WORLD ASSOCIATION OF SOIL AND WATER CONSERVATION

HOT NEWS

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Contents

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WASWAC Website: www.waswac.org

The Second International Youth Forum on Soil and Water Conservation (2nd IYFSWC)

The Second International Youth Forum on Soil and Water Conservation (2nd IYFSWC)

Moscow, Russia, 27-31, August, 2018

The second international Youth Forum on Soil and Water Conservation (2nd IYFSWC) is aimed to be held at Lomonosov Moscow state University in the summer of 2018.

The Organizers are Lomonosov Moscow State University and World Association of Soil and Water Conservation (WASWAC), Co-organizers include International Commission on Continental Erosion (ICCE) of International Association of Hydrological Sciences (IAHS), World Large Rivers Initiative and Interuniversity Council on Fluvial and Soil Erosion Research.

2nd IYFSWC will address:

- Challenges/actions of soil and water management in the changing world
- Mechanism/processes and modelling of soil degradation
- Innovation of technology of soil and water conservation

- Ecological restoration and regional sustainable development
- How to play the roles of youth in soil and water conservation

Conference program will include:

- ✧ Plenary lectures by keynote speakers – internationally recognized scientists
- ✧ Oral and poster thematic sessions
- ✧ Field excursion to the World largest hydro-technical projects – water transfer from Volga River to Moscow city
- ✧ Cultural program in Moscow
- ✧ Post-conference tours to the cities of Saint-Petersburg and Kazan
- ✧ Extra-program – special thematic part-time courses for young scientists . The participants of the workshops will get official certificate of Moscow State University

Outstanding Youth Paper Award:

The World Association of Soil and Water Conservation (WASWAC) will evaluated 10 papers as Outstanding Youth Paper Award from the presentations submitted by young people who is not older than 40 years by the end of 2018. Each awardee will win $1000 (USD) prize and may get some reduction of expenses during the Forum. The awarded paper will be published in the journal International Soil and Water

Conservation Research (ISWCR), which is hosted by Elsevier.

Registration fees:

Including e-proceedings, coffee, lunch, welcome reception and hotel-venue transportation.

General participants: 250 (early bird) – 300 (regular) in Euro

Student: 150 (early bird) – 200 (regular) in Euro

Key dates of the Forum:

Registration opens	December 2017
Abstract submission deadline	**15 March 2018**
Registration & fee payment deadline (early bird)	01 May 2018
Notice of abstract acceptance	15 April 2018

The official website (http://www.eng.geogr.msu.ru/IYFSWC) has been constructed, all information is available in this website. You are also welcome to see the announcement in our association's website http://www.waswac.org/waswac/Announcements/webinfo/2017/07/149991084046 1296.htm

Welcome to Moscow to attend

The 2nd IYFSWC in August, 2018

Glinka World Soil Prize

The Glinka World Soil Prize honors individuals and organizations whose leadership and activities have contributed, or are still contributing to the promotion of sustainable soil management and the protection of soil resources.

The Glinka Prize is an annual award for dynamic change-makers dedicated to solving one of our world's most pressing environmental issue: Soil Degradation.

The first Glinka World Soil Prize was awarded on the occasion of the World Soil Day 2016. The nomination process for the Glinka World Soil Prize 2017 is now officially launched and organizations/individuals are invited to nominate appropriate candidates and submit the nomination form by 30 September 2017 to GSP-Secretariat@fao.org.

About the Prize

The award will contribute in a timely manner to raise awareness amongst policy makers and the general public about possible solutions to tackle acute national and local problems of soil degradation, and to encourage all stakeholders and soil practitioners to engage in field-oriented work, with direct contributions to the preservation of the environment, food security and poverty alleviation as specified in the Revised World Soil Charter.

The Glinka World Soil Prize aims to keep up the momentum generated by the

International Year of Soils 2015.

Who can submit nominations?

All GSP Partners are invited to nominate candidates, either directly or on behalf of a third party. Self-nominations are not allowed and will be disqualified. Nominations can be submitted in English, French, Spanish, Russian, Arabic or Chinese.

Once completed, the form should be submitted to:

GSP Secretariat

Viale delle Terme di Caracalla, B709

00153 Roma, Italy

Email: gsp-secretariat@fao.org

Who can be nominated?

Nominees should have made outstanding achievements in implementing the principles and recommended actions of the revised World Soil Charter adopted by the FAO Conference in June 2015, and the achievement should contribute to one of the five pillars of the GSP (a proven impact at field level will be an added value).

Who is Konstantin Dmitrievich Glinka?

Konstantin Glinka (1867-1927) was a prominent Russian soil scientist who is credited for his unique contribution to understanding the principles of the geographical distribution of soils and extensive activities on the exploration, mapping and assessment of vast areas of Siberia, the Far East and Central Asia, as well as his important studies in the areas of soil mineralogy, chemistry and paleopedology.

What is the deadline for submitting a nomination?

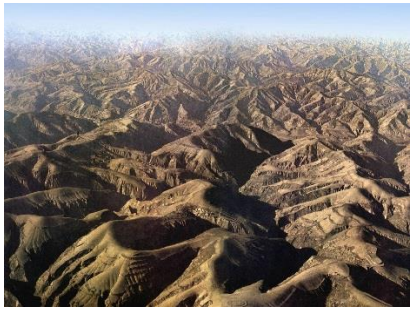
Completed nominations can be submitted by post or email and must be received by 30 September 2017 cob Rome time.

Details here: http://www.fao.org/global-soil-partnership/pillars-action/2-awareness-raising/glinka-world-soil-prize/en/

Evaluation on national achievement and effect of soil and water conservation in China

Evaluation on national achievement and effect of soil and water conservation, a project released by CAS in 2016, has been finished field investigation up to 6 times, including the black soil region in the northeast China, the karst region in southwest China, the red soil zone in the south China, the stony mountain zone in the north China, the windy and sandy zone in the north China, and Loess plateau in the northwest China.



Generally, after several decades control on soil erosion, great achievement has been achieved, the sediment into Yellow River and Yangtze River have been reduced effectively, the desertification has been controlled to a great extent, the black soil land has been protected well, the agricultural production situation and eco-environment have been improved significantly.

The comprehensive management for small watershed could be found anywhere in China, after adopting such measures, vegetation coverage has been increased more than 30% in some regions.

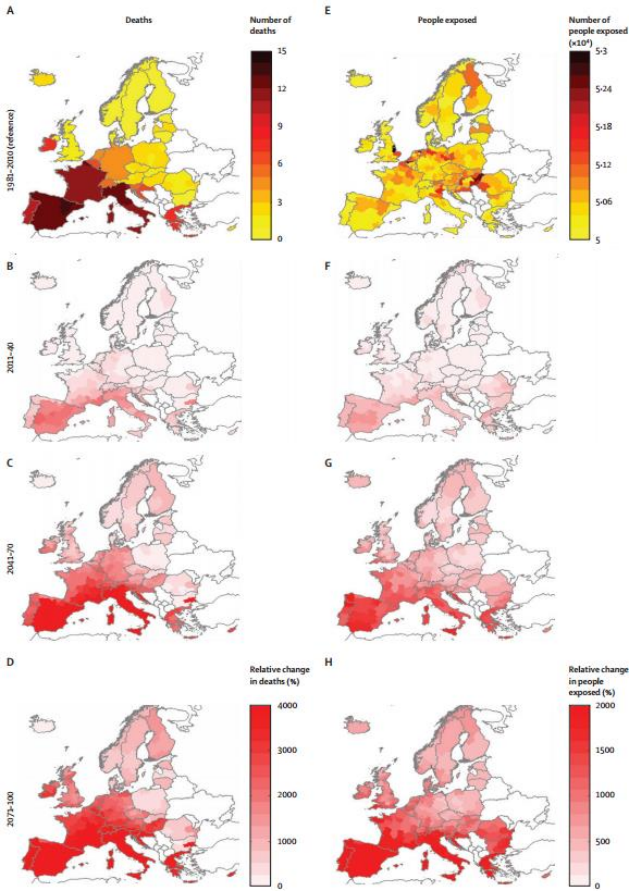
Here are some comparisons before and after treatment:

This project is aimed to evaluate the specific effects of soil and water conservation through summarizing the long term results in monitoring and measurement in field stations based on small watersheds. The following questions were expected to be answered: (1) how to set up soil and water conservation measures in different regions? and how to adjust land use? (2) what effects have been achieved for adopted technologies and measures? (3) how to make people rich during the treatment of soil erosion?

This project started from the beginning of 2016, and will be finished by the end of 2018, main researchers are from *the Institute of soil and water conservation of CAS & MWR, China institute of water resources and hydropower research, Beijing Normal University, Institute of soil science of CAS, Institute of Mountain Hazards and Environment of CAS, Institute of subtropical agriculture of CAS,* etc.

Increasing risk over time of weather-related hazards to the European population

Background The observed increase in the effects on human beings of weather-related disasters has been largely attributed to the rise in population exposed, with a possible influence of global warming. Yet, future risks of weather-related hazards on human lives in view of climate and demographic changes have not been comprehensively investigated.



Methods We assessed the risk of weather-related hazards to the European population in terms of annual numbers of deaths in 30 year intervals relative to the reference period (1981–2010) up to the year 2100 (2011–40, 2041–70, and 2071–100) by combining disaster records with high-resolution hazard and demographic projections in a prognostic modelling framework. We focused on the hazards with the greatest impacts—heatwaves and cold waves, wildfires, droughts, river and coastal floods, and windstorms—and evaluated their spatial and temporal variations

in intensity and frequency under a business-as-usual scenario of greenhouse gas emissions. We modelled long-term demographic dynamics through a territorial modelling platform to represent the evolution of human exposure under a corresponding middle-of-the-road socioeconomic scenario. We appraised human vulnerability to weather extremes on the basis of more than 2300 records collected from disaster databases during the reference period and assumed it to be static under a scenario of no adaptation.

Findings We found that weather-related disasters could affect about two-thirds of the European population annually by the year 2100 (351 million people exposed per year [uncertainty range 126 million to 523 million] during the period 2071–100) compared with 5% during the reference period (1981–2010; 25 million people exposed per year). About 50 times the number of fatalities occurring annually during the reference period (3000 deaths) could occur by the year 2100 (152000 deaths [80500–239800]). Future effects show a prominent latitudinal gradient, increasing towards southern Europe, where the premature mortality rate due to weather extremes (about 700 annual fatalities per million inhabitants [482–957] during the period 2071–100 vs 11 during the reference period) could become the greatest environmental risk factor. The projected changes are dominated by global warming (accounting for more than 90% of the rise in risk to human beings), mainly through a rise in the frequency of heatwaves (about 2700 heat-related fatalities per year during the reference period vs 151500 [80100–239000] during the period 2071–100).

Interpretation Global warming could result in rapidly rising costs of weather-related hazards to human beings in Europe unless adequate adaptation measures are taken. Our results could aid in prioritisation of regional investments to address the unequal burden of effects on human beings of weather-related hazards and differences in adaptation capacities.

Details at: http://press.thelancet.com/weatherhealth.pdf

Urban floods intensifying, countryside drying up

University of New South Wales

An exhaustive global analysis of rainfall and rivers shows signs of a radical shift in streamflow patterns, with more intense flooding in cities and smaller catchments coupled with a drier countryside.

Drier soils and reduced water flow in rural areas - but more intense rainfall that overwhelms infrastructure and causes flooding and stormwater overflow in urban centres. That's the finding of an exhaustive study of the world's river systems, based on data collected from more than 43,000 rainfall stations and 5,300 river monitoring sites across 160 countries.

The study, by engineers at University of New South Wales in Sydney and which appears in the latest issue of the journal Scientific Reports, explored how rising local temperatures due to climate change might be affecting river flows.

As expected, it found warmer temperatures lead to more intense storms, which makes sense: a warming atmosphere means warmer air, and warmer air can store more moisture. So when the rains do come, there is a lot more water in the air to fall, and hence, rainfall is more intense. But there's been a growing puzzle: why is flooding not increasing at the same rate as the higher rainfall?

The answer turned out to be the other facet of rising temperatures: more evaporation from moist soils is causing them to become drier before any new rain occurs - moist soils that are needed in rural areas to sustain vegetation and livestock. Meanwhile, small catchments and urban areas, where there are limited expanses of soil to capture and retain moisture, the same intense downpours become equally intense floods, overwhelming stormwater infrastructure and disrupting life.

"Once we sorted through the masses of data, this pattern was very clear," said Ashish Sharma, a professor of hydrology at UNSW's School of Civil and Environmental Engineering. "The fact that we relied on observed flow and rainfall data from across the world, instead of uncertain model simulations, means we are seeing a real-world effect - one that was not at all apparent before."

"It's a double whammy," said Conrad Wasko, lead author of the paper and postdoctoral fellow at UNSW's Water Research Centre. "People are increasingly migrating to cities, where flooding is getting worse. At the same time, we need adequate flows in rural areas to sustain the agriculture to supply these burgeoning urban populations".

Global flood damage cost more than US$50 billion in 2013; this is expected to more than double in the next 20 years as extreme storms and rainfall intensify and growing numbers of people move into urban centres. Meanwhile, global population over the next 20 years is forecast to rise another 23% from today's 7.3 billion to 9 billion - requiring added productivity and hence greater water security. The reduction in flows noted by this study makes this an even bigger challenge than before. "We need to adapt to this emerging reality," said Sharma. "We may need to do what was done to make previously uninhabitable places liveable: engineer catchments to ensure stable and controlled access to water. Places such as California, or much of the Netherlands, thrive due to extensive civil engineering. Perhaps a similar effort is needed to deal with the consequences of a changing climate as we enter an era where water availability is not as reliable as before."

"Climate change keeps delivering us unpleasant surprises," said Mark Hoffman, UNSW's Dean of Engineering. "Nevertheless, as engineers, our role is to identify the problem and develop solutions. Knowing the problem is often half the battle, and this study has definitely identified a major one."

Rainfall data used in the study was collected from the Global Historical Climatology Network, which contains records from over 100,000 weather stations in 180 countries and is managed by the U.S. National Oceanic and Atmospheric Administration. River flow data came from the Global Runoff Database, run by Germany's Federal Institute of Hydrology, which relies on river discharge information collected daily or monthly from more than 9,300 stations in 160 countries.

Copy from: https://www.eurekalert.org/pub_releases/2017-08/uons-ufi081417.php

National Soil Health Measurements to Accelerate Agricultural Transformation

Soil Health Institute Endorses 19 Soil Health Measurements After 3 Years of Collaboration

For scientists, farmers and ag policy makers, one nagging question has yet to be completely "unearthed:" Just how healthy (or unhealthy) are the nation's soils?

"We can't really know the answer to that question until we have a set of common soil health measurements that scientists and farmers can compare and track over time," said Dr. Wayne Honeycutt, CEO of the Soil Health Institute. "But we believe our endorsement of 19 measures today will help us seek and track that common ground – and ultimately answer that important question."

The concept of soil health is gaining widespread attention because it promotes agricultural practices that are not only good for the farmer, but also good for the environment. An abundance of research shows that improving soil health boosts crop yield, enhances water quality, increases drought resilience, reduces greenhouse gas emissions, increases carbon sequestration, provides pollinator habitat, and builds disease suppression. To help implement widely-applicable, consistent measures of soil health, the Soil Health Institute announces its endorsement of 19 national soil health measurements.

Over the last three years, scientists from public and private sectors, farmers, field conservationists, soil test laboratories and many others provided input to develop a

"Tier 1" list of recommended soil health measures, considered effective indicators of soil health. These specific measurements are regionally defined, have known thresholds, and help define management strategies to improve soil function – like providing nutrients and water.

" Establishing these measurements of soil health will allow a broad group of stakeholders to speak the same language," said Honeycutt. "This will go a long way in mobilizing further efforts to improve sustainability of our food production systems."

" The National Association of Conservation Districts believes a shared, foundational understanding of how we measure soil health is critical to advancing the adoption of conservation management practices countrywide," NACD President Brent Van Dyke said. "We anticipate that through our own Soil Health Champions Network, and supported by the measurement efforts of the Soil Health Institute, our nation's agricultural producers will be better equipped than ever to sustainably grow America's food, fuel, and fiber in an era of unprecedented global demand."

Soil health, like human health, is a complex and holistic concept. For example, when a person goes to a medical doctor, their health is not judged by blood pressure alone. Instead, many tests are used to assess their health. In a similar way, soil health is based on numerous chemical, physical, and biological measurements.

Specific Tier 1 measures endorsed include:

- organic carbon,
- pH,
- water-stable aggregation,
- crop yield,
- texture,
- penetration resistance,
- cation exchange capacity,
- electrical conductivity,
- nitrogen,
- phosphorus,
- potassium,
- carbon mineralization,
- nitrogen mineralization,
- erosion rating,
- base saturation,
- bulk density,
- available water holding capacity,
- infiltration rate, and
- micronutrients

"Many of these Tier 1 measures have proven effective to help producers achieve high yields for decades," Honeycutt said. "Consequently, many of the soil test laboratories and field conservationists are already using these measurements. Currently, the Soil Health Institute is reaching out to those organizations to explore additional

implementation opportunities."

" We support the widescale adoption of these soil health indicators, recognizing the robust process and scientific collaboration behind them," said Nick Goeser, director of the Soil Health Partnership, and National Corn Growers Association director of soil health and sustainability. "We encourage farmers and agronomists to regularly test soil, use these indicators as business management tools for greater insight, and adopt practices that will improve soil health, like reducing the intensity of tillage to build soil organic matter."

" The Soil Science Society of America supports development of scientifically-rigorous methodologies to quantify soil health, foster research, and promote outreach of reliable metrics to ranchers and farmers," added Dr. Andrew Sharpley, President, SSSA.

Work continues with the agricultural industry to add more measurements to the Tier 1 classification – currently being researched as Tier 2 and Tier 3 measurements. They require additional research to elevate them to Tier 1 usefulness. Such research may involve understanding regional differences in interpretation, establishing thresholds, and developing management recommendations to improve soil functioning.

" In particular, several biological measurements have significant potential to help suppress diseases naturally, improve water quality, build drought resilience, increase carbon sequestration, and reduce greenhouse gas emissions," said Dr. Steven Shafer, Chief Scientific Officer with the Soil Health Institute. "However, additional research is needed to evaluate Tier 2 and Tier 3 measurements and interpret their contributions to soil health in different climates, soils, and production systems."

" We are working with numerous partners to advance that research and are already making plans to get it into the hands of farmers and ranchers," added Honeycutt.

Details here: http://soilhealthinstitute.org/national-soil-health-measurements-accelerate-agricultural-transformation/

3D Soil Hydraulic Database of Europe at 1 km and 250 m resolution

A consistent spatial soil hydraulic database at 7 soil depths up to 2 m calculated for Europe based on SoilGrids250m and 1 km datasets and pedotransfer functions trained on the European Hydropedological Data Inventory. Saturated water content, water content at field capacity and wilting point, saturated hydraulic conductivity and Mualem-van Genuchten parameters for the description of the moisture retention, and unsaturated hydraulic conductivity curves have been predicted. The derived 3D soil hydraulic layers (EU-SoilHydroGrids ver1.0) can be used for environmental modelling purposes at catchment or continental scale in Europe. Currently, only EU-SoilHydroGrids provides information on the most frequently required soil hydraulic properties with full European coverage up to 2 m depth at 250 m resolution.

Description

The multilayered European Soil Hydraulic Database (EU-SoilHydroGrids ver1.0) was derived with European pedotransfer functions (EU-PTFs; Tóth et al., 2015) based on the soil information of SoilGrids250m and aggregated 1 km (Hengl et al., 2017) datasets.

It covers the parameters:

- saturated water content,

- water content at field capacity and wilting point,
- saturated hydraulic conductivity and Mualem-van Genuchten parameters for the description of the moisture retention, and
- unsaturated hydraulic conductivity curves

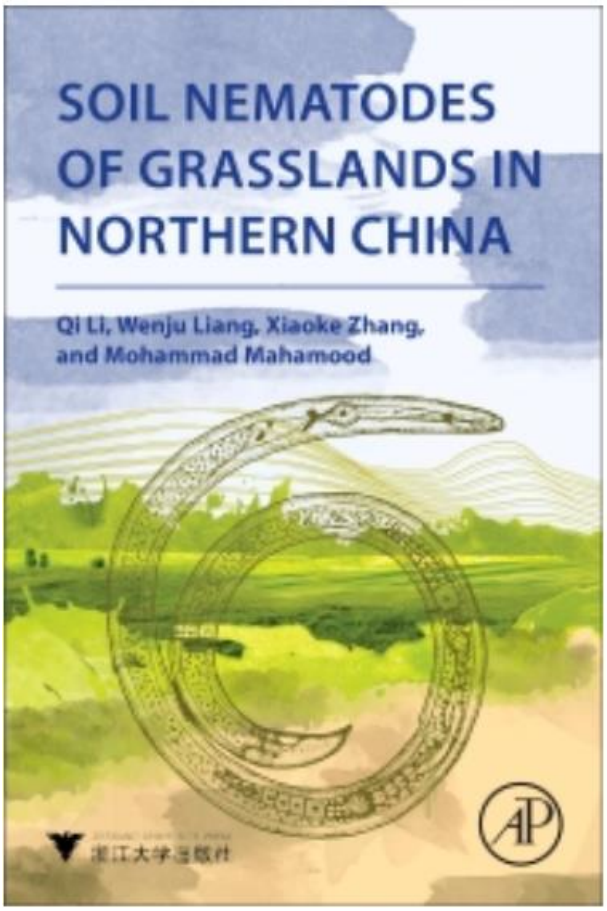
The EU-PTFs (Tóth et al., 2015) were trained on the European Hydropedological Dataset (EU-HYDI; Weynants et al., 2013). EU-HYDI is a collection of data from 29 institutions in 18 European countries and contains data on taxonomical, chemical, and physical soil properties of more than 18,000 soil samples. Pedotransfer functions were calibrated using soil information of 134 to 6,074 soil samples and validated on 57 to 2,357 samples, depending on the type of soil hydraulic property.

SoilGrids provides the most detailed information on soil properties with full continental coverage in Europe. It incorporates soil taxonomical, physical, and chemical data of seven soil depths at 250 m resolution (Hengl et al., 2017). The following soil properties to calculate the soil hydraulic properties were used: clay, silt, and sand content (mass %); organic carbon content (g kg^{-1}); bulk density (kg m^{-3}); pH in water and depth to bedrock (cm) at 0, 5, 15, 30, 60, 100, and 200 cm depth. The first four depths, which are less than or equal to 30 cm depth, are considered as topsoil and the remaining handled as subsoil in accordance with the EU-PTFs used for calculations (Tóth et al., 2015).

In case bedrock appears within 200 cm, hydraulic properties were calculated up to the first layer underlying the top of the bedrock providing the possibility to interpolate the soil hydraulic properties through different soil depths. For modelling purposes, the predicted depth to bedrock is available from www.soilgrids.org; data are described in detail in Shangguan, Hengl, Mendes de Jesus, Yuan, and Dai (2017). For methods, results and further discussion, reference is made to the accompanying paper: "3D soil hydraulic database of Europe at 250 m resolution" (Brigitta Tóth, Melanie Weynants, László Pásztor, Tomislav Hengl)

Request form here: https://esdac.jrc.ec.europa.eu/content/3d-soil-hydraulic-database-europe-1-km-and-250-m-resolution#tabs-0-description=1

Soil nematodes of grasslands in northern China



Description

Soil Nematodes of Grasslands in Northern China presents research on China's temperate grasslands, providing the findings and results of a large field survey along a transect across the northern temperate grassland. It examines nematode distribution patterns along the transect from trophic group and family, to genus level, also evaluating their relationship with climatic conditions, plant biomass and soil parameters. The book then presents detailed taxonomy information of nematodes to genus or species level, providing keen insights into nematode diversity along the grassland transect in north China.

Final sections review the advances and perspectives for the research of soil ecology on soil nematodes in China, including recent major discoveries of soil microbial diversity and eco-function during this field survey.

Key Features

Features previously unavailable information on nematode diversity and distribution along a large geographic region of China

Describes the relationship of nematode assemblage composition with climatic conditions, plant and soil characteristics

Covers nematode genera and species descriptions along the grassland transect

Details

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Paperback ISBN: 9780128132746

About the Author

Qi Li

Qi Li is Professor of Soil Ecology at the Institute of Applied Ecology, Chinese Academy of Sciences in Shenyang, China, where he has been affiliated for more than a decade. Grants for his research have included funding to explore the extension mechanism of soil water and nutrient buffering capacity, as well as the effects of free air enrichment elevated O3 on soil nematodes under wheat soil with different ozone tolerance. He has published nearly 40 peer-reviewed articles and has presented research at professional meetings that include the Joint Meeting of the International Soil Ecology Society & the Society of Nematologists, as well as the International Colloquium on Soil Zoology and Ecology.

Affiliations and Expertise

Institute of Applied Ecology, Chinese Academy of Sciences, Shenyang, China

WASWAC MEMBERSHIP APPLICATION/RENEWAL FORM (Issued 120501)

(For applicants from all countries)

Name: (Ms./Mrs./Mr./Prof./Dr.)..... Gender: □F □M

Institution:.....

Postal address:.....

State/Province:..... Zip/Postal code:..... Country:.....

Phone:..... Fax:.....

Emails (Please give at least 2 addresses to ensure uninterrupted contact): (1).....

(2)..... (3).....

My specialized field(s):.....

Please sign me up for the WASWAC membership in category*: □1(IM)□2(LM)□3(OM)□4(SM&GM)

Membership for the year(s)..... @US$..... = US$ .....

Donation for developing country membership, etc. US$ .....

Donation to the Moldenhauer Fund US$ .....

Total US$ .....

***Membership categories & rates** from July 18, 2005, amended March 3, 2007 and March 4, 2010.

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2. LM (Life membership): US$80 for developing countries (In China, members pay 520 yuan RMB); US$160 for developed countries and persons working in international organizations worldwide. Persons who have passed their 60th birthday pay only half of these LM rates.

3. OM (Organization membership): For universities, research and implemental institutions, government agencies, NGOs, societies, associations and international organizations, etc. Persons belonging to an Organization member will receive the same online products and services as the other two above categories: $100/year for an organization with up to 150 persons; $150/year for an organization with up to 300 persons: $200/year for an organization with up to 500 persons; and $10/year for an additional 100 persons or part thereof.

4. SM&GM (Student membership & Gift membership): US$5/year worldwide, to be purchased to give to colleagues, friends, students, etc.

For sending money by foreign wires through a bank, please give the following information to your bank:

Name of Receiver (A/C Holder's Name): World Association of Soil and Water Conservation

Bank Name and Address: China Construction Bank, Shoutinanlu Branch, Beijing, China, No. 9 Shoutinanlu Street, Haidian District, Beijing, P R China

A/C NO.: 1100 1042 7000 5301 6996

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