December 5th 2021 will mark the observance of 8th World Soil Day. I would like to announce the launch of Soil Science Society of China (SSSC) Newsletter.

The Newsletter is a bimonthly publication that mainly focuses on society news, conference news, research frontiers, publication releases and upcoming events, special issues, and technical products. It will provide a platform for Chinese soil scientists to present to the world the latest content concerning their progress and achievements.

International soil science research collaboration is essential to understand soil and its role in the functioning of the global ecosystem, particularly in relation to the global climate and environmental changes. The aim is to promote international cooperation to strengthen the exchanges among Chinese soil scientists and other members within the international union of soil sciences. The ultimate goal is to promote the sustainable management of our soil resources for a shared future.

I wish to invite all members of SSSC, and our international colleagues of IUSS to actively join us in this new endeavor, which aims to promote communication between Chinese scientists and the rest of the international soil science community.

Prof. Xiao-Yuan Yan
Standing Vice President and Secretary General of SSSC
Congratulations on the publication of the inaugural issue of the English Newsletter of Soil Science Society of China. Built on the contributions of several generations of soil scientists, soil science in China has been a flourishing discipline with remarkable international reputation. In the new era, the rapid development of the world economy and agriculture, the increasing intensity of the utilization of soil resources, and the associated challenges of soil deterioration and pollution pose a global threat to the sustainable development of the entire human race. Solving these problems will depend on long-term joint efforts of scientists around the world.

The launch of the English Newsletter of SSSC is a wonderful start of Chinese soil scientists to demonstrate our international vision and leadership. It will become a dynamic platform for international soil researchers and decision makers to acquire relevant policies, scientific frontiers and significant achievements in the field of soil science and technology through a China perspective. We hope that the Newsletter will become a window for the world to appreciate the development of soil science in China, so as to strengthen the exchange and collaborations between China and other countries, and ultimately contribute to the development of soil science shared by the mankind. This is our central mission, as the sustainable use of soil and sustainable development of agriculture are the foundation of the welfare of the entire world.
Message of SSSC Honorary President

Professor Renfang Shen

I warmly congratulate on the official publication of English newsletter of SSSC, in the capacity of the honorary president of the SSSC. As a member of the family of the International Union of Soil Sciences (IUSS), the SSSC has always had a very close relationship with the IUSS. However, we have not had an English newsletter to introduce the work of the SSSC to our international counterparts. This is exactly what I have always wanted to do but did not do when I was the president of SSSC. I hope that the Newsletter can become a platform to introduce the world the latest scientific research progress in soil science in China, to become a bridge and link to connect with global soil researchers, to take an active role in preparation for the 23rd World Congress of Soil Science to be held in China in 2026, and ultimately to make due contributions to the development of soil science in the world!

Message of Consultant of International Collaboration Committee of SSSC

Professor Yongguan Zhu, CAS Academician

It is with great pleasure in congratulating the launch of the Newsletter of Soil Science Society of China, which I believe will be an effective bridge between China and the rest of the world. The Newsletter will provide a platform to disseminate research developments in soil science from China, and to facilitate collaboration of Chinese soil scientists with scientists from other countries.

Soil science development in China is driven by the daunting task of safeguarding food security and environmental sustainability in China, but also enhanced by extensive collaboration with many countries around the world. In this increasingly globalized world, we are facing many grand challenges, such as food security, biodiversity conservation, climate change, that all need global collaboration. I hope this Newsletter will play a critical role in developing solutions to these challenges.
About SSSC

Founded in 1945, the Soil Science Society of China (SSSC) is one of the top level national academic societies under the China Association for Science and Technology. It is a legally registered, trans-industrial, trans-departmental, and nonprofit organization that is oriented towards promoting progress in soil sciences, supporting all soil scientists in the pursuit of their activities, and providing services to society and government. The SSSC was affiliated with the Institute of Soil Science, a division of the Chinese Academy of Sciences, since 1951, at which time its registration was approved by the People’s Central Government of the People’s Republic of China. In 1979, the SSSC became a member of the International Soil Science Society (ISSS, now IUSS, the International Union of Soil Sciences).

The SSSC has more than 20 committees which specialize in soil physics, soil chemistry, soil-plant nutrition, soil ecology, soil biology and biochemistry, soil genetic classification and soil geography, soil erosion and soil-water conservation, soil environment, salt-affected soils, forest soils, soil remote sensing and information, soil fertility and fertilizer, soil remediation, others responsible for scientific popularization, education, youth, edition and term verification, soil quality standardization, soil engineering, and international collaboration. It has three working groups that focuses on nitrogen, soil health, and environmental micro-plastics. The society also has 31 provincial-level soil (fertilizer) societies.

Academic journals sponsored or co-sponsored by the SSSC

The SSSC sponsors or co-sponsors five academic journals: Acta Pedologica Sinica, Soil Bulletin, Journal of Soil and Water Conservation, Arid Zone Research, and Pedosphere (in English). The SSSC presents three nationwide awards to its members, including the SSSC Outstanding Achievement Award, the Science and Technology Award, and the Outstanding Young Scholar Award.

Pedosphere, a peer-reviewed international journal in soil sciences, was founded in 1991 and is sponsored jointly by the SSSC; the Institute of Soil Science, the Chinese Academy of Sciences, and the State Key Laboratory of Soil and Sustainable Agriculture, China. It is published bimonthly in English by Elsevier Limited and Science Press.
SSSC Leadership

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To promote the development of soil sciences in China, and to recognize members of the SSSC who have demonstrated outstanding achievements in soil science-related fields and made important contributions to the development of the society, the SSSC established the SSSC Fellowship. According to the fellowship statute and election method, the SSSC decided to award 12 scientists, including Academician Qiguo Zhao, as inaugural Fellows (see the list above).

Fellowship is the highest academic title in the field of soil sciences that is bestowed by the SSSC. It is a lifetime honor. Members who are over 80-years-old are automatically recognized as senior members. Soil scientists who are non-Chinese nationals can be awarded the title of ‘Foreign Fellow’.
The International Collaboration Working Committee launched

A new committee under the SSSC was formed as a special celebration of the 7th World Soil Day. On December 5, 2020, the International Collaboration Committee of the SSSC convened its first meeting online, announcing its official establishment and initiating fruitful discussions on the mission, strategy, and working mechanisms of the group.

The meeting was hosted by Professor Xiaoyuan Yan. Professor Jiabao Zhang delivered the opening remarks. Professor Yongguan Zhu gave a keynote speech on the overarching missions of the committee. On behalf of the SSSC, Professor Xiaoyuan Yan announced the official establishment of the International Collaboration Committee. The meeting unanimously elected Professor Yongguan Zhu as an advisory member of the committee, Professor Fang Wang (Institute of Soil Science, CAS) as the chair, Professor Yongtao Li (South China Agriculture University), Professor Cheng Gu (Nanjing University) and Professor Xiaojuan Feng (Institute of Botany, CAS) as vice chairs. Professor Xiangdong Li (The Hong Kong Polytechnic University) and the
other 20 soil scientists were elected as the inaugural committee members. The committee, which consists of active Chinese researchers with an abundance of experience in the field of international collaboration or who hold important positions in international organizations or journals, is dedicated to promoting the international influence and leadership of soil scientists from China.

The inaugural committee members shared their experiences in international exchanges and discussed strategies to address the current gaps and challenges in the field of soil science by leveraging international collaboration. The meeting closed with the concluding remarks of Professors Jiabao Zhang and Yongguan Zhu. They greatly appreciated the enthusiastic participation and constructive suggestions of the committee members, and voiced their strong expectation that the committee implement real initiatives to promote the influence of Chinese soil research in the international scientific community.

In September, 2020, during the 3rd meeting of the 13th Standing Council of the SSSC, a decision was made to establish a new committee to promote international collaboration. Under the guidance of the SSSC president and vice-presidents, and building upon two months of dedicated efforts by the Preparatory Commission, the International Collaboration committee of the SSSC was successfully established. As an integral part of the SSSC, the new committee aims to promote international cooperation, to broaden international exchanges and to strengthen its international impact, all of which are critical to paving the way for the SSSC to become a first-class international scientific society. The committee will also provide a forum for the SSSC members and soil scientists to communicate content related to their latest progress and achievements to the world. Moreover, the new committee is expected to lay a solid foundation for the preparation of the 23rd World Congress of Soil Science which will be hosted by the SSSC in Nanjing, China, in 2026.

Strategic Cooperation Framework with the Soil Science Society of America established

On March 20, 2021, the SSSC signed a memorandum of understanding with the Soil Science Society of America (SSSA). Both parties agreed to formulate a strategic cooperation agreement to foster international collaboration and academic exchange. This agreement will provide mutual benefits for their respective members, including access to society media, journals, and conferences. The SSSC recently launched a series of initiatives to promote international exchange and collaboration in soil research, and this strategic partnership between the SSSC and SSSA will open up new opportunities between the two dynamic research communities.
The 2nd Meeting of the 14th Board of Directors and the Symposium on Soil Health and Green Agriculture held in Taiyuan

July 20 to July 22, 2021, Taiyuan, Shanxi. The 2nd Meeting of the 14th Board of Directors and the Symposium on Soil Health and Green Agriculture was successfully held, convening a meeting of over 600 attendees from all across China who operated within various sectors, such as soil-related academia, administration, and industry. The meeting was primarily sponsored by the SSSC and jointly supported by the Soil Fertility Society of Shanxi Province, School of Resource and Environment and the Research Institute of Eco-Environmental Industry of Shanxi Agricultural University. In addition to the introductory and welcoming remarks of the SSSC leadership and host representatives, the opening highlights of the conference also included the ceremony to confer honorary certificates to the inaugural cohort of SSSC Fellows and the awards for the 16th SSSC of Science and Technology.

The conference also included a thematic symposium on Soil Health and Green Agriculture with nine high profile plenary presentations and 58 keynote presentations which were held during four different sessions. Over 40 graduate students presented their research. The conference also discussed the administrative affairs of the SSSC.

The 19th Chinese Young Soil Scientists and the 14th Chinese Young Plant Nutrition and Fertilizer Scientists Conference was successfully held

From May 18 to May 22, 2021, the 19th Chinese Young Soil Scientists and the 14th Chinese Young Plant Nutrition and Fertilizer Scientists Conference were successfully held in Jinggangshan, Jiangxi, China. More than 650 experts, scholars and students from universities, research institutes, and enterprises all across the country attended the conference. With the theme of “helping rural revitalization and building a beautiful China”, the conference aimed to provide a forum for
exchange and cooperation among young workers in the fields of soil, fertilizer, plant nutrition, and other agricultural resources utilization, to stimulate the vitality and intelligence of young scientific and technological workers, and to promote the connection, intersection and integration of various agronomy research fields. Moreover, to celebrate the 100th anniversary of the founding of the Communist Party of China, the conference deeply promoted learning and education with respect to party history by means of education on national conditions and on-the-spot teaching.

The 3rd National Symposium on Environmental Microplastic Pollution and Control was successfully held

The Environmental Microplastics Working Group of the Soil Science Society of China was founded November 13–15, 2020. On June 7–9 of 2021, the working group successfully hosted the 3rd National Symposium on Environmental Microplastic Pollution and Control in Qingdao. More than 500 delegates from 167 universities, research institutions, enterprises, and governments attended the symposium. Professor Yongming Luo from the Institute of Soil Science, a division of the Chinese Academy of Sciences, and Professor Chengjun Sun from the First Institute of Oceanography, Ministry of Natural Resources, served as the co-chairmen of the academic committee of this symposium. The symposium covered a broad range of research interests in environmental microplastics, which included: investigation and analytical methods, pollution characteristics and source analysis, transformation and surface changes, environmental migration and predictions, microbial ecological effects, bioaccumulation, toxic effects and ecological risks; interaction with pollutants and the health risks; recycling, processing and resource utilization; pollution control, governance and policy-making. The successful convening of the symposium has strongly promoted the research development of environmental microplastics in China.
The Academic Symposium on “Soil Biodiversity and Biochemical Processes” was held in Hefei

During the period June 20–23, 2021, the academic symposium on “Soil Biodiversity and Biochemical Processes” was successfully held in Hefei, Anhui, China. The symposium was hosted by the Specialty Committee on Soil Biology and Biochemistry, SSSC. The College of Resources and Environment, Anhui Agricultural University, and the State Key Laboratory of Soil and Sustainable Agriculture, the Institute of Soil Science, and the Chinese Academy of Sciences organized this symposium.

More than 600 professors, scholars, and graduate students across the country attended the symposium. The symposium provided more than 80 oral presentations and 78 poster presentations. A “Microbial Ecology and Bioinformatics Training” program was also held after the symposium.

With the aim of responding to frontier issues related to soil biodiversity and biochemical processes, this symposium created a broad platform for academic exchange, and greatly promoted the development of this research field in China.
In the natural as well as engineered systems, microorganisms typically work collectively in a complex community via metabolic interactions. Recently, Institute of Soil Science, Chinese Academy of Sciences cooperated with UCLA on the potential novel pathways for 1,4-dioxane degradation by a consortium enriched from activated sludge. Species with relatively higher abundance (> 0.3%) were identified to present high metabolic activities in the biodegradation process through shotgun sequencing. The functional gene investigations revealed that Xanthobacter sp. 91, Xanthobacter sp. 126, and a Rhizobiales strain carried novel 1,4-dioxane hydroxylation monooxygenase genes. Xanthobacter sp. 126 contained the genes coding for glycolate oxidase, which is responsible for utilization of 1,4-dioxane intermediates through the TCA cycle, which was further proven by the specific glycolate oxidase inhibitor, α-hydroxy-2-pyridinemethanesulfonic acid. An expanded degradation pathway of 1,4-dioxane was proposed on the basis of the three major intermediates (2-hydroxy-1,4-dioxane, ethylene glycol, and oxalic acid) confirmed by metabolomics. These findings of functional genes and the collaborations among different species will be valuable in predicting natural attenuation or reconstruction of a bacterial consortium for enhanced remediation of 1,4-dioxane-contaminated sites as well as wastewater treatment. This study was published in Journal of Hazardous Materials.

(https://doi.org/10.1016/j.jhazmat.2021.125157)
Quantification of the Mineral Contribution to Soil Sorption of Organic Pollutants by Improved Mathematical Model Accounting for Associations between Minerals and Soil Organic Matter

The fate and transport of anthropogenic organic pollutants (OPs) to soils are largely impacted by environmental processes including soil sorption. Commonly, soil sorption is attributed to interactions with soil organic matter, perhaps overlooking substantial involvement of soil minerals. Recently, Dr. Yan He’s group from Zhejiang University used 36 soil samples with far-ranging ratios of clay to organic carbon out of 609 soil horizons to examine the contribution of minerals on soil sorption of pentachlorophenol (PCP) and phenanthrene (PHE). Sorption isotherms (n = 216) were fit individually using Freundlich, Langmuir and Linear models, with the most fitted K_d screened out for quantification of net mineral contribution via development of mathematical model accounting for associations between minerals and SOM. Two mineral-relevant parameters [adsorption distribution coefficient (K_min) and mineral contribution index (MCI)] were simultaneously defined. Previously reported soil sorption data of PCP, PHE and butachlor were also included. The MCI value was very close to or even over than the minerals dominant critical value (0.5). Significant dependence of MCI with four parameters of soil property further offered the possibility to roughly evaluate mineral contributions based on estimated threshold values of soil property parameters (especially TOC). This study provides an accessible approach for predicting the contribution of minerals in soil OP retention, especially highlighting their predominant roles vs. SOM in regulating OP removal in most of subsurface soil or contaminated brownfields. This study was published in Environmental Pollution.

DOI: 10.1016/j.envpol.2021.116991
Viruses are the most abundant biological entities in the world, but their ecological functions in soil are largely unknown. Recently, a research group led by Prof. Tida Ge from the Institute of Subtropical Agriculture of the Chinese Academy of Sciences provided experimental evidence that phages can decrease bacterial abundance and, consequently, SOC mineralization.

In this study, a range of phage and bacterial abundances were established in sterilized soil. The total and viable 16S rRNA gene abundance was measured by qPCR to determine bacterial abundance, with propidium mono-azide (PMA) preapplication to eliminate DNA from non-viable cells. The study showed that SOC mineralization was regulated by bacterial population size, which was likely under top-down control by phages. Higher bacterial abundance stimulated CO₂ production, whereas the high T4-like phage abundance and abundance ratio of T4-like phages to bacteria lowered bacterial abundance and, consequently, SOC mineralization. The abundance ratio of T4-like phages to bacteria is a strong predictor of SOC mineralization. By killing bacteria, phages reduce the CO₂ production rate. This study provides the earliest evidence of the functional role of phages in organic matter turnover in soil: they retard SOC decomposition but accelerate bacterial turnover. This study was published in Environmental Science & Technology on April 14, 2021.

(https://pubs.acs.org/doi/10.1021/acs.est.0c06014)
Microplastics in Terrestrial Environments: Emerging Contaminants and Major Challenges

Editors: Defu He, Yongming Luo

This book focuses on microplastics as emerging persistent contaminants in terrestrial environments. Scientists from around the globe review recent advances in multidisciplinary research on micro(nano)plastics, such as: analytical methods; the sources, fate and distribution of microplastics; ecological risks; toxicity and health risks; and control and countermeasures for microplastics in terrestrial environments. Offering a comprehensive overview of microplastics in terrestrial environments, this book is a valuable resource for environmental researchers, ecologists and toxicologists, as well as policymakers and non-experts.

Pollution, Prevention and Control of Organic/Biological Contaminants in Soil

Editors: Yan He, Jianming Xu. In Chinese

Soil pollution is a growing global concern, as it poses significant threats to food security, ecological sustainability, and human health. Issues related to soil pollution, control, and remediation are a growing a research frontier in the resource and environmental sciences, although they also present a challenge for scientists. Research that tackles this cutting-edge issue will result in many innovations in soil pollution, control, and remediation, so as to address China’s sizeable strategic needs.

To focus on the construction of a research system of the farmland pollution process that reflects Chinese characteristics, Dr. Yan He and Dr. Jianming Xu from Zhejiang University, as editors, recently summarized relevant work in China in the last five years in a book. They put forward pollution prevention and control measures of typical/emerging organic and biological contaminants in farmland soil, thereby providing a key support to guarantee green and high quality development of national agriculture in order to protect human health, while also maintaining balance and the health of the farmland ecosystem.