
- **Mr. Ahmad Sami Ullah**, SSO, Land & Water Use Section, Arid Zone Agricultural Research Centre, Quetta. **Email:** ahmadsamiullah@yahoo.com