

Soil Science News

Quarterly Newsletter of Soil Science Society of Pakistan

سوائے سائنس سوسائٹی آف پاکستان

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July - December 2020

Vol. 21 (No. 3-4)

Editorial

Soil Health and Micro-organisms

The soil is a living system – a single gram of a healthy soil can hold hundreds of millions to billions of microbes. The most numerous microbes in soil are the bacteria, followed (in decreasing numerical order) by the actinomycetes, fungi, algae, protozoa and nematodes.

In fact, under our feet, there is another world which is controlled by small- and micro-organisms; spend 24/7 in performing essential ecological processes and turn over organic and inorganic substances all across the terrestrial earth. They create a soil fabric that is a dynamic, complex and vital for humankind.

Healthy soils teem with soil microbes. The soil microorganisms are indispensable for making soil healthy as they play an essential role in decomposing organic matter, cycling nutrients and fertilizing the soil. Soil microbes are also important for the development of healthy soil structure – aggregation, bulk density, aeration, water retention/availability and solute and solvent movement. Further, soil microorganism are also vital for carbon sequestration because soil microorganisms are both components and producers of soil organic carbon, a substance that locks carbon into the soil for long periods.

Soil organic matter is an essential component to keep all our soils alive. While, our soils are severely deficient/low in organic matter, which is lifeline of soil microorganisms. Further, long-term soil over exploitation/abuse and application of biocides have significantly reduced/is reducing the biodiversity in most of cultivated soils, particularly in intensively cultivated soils. We may not know what we are losing since much is to be learned about the diversity of life in the soil, and the effects of soil biodiversity loss on crop production may be masked by increased use of inorganic fertilizers.

Without the cycling of elements, the continuation of life on earth would be impossible, since essential nutrients would rapidly be taken up by organisms and locked in a form that cannot be used by others. The reactions involved in elemental cycling are often chemical in nature, but

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News and Views

Bio-gas Technology: Usage and Benefits

Land Resources Research Institute, National Agricultural Research Centre, Islamabad organized an on farm seminar under the Agricultural Linkages Program, PARC funded project “Efficient use of microbes for biogas energy production at Peerowal, Khanewal on 28 November, 2020.



The aim of the seminar was to create awareness among farmers and community about the use of biogas as an alternate energy and bio-slurry as organic fertilizer. The chief guests of the seminar was Dr. Sarfraz Ahmad, Member (Natural Resources Division), PARC, Islamabad. Among others guest were, Eng. Shamim-ul-Sabtain Shah, Director General, NARC and Dr Rizwan Ahmad Project Incharge/Principal Scientific Officer, LRRI, NARC. In this seminar importance of recycling of crop residues and farm wastes was highlighted for clean energy, safe environment and sustainable agriculture.

Webinar on “Water Issues and Ways Forward to Improve Water Security in Pakistan”

An International webinar was organized by the University of Agriculture, Faisalabad Sub-Campus Depalpur, Okara, on 15 October, 2020. In this webinar, national and international experts highlighted the water security problems being faced by Pakistan and their possible solutions.



MOU between Action Against Hunger and Department of Soil Science, Sindh Agriculture University, Tandojam

Department of Soil Science, Sindh Agricultural University, Tandojam and Action Against Hunger has signed a memorandum of understanding (MOU) on "Drought Resistant Agricultural Farming in District



Badin, Sindh". Under the MOU, 10 postgraduate students of the Soil Science Department will be trained by the Mission. The document was signed by Professor Dr. Zaheeruddin Mirani, Vice Chancellor Sindh Agriculture University Tandojam and Ms. Jennifer Ankrom-Khan, Country Director - Action Against Hunger (ACF) - Pakistan Mission.

World Soil Day - 2020



World Soil Day 2020, was celebrated through Pakistan on 5 December, 2020. The theme of the World Soil Day 2020 is "Keep soil alive, Protect soil biodiversity" aims to raise awareness of the importance of maintaining healthy ecosystems and human well-being by addressing the growing challenges in soil management, fighting soil biodiversity loss, increasing soil awareness and encouraging governments, organizations, communities and individuals around the world to commit to proactively improving soil health.

Sindh Agriculture University, TandoJam – World Soil Day -2020 was jointly celebrated by the Department of Soil Science, Sindh Agriculture University, Tandojam;



Farm Advisory Center, Fauji Fertilizer Company, Hyderabad and Soil Science Society of Pakistan. The event was comprised of awareness walk from Department of Soil Science to Dr. A. M. Sheikh Auditorium, SAU, Tandojam, cake cutting ceremony and technical session. Prof. Dr. Zaheeruddin Mirani, Vice Chancellor, SAU, Tandojam was the chief guest of event.

Central Cotton Research Institute Sakrand – World Soil Day was also celebrated with passion and dedication at Central Cotton Research Institute, Sakrand, Shaheed Benazirabad and was attended by large number of scientists.



National Agricultural Research Centre, Islamabad – World Soil Day was also jointly organized by Land Resources Research Institute and Soil Science Society of Pakistan with passion and commitment at National Agricultural Research Centre, Islamabad. Eng. Shamim-ul-Sabtain Shah, Director General, NARC; Dr. Sarfraz Ahmad, Member (Natural Resources Division) PARC; Dr. S. M. Gill Director, LRRI; Mr. Sair Sarwar, Joint Secretary, SSSP and large number of scientist participated.



University of Agriculture Peshawar – World Soil Day 2020 was also celebrated at Department of Soil and Environmental Sciences, University of Agriculture Peshawar on 5th December, 2020. The event was attended by faculty members and students.



Promotion/appointment/posting

Mr. Muhammad Yousuf Memon

Director/Deputy Chief Scientist, Nuclear Institute of Agriculture Tandojam, Pakistan Atomic Energy Commission (PAEC), has been promoted as Chief Scientist.



Mr. Muhammad Irfan

Junior Scientist, Soil and Environmental Sciences, Nuclear Institute of Agriculture, Tandojam, PAEC has been promoted as Senior Scientist.

Dr. Tanvir Ali Siyal, Dr. Javeria Afzal

Arain and Dr. Nazia Rais have been appointed Assistant Professors (IPFP) in the Department of Soil Science, SAU, Tandojam under Interim Placement of Fresh PhDs program funded by HEC, Islamabad.

Professor Dr. Muhammad Sharif

has been appointed as Chairman, Department of Soil and Environmental Sciences, Agriculture University Peshawar. Dr. Sharif did M. Sc. (Hons) and Ph. D. from Agriculture University Peshawar. He also did MS and Post Doc. from Germany. Dr. Sharif is specialized in Soil Microbiology and Biochemistry.



Congratulation from the desk of Soil Science News.

Awards

Mr. Abdullah Keerio, Head, Plant Physiology Division, Central Cotton Research Institute, Sakrand secured 2nd Position in National Digital Poster Competition organized by Department of Soil and Environmental Sciences, MNS-University Multan on the occasion of World Soil Day, 2020.



New Publications

The Role of Agriculture in Climate Change Mitigation. 2020. Lucjan Pawlowski, Zygmunt Litwińczuk, Guomo Zhou.

Agriculture and forestry are responsible for quite big emissions of greenhouse gases: CO₂, CH₄ and N₂O, and have significant potential to reduce these emissions mainly through enhancement of CO₂ absorption by terrestrial ecosystems. To evaluate the impact of agriculture on climate change, ruminant farming should be also taken into account. The methods for reducing greenhouse gas emissions through appropriate management of terrestrial ecosystems and animal husbandry are widely discussed in this book, which will be of interest to academics, professionals and policy makers in environmental sciences.



Soil Health and Micro-organisms *Continued from page 1*

biochemical reactions, those facilitated by organisms, also play an important part in the cycling of elements. Soil microbes are of prime importance in this process.

Generally, it is believed that the soil is the farmers factory and it is true as well. While, much attention has been paid to the chemical and physical health of soil. At the same time, an equally important factor, soil biological health, is normally given little thought. We must pay equal attention to soil biology to make sure that the factory, that is your soil, is running at an optimal level. We must realize that the relationship between the three components of soil health is just as important as any one component on its own.

Almost all soil organisms (except some bacteria) need the same things that we need to live: food, water and oxygen. They eat a carbon-based food source, which provides all their nutrients, including nitrogen and phosphorus. They require a moist habitat, with access to oxygen in the air spaces in soil. These reasons explain why 75 per cent of soil organisms are found in the top five centimetres of soil. It also explains, however, why many of our agricultural soil microorganism populations are depleted. Unfortunately, such as excessive land clearance, the burning of stubble, inappropriate fertiliser application and over-tillage, have degraded soils and produced conditions such as salinity, acidification, soil structural decline and desertification.

There is a dire need to keep all our soils alive by adding ever more organic matter and adopt all those practices which ultimately enhance the soil organic matter by i) adopting conservation agriculture/tillage, stop taking of crop residues (for burning or animal feed) and burning of cow dung, stopping in-field burning of crop residues, recycling of crop residues and farm wastes, paying farmer for ecosystem services (crop residues incorporation or green manuring), balance and integrated use of organic and inorganic fertilizers sources. These practices will not only increase the soil organic matter, these will also reduce the greenhouse gases emission.

Retirements

Professor Dr. Muhammad Jamal Khan Khattak, Department of Soil & Environmental Sciences, The University of Agriculture, Peshawar has retired on 5th August, 2020. He did MSc (Hons) from University of Agriculture, Peshawar (UAP) in 1985, Ph. D. from University of Arizona in 1994 and Post Doc from UK in 2006. Dr. Khattak started his professional career by joining Department of Soil Science, UAP as Lecturer in 1985. Dr. Khattak also worked on different administrative positions and as member/convener of different committees.



Dr. Khattak was specialized in Soil Environment and Soil Salinity and supervised large number of Ph. D. M, Sc. (Hons) students. He executed number of national and international research projects as project incharge and co-project Incharge and produced a valuable data. He has more than 100 research publications including research articles, book chapter and technical reports. He earned Silver Medal in M.Sc. (Hons) and was recipient of Research Productivity Award from PCST and enlisted as Productive Scientist of Pakistan.

Dr. Muhammad Iqbal, Agricultural Chemist, Soil & Water Testing Laboratory, Gujranwala has retired from Govt. service 30-09-2020. Dr. Iqbal acquired M.S. (Hons) degree in Soil Science from University of Agriculture, Faisalabad and joined Agriculture Department (Research Wing), Govt. of the Punjab as Agric. Officer (Lab) on 04-01-1987. He did Ph.D from Japan in 1992. Dr. Iqbal was specialized in Soil Fertility and Plant Nutrition.



Dr. Iqbal was promoted to the position of Asstt. Agri. Chemist in 2002 and Agri. Chemist in 2015 and served in different districts and divisional Soil & Water Testing Laboratories. He published research work in various Journal of national and international repute, conference proceedings and technical reports.

Mr. Khalid Mahmood, Asstt. Agr. Chemist, Soil & Water Testing Laboratory, Rahim Yar Khan has retired on Sep. 09, 2019 after serving (< 33) Directorate of Soil Rapid Soil Fertility Survey and Soil Testing, Lahore. He did M.Sc. (Hons) in Soil Science from University of Agriculture, Faisalabad in 1986.

Mr. Mahmood started his professional career by joining

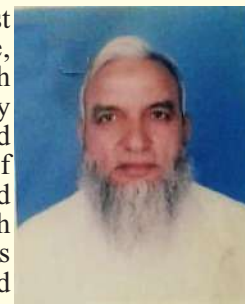


Agriculture Department (Research Wing), Govt. of the Punjab as Agric. Officer (Lab) on 25-04-1987 and was promoted to the position of Asstt. Agr. Chemist in 2009. He served in different districts and divisional Soil & Water Testing Laboratories.

We pray for good health and prosperous retired lives of our respected colleagues.

Obituary

Mr. Abdul Rashid, Agri. Chemist (Rtd.), Plant Protection Institute, Ayub Agricultural Research Institute, Faisalabad has passed away on 29 November 2020. Mr. Rashid did M. Sc. from the University of Agriculture, Faisalabad and joined Agriculture Department (Research Wing), Govt. of the Punjab as Research Officer 1969 and retired from service in 2006.



Mr. Muhammad Yasin, Senior Scientific Officer (Rtd.), Land Resources Research Institute, National Agricultural

Research Centre, Islamabad died on 21st December 2020. Mr. Rashid joined Agriculture Research Council, Islamabad in 1970 as Scientific Assistant after completion of graduation. He did M. Sc. from Allama Iqbal Open University, Islamabad and M. Phil. in Forestry and Range Management from PMAS-Arid Agri. University, Rawalpindi in 2009. Mr. Yasin

retired from NARC in 2016. He was a nice and thorough gentleman.

The Society records with a deep sense of grief and sorrow the sad demise and prays for the departed souls.

Soil and Environment Portal

Executive Council of Soil Science Society of Pakistan decided to develop a "Soil and Environment Portal" to highlight and publicize the innovative and outstanding research findings in the areas of Soil and Environment Sciences. All the scientists working in these areas are requested to share 100 words summary of research along with pictorial if any to Dr. Ghulam Murtaza Jamro, General Secretary, SSSP (Email: general.secretary@sss-pakistan.org/gmjamro@gmail.com/ Cell: 0307-0364559).

News and Views for next issue of the 'Soil Science News' may be conveyed to the Society office bearers of your chapter or to **Dr. M. Mahmood-ul-Hassan** (mmh@comsats.net.pk), Editor/ **Dr. Azhar Hussain** (azharhaseen@gmail.com), Assoc. Editor, Soil Science News. The news can also be mailed at info@sss-pakistan.org