



In the Name of Allah, the Beneficent, the Merciful

# Soil Science News

Quarterly Newsletter of **Soil Science Society of Pakistan**

Editor: Dr. M. Mahmood-ul-Hassan

Associate Editor: Ejaz Rafique

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## EDITORIAL

### Sewage Usage and Environmental Implications

Application of sewage to agricultural land is a common practice, particularly, near the larger cities because of its availability, high organic component, and nutrient value. However, if excessive pollutant loads are introduced with low-quality sludge application, this practice may adversely affect soil health, threaten groundwater quality, and lead to food chain contamination.

The developed countries of the world have permissible limits either for maximum trace metal loads in soils or amounts of sewage sludge and trace metal concentrations in sewage being applied to soils. For example, Sweden and Denmark have the lowest concentrations allowed in agricultural soil treated with sewage sludge, whereas USA allows concentrations above all the European limits. In UK, 47% of the sewage sludge produced is applied to land at an average loading of  $6.6 \text{ Mg ha}^{-1} \text{ yr}^{-1}$  dry wt. In Pakistan however, heavy loads of the sewage sludge are being applied to agricultural land without bothering about its quality and quantity.

Considerable uncertainty exists about the long-term fate of heavy metals contained in sewage.

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## NEWS AND VIEWS

### Phosphorus Transport Behaviour in Relation to Soil Structure

Intact soil column studies under saturated conditions were conducted to investigate phosphorus (P) transport behaviour through structurally variable soils. Results of the column experiments at NARC, Islamabad revealed that applied fertilizer P has more probability of being transported through

### 11<sup>th</sup> Congress of Soil Science

13 - 16 March, 2006

#### Call for Abstracts, Registration and Accommodation

The Soil Science Society of Pakistan is organizing 11<sup>th</sup> Congress of Soil Science on 13 - 16 March, 2006 at NARC, Islamabad. Its theme is "Soil Management for Sustainable Agriculture and the Environment".

Intending participants are requested to submit **Abstracts and Registration Fee** to **Dr. M. Tariq Siddique, Treasurer, SSSP/AAC, Soil & Water Testing Laboratory, Data Ganj Bakhsh Road, Rawalpindi. E-mail: treasurer@sss-pakistan.org; Tel: (92 - 51) 4841395. Accommodation Requests** may please be sent, latest by **15 February 2006**, to **Dr. M. Mahmood-ul-Hassan, Joint Secretary, SSSP/SSO, LRRP, NARC, Islamabad-45500, Pakistan. E-mail: secretariat@sss-pakistan.org. Tel: (92 - 51) 9255051.**

For details, visit [www.sss-pakistan.org](http://www.sss-pakistan.org) or e-mail: [11th-congress@sss-pakistan.org](mailto:11th-congress@sss-pakistan.org)

relatively better structured soils compared with massive soils. Soil structural anomalies, i.e. Inter-aggregated void spaces, cracks, dead root channels, etc, appear to act as channels for preferential flow. Whereas, inter-aggregate porosity act as water storage and immobile water appears to exist. Rapid transport through inter-aggregated (mobile zone) is accompanied by non-equilibrium sorption desorption process, diffusive mass transfer between the mobile and immobile water zones. Therefore, the rapid movement of applied fertilizer nutrient solution yielded the early initial breakthrough and long tailing in the BTCs.

## Editorial Board of Pakistan Journal of Soil Science

Following four Editorial Board Members of PJSS have completed their tenure:

1. **Dr. Riaz A. Khattak**, NWFP Agricultural University, Peshawar.
2. **Dr. Safdar Ali**, University of Arid Agriculture, Rawalpindi.
3. **Dr. Kazi Suleman Memon**, Sindh Agriculture University, Tandojam.
4. **Dr. M. Ramzan Chaudhry**, IWASRI, Lahore.

Consequently, the following have been appointed new members of the Editorial Board:

1. **Dr. Tariq Mahmood**, University of Arid Agriculture, Rawalpindi.
2. **Dr. Farooq-e-Azam**, NIAB, Faisalabad.
3. **Dr. Zaheer A. Zaheer**, University of Agriculture, Faisalabad.
4. **Dr. Muhammad Jamal Khan**, NWFP Agriculture University, Peshawar.

### PROMOTION, APPOINTMENT, POSTING

**Dr. M. Ibrahim**, AC, Soil Chemistry Section, AARI, Faisalabad has been given additional charge of Director, Soil Salinity Research Institute, Pindi Bhattian, District Hafizabad.

**Mr. Amjad Ali Shujra**, **Mr. Sajidullah Vistro**, **Mr. Saleem Jehangir Kazi**, **Mr. Abdul Sattar Khushk**, **Mr. Hafeezullah Babar**, **Miss. Rubina Tabbasum**, and **Mr. Imdad Ali Sahu**, Assistant Research Officers, Agricultural Research Institute, Tandojam have been promoted as Assistant Agricultural Chemists.

**Mr. Zia-ul-Hassan Shah**, Assistant Research Officer, has been selected as Agricultural Chemist by the Sindh Public Service Commission.

**Dr. Shahid Mahmood**, AC, Soil & Water Testing Laboratory, Lahore has been given additional charge of Senior Procurement Officer, Department of Agriculture, Govt. of Punjab, Lahore.

**Mr. Tanveer Iqbal** and **Miss Asia Munir** have

been appointed as Lecturer, Department of Soil Science & Soil and Water Conservation, University of Arid Agriculture, Rawalpindi.

**Mr. Muhammad Akram**, AC, SAWCRI, Chakwal, has been given additional charge of AC, Soil & Water Conservation Research Station, Sohawa, Distt. Jehlum.

**Mr. M. A. Khan Tareen**, Agri. Engineer SAWCRI, Chakwal, has been given additional charge

### SSSP General Body Meeting and Special Seminar

The Soil Science Society of Pakistan has called a General Body Meeting on **September 27, 2005 (Tuesday) at 10:00 AM, at Seminar Room of Ayub Agricultural Research Institute, Faisalabad.**

On this occasion, **Professor Dr. Abdul Ghafoor**, Director (Research), University of Agriculture, Faisalabad will be the invited speaker for a Special Seminar on "*Sewage for Irrigation: Resource, Opportunity, or Slow Poisoning*" that will be held at 09:30 AM..

All Members of the Society are requested to ensure participation. Please confirm your participation to **Dr. Shahid Javed**, AAC, Chemistry Section, AARI, Faisalabad (Tel: 041 657291-90/257, 0333-6531351; E-mail: [sjavid@yahoo.com.uk](mailto:sjavid@yahoo.com.uk)).

of AC, Soil & Water Conservation Research Station, Fateh Jang, Distt. Attock.

*Congratulations to all from Soil Science News!*

### VISITS ABROAD

**Prof. Dr. Jamal Khan Khattak**, Department of Soil & Environmental Sciences, and **Prof. M. Tariq Jan**, Department of Agronomy, NWFP Agricultural University, Peshawar, and Life Members of SSSP have visited University of Wales, Reading and Sheffield UK under the HEC Linkages Programme with western universities for the development of courses on statistical designs in agriculture.

### HONOURS AND AWARDS

**Dr. Dil Fayaz Khan**, Research Officer, Directorate of Soil and Plant Nutrition, ARI, Tarnab, Peshawar has been awarded **Research Productivity Allowance, 2004-05** (Rs. 60,000) by Pakistan Council for Science and Technology, Islamabad.

**Dr. Abdul Rashid**, Chief Scientific Officer, NARC, Islamabad has been appointed a member of the Editorial Board of an international journal, *Communications in Soil Science and Plant Analysis*, published by Taylor & Francis, Inc., Philadelphia, Pennsylvania, USA. He is already an Editorial Board Member of *European Journal of Agronomy*, published by Elsevier BV, Amsterdam, The Netherlands. Also,

in consideration of his outstanding professional accomplishments, Dr. Rashid has been awarded a *Grant for Active Scientists and Technologists* by Pakistan Science Foundation.

*Congratulations to both for earning professional distinctions!*

## RESEARCH GRANTS

**Professor Dr. Safdar Ali**, Department of Soil Science and Soil and Water Conservation, University of Arid Agriculture, Rawapindi has received an ALP Research Grant of Rs. 2.00 million for a research project entitled "*Impact of Tillage Systems, Legumes and Mulches on Soil Profile Moisture Dynamics and Wheat Production*".

**Dr. Muhammad Aslam**, SSO, Land Resources Research Program, NARC Islamabad has been awarded a 3-year ALP Umbrella Research Project (Rs. 9.80 million) entitled "*Use of Nitrogen Fixing Plant Growth Promoting Rhizobacteria (PGPR) for Development of Biofertilizers for Crops of Economic Importance*". The project aims at exploiting role of useful soil microorganisms (esp. PGPR) for improving growth and yield of major crops of Pakistan, i.e., wheat, rice, maize, cotton and sugarcane. This would be achieved through production and use of PGPR-biofertilizers for these crops. The Umbrella Project comprises of following components:

- LRRP, NARC, Islamabad: PI/Coordinator, **Dr. Muhammad Aslam**
- NIBGE, Faisalabad: PI, **Dr. Sajjad A. Mirza**, Principal Scientist
- Department of Biological Sciences, Quaid-e-Azam University, Islamabad: PI, **Dr. Asghari Bano**, Associate Professor

**Directorate of Soil and Plant Nutrition, ARI, Tarnab, Peshawar** has got financial support from Govt. of NWFP through ASPL-II funding for a project "*Establishment of Pesticide Residue Laboratory*" at ARI, Tarnab, Peshawar.

## RECENTLY COMPLETED PhDs

**Mr. Obaid-ur-Rehman**, Research Officer, Soil Salinity Research Institute Pindi Bhattian and Life Member of SSSP, has completed PhD from Institute of Soil and Environmental Sciences, University of Agriculture, Faisalabad. Title of his thesis



was "*Plant availability of native, residual and fertilizer phosphorus in alluvial soils of rice tract*".

**Mr. Sher Muhammad**, SO, LRRP, NARC, Islamabad has resumed his duties after completing PhD from Faculty of Organic Agricultural Sciences, University of Kassel, Germany. His thesis research topic was "*Microbial Use of Organic Substrate and Maize Growth Especially in Alkaline and Saline Soils of Pakistani Punjab*".



University of Agriculture, Fasaialabad, has awarded PhD degree in Soil Science to **Mr. Ehsan-ul-Haq Chaudhary**, ASFO, Soil Fertility Survey in Soil Testing Institute, Rawalpindi. He completed his PhD thesis research on "*Phosphorus Requirement of Maize in Relation to Soil Characteristics*" under the supervision of Professor Dr. Atta Muhammad Ranjha, Institute of Soil and Environmental Sciences, University of Agriculture, Fasaialabad.

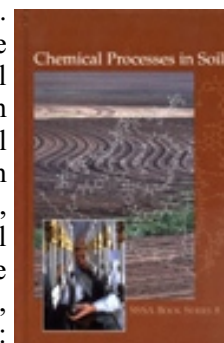
*Congratulations to all for earning a higher qualification!*

## NEW PUBLICATIONS

Sims, J.T. & A.N. Sharpley (ed.). 2005. *Phosphorus: Agriculture and the Environment*. A thorough discussion by 78 experts, sections include: Production and characteristics, reactions and cycling, plant nutrition and crop management, animal nutrition, management practices, phosphorus and the environment. 1121 pages; Price, \$155; Hardcover, 1121 pages, ASA-CSSA-SSSA, Agron. Monogr. 46. ISBN: 0-89118-157-1.



Tabatabai, M.A. & D.L. Sparks (ed.). 2005. *Chemical Processes in Soils*. A thorough understanding of the chemical and biological processes taking place within the soil under our feet is critical for those studying or working in the agricultural, ecological, environmental, earth, and soil sciences. This book will serve them well. 723 pages; Price, \$90; SSSA Book Ser. 8. ISBN: 0-89118-843-6.



Bhatti, A. U. 2005. *Spatial Variability and Its*

*Management in Agriculture*. Published by Higher Education Commission, Islamabad, Pakistan. The monograph is useful for graduate and post-graduate students as well as for researchers.

## UPCOMING CONFERENCES

**BORON 2005**. Sept. 9-3, 2005. The 3rd International Symposium on All Aspects of Plant and Animal Boron Nutrition. Wuhan, China. [www.hzau.edu.cn](http://www.hzau.edu.cn)

**International Salinity Forum. Managing Saline Soils and Water: Science, Technology and Social Issues**. April 25-27, 2005. Riverside, California, USA. [www.waterresources.ucr.edu](http://www.waterresources.ucr.edu)

**International Conference on Human Impacts on Soil Quality Attributes**. Sept. 12-16, 2005. Isfahan University of Technology, Isfahan, Iran. [www.iut.ac.ir/cesoil/HISQA.htm#arm](http://www.iut.ac.ir/cesoil/HISQA.htm#arm)

**15<sup>th</sup> International Plant Nutrition Plant Nutrition Colloquium**. Sept. 14-19, 2005. Beijing, China. [www.ipnc15.com](http://www.ipnc15.com)

### Sewage Usage and Environmental Implications, *Contd. from page 1*

Possibly, it can increase heavy metal bioavailability and/or leaching upon sewage sludge organic matter mineralization. Exposure to excessive concentrations of cadmium, mercury and other metals already has produced frequent adverse effects on human health in certain parts of the country such as Kasur, Hyderabad and Karachi. Thus, fear exists that similar toxic effects can happen in other parts of the country. In addition, some of these elements also have detrimental effect upon crop quality,

growth and yield. They also have adverse effect on the sludge disposal and dispersal in Pakistan is not regulated in such a manner that prevents accumulation of pollutants to toxic concentrations. Similarly, raw sewage contains significant concentration of heavy metals which are not degraded by the processes of sewage treatment, because none of the sewage treatment

### PROFESSOR Dr. MUHAMMAD ARSHAD DECORATED WITH NATIONAL CIVIL AWARD *TAMGHA-I-IMTIJAZ*

President of Pakistan has awarded *Tamgha-i-Imtiaz* (2005) to **Professor Dr. Muhammad Arshad**, Instituted of Soil and Environmental Sciences, University of Agriculture, Faisalabad, in recognition of his outstanding achievements in academics and research. Professor Arshad is an author/coauthor of two books, seven book chapters and over 50 papers, all published abroad. He has successfully supervised seven Ph.D scholars; six more are in pipeline. He has won several competitive research grants from various funding agencies. Dr. Arshad was declared "Best Scientist in Agriculture for the Year 2001" by Pakistan Academy of Sciences, and the Higher Education Commission awarded him "Best University Teacher Award for the Year 2003". Also, He is a regular recipient of Research Productivity Allowance from Ministry of Science and Technology since initiation of this prestigious program.



system in Pakistan is efficient enough even in Metropolitans. In fact, most of the Municipalities dispose off sewage to drains without any treatment. Pre-treatment of sewage is necessary for the safe disposal to agricultural land as well as to rivers and drains to safe guard human health, environment, crop quality and potable groundwater.

Given this situation, it is essential to assess the impact of this practice on agriculture, the environment, and human health. Beyond this, necessary measures are warranted to mitigate these ill effects while maintaining productive use of sewage.

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

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- **Dr. Shahid Javed**, Assistant Agricultural Chemist, Soil Chemistry Section, Ayub Agricultural Research Institute, Faisalabad. **E-mail:** [sjavid@yahoo.co.uk](mailto:sjavid@yahoo.co.uk)
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