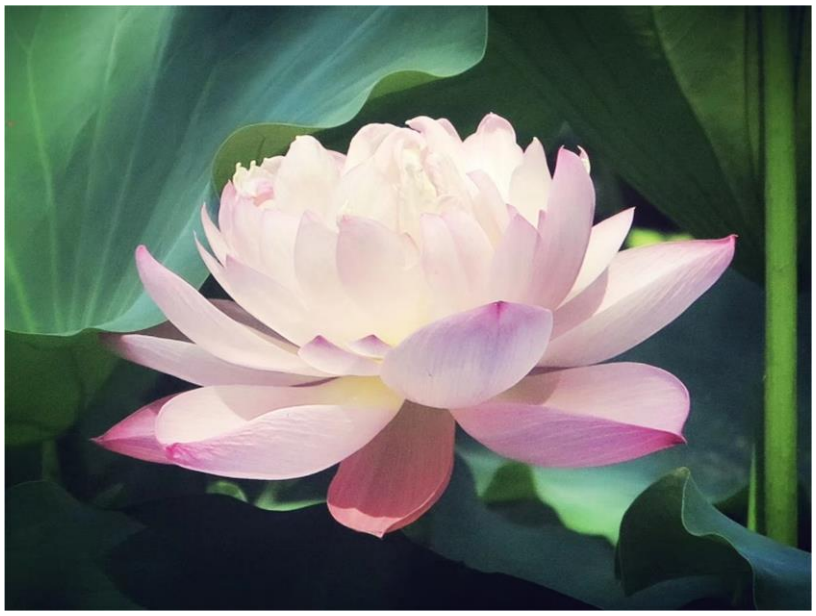
WORLD ASSOCIATION OF SOIL AND WATER CONSERVATION

HOT NEWS

Issue 06, 2019



WASWAC HOT NEWS No. 06, June, 2019

Contents

Editors: Dr. DU Pengfei, Dr. ZHAO Ying.

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For ISWCR paper submission:

http://www.keaipublishing.com/en/journals/international-soil-and-water-conservation-research/

WASWAC Website: www.waswac.org

Information of WASWAC World Conference IV

Soil and Water Resources Management for Climate Smart Agriculture and Global Food and Livelihood Security

At New Delhi, India, November 5th-9th, 2019

ONLY A WEEK LEFT

TO SUBMIT

YOUR ABSTRACT

(1) Website change

The original website (http://soilconservation.org/) is no longer in use. The current website: http://scsi.org.in/ of Soil Conservation Society of India has been updated with details of the WASWAC World Conference IV. You may visit this page

(http://scsi.org.in/sw_index.html) for the updates, submission of abstracts and registration. The delegates who have submitted their abstract do not need to re-submit.

(2) Acceptance of abstract/paper

The acceptance of abstract/paper has been returned to the author(s) after review. Any participants who have not received the acceptance or confirmation of the abstract/paper, please do not hesitate to contact icscsi2019@gmail.com and soilcsi@gmail.com for further help. If you are a member of WASWAC, please also contact the secretariat of WASWAC with waswac@foxmail.com or waswac@vip.163.com

(3) Deadlines extended

- Last date of abstract submission August 31, 2019
- Intimation of acceptance of abstracts September 15, 2019
- Submission of full length papers September 25, 2019
- Last date for registration without late fees October 1, 2019

(4) Conference themes

- **Soil Degradation – inventorization, issues and Management**

a. Soil salinization, acidification, compaction (structural degradation), pollution – issues and management
b. Urban soils and their management
c. Soil quality challenges in resilient agriculture
d. Soil erosion – modelling, innovations in management under different land uses
e. Remote sensing and GIS applications for managing soil degradation
f. Integrated watershed management
g. Restoration of degraded soils

- **Water Resources Conservation and Management**

a. Conservation irrigation innovations for higher water productivity
b. Conjunctive use of poor quality waters
c. Low-cost groundwater recharge techniques
d. Rain/runoff water harvesting in urban, peri-urban and rural areas
e. Recycling of wastewaters

- **Sustainable Farming Systems vis-a-vis Climate Change**

a. Intensification of cropping systems for adaptation to climate change
b. Integrated farming system for livelihood and natural resource security
c. Biodiversity conservation through integrated farming system
d. Coastal ecosystem management

- **Land Use Planning and Management under Changing Soil and Water Scenario**

a. Land management in mountainous, plateau, plains, desert, grassland, alpine regions
b. Shifting cultivation – impacts, management
c. Carbon sequestration potential of soils under different land uses and in agro-climatic regions

- **Biodiversity Conservation for Mitigating Climate change**

a. Aforestation and forest management for sustained rural livelihood
b. Biodiversity conservation in different agro-ecological regions vis-a-vis climate change
c. Agro-forestry systems – scope, issues and system combinations
d. Protection and preservation of wildlife and flora & fauna in the adverse environmental conditions.

- **Socio-economic and Gender issues in Natural Resource Management**

a. Socio-economic constraints in soil and water conservation
b. Socio-economic development and livelihood support to farming community.
c. Women empowerment in natural resource management
d. Role of women in environmental protection

- **Policy Interventions in Soil and Water Management for Global Food security**

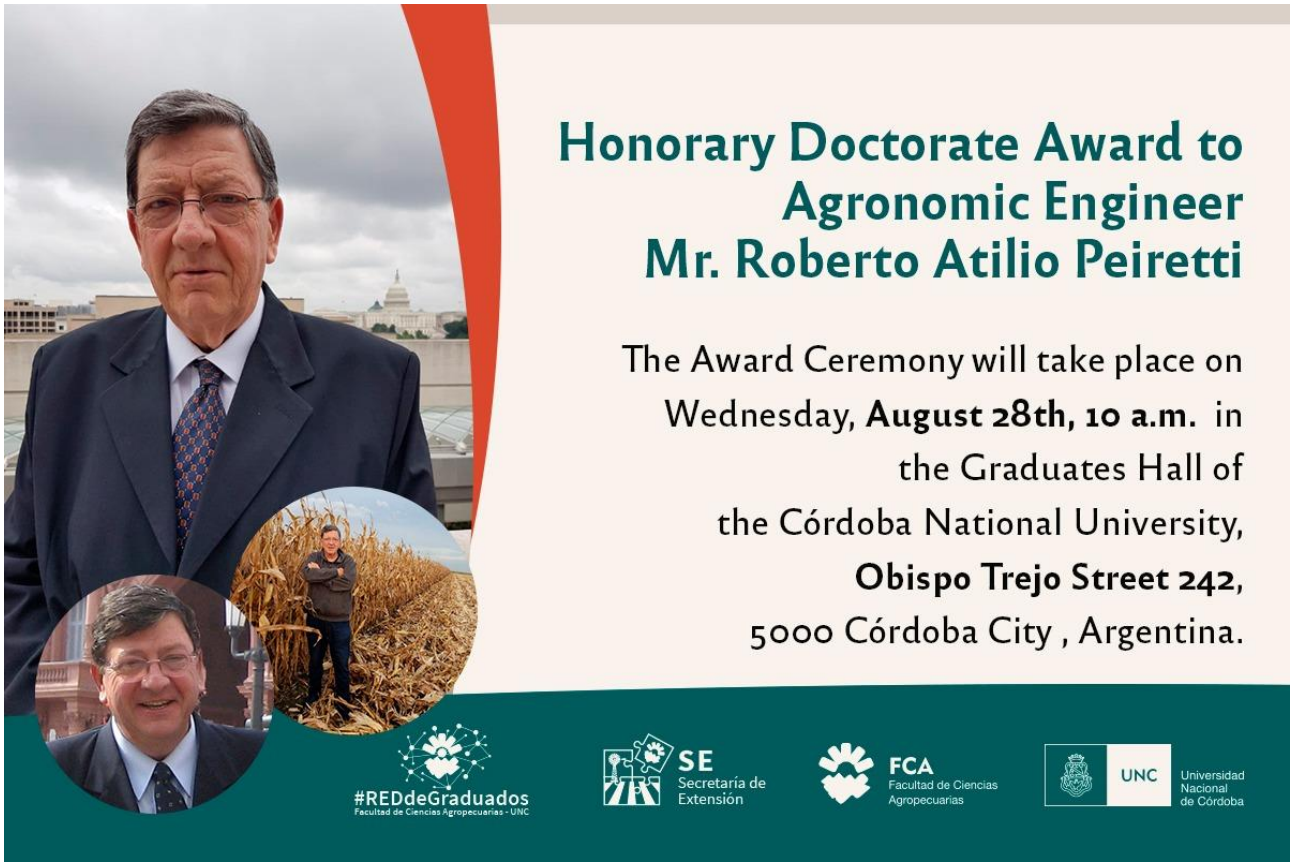
a. Global policy framework for ensuring food, energy and livelihood security
b. Community participation in conservation and sustainability interventions
c. Irrigation development and rainfed farming systems
d. Policy interventions on the use of groundwater

- **Bio-Industrial approaches to Watershed for Food and Livelihood Security**

a. Bio-industrial watershed management for enhancing income and employment generation
b. Extension, Education and Training initiatives for promotion of soil and water conservation.
c. Use of Bio-industrial waste for development and management of degraded Natural Resources.

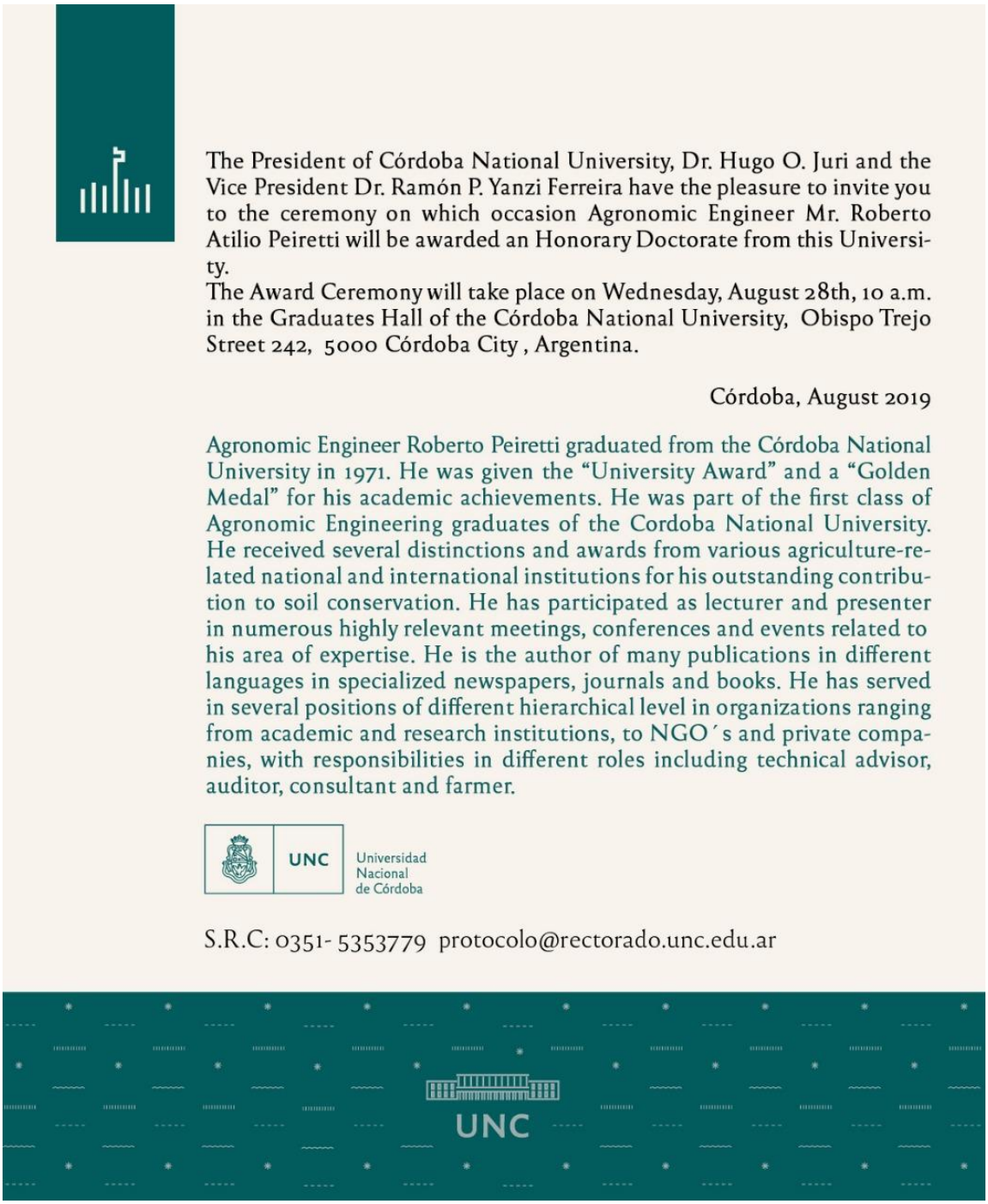
Honorary Doctorate Award to Agronomic Engineer Mr. Roberto Atilio Peiretti

Mr. Roberto Atilio Peiretti, the deputy president of WASWAC, will receive the Honorary Doctorate Award soon. The Award Ceremony will take place on Wednesday, August 28th in the Graduates Hall of the Cordoba National University, Argentina.



Mr. Roberto Atilio Peiretti acted as No Till developer, producer and consultant for the last thirty years. He is actively managing a No Till Farming operation of around ten thousand hectares located in different parts of Argentina. Also he is advising and contributing to the development, adaptation and adoption of the No Till system and MOSHPPA model principles in several other countries and continents around the globe. He was one of the founder members of AAPRESID (Argentinean No Till Farmers Association) and actual member of the AAPRESID Steering Committee engaged on the International Relationships

Working Group of the institution. He was elected as President of CAAPAS (American Confederation of Farmers Organizations for a Sustainable Agriculture) for the period 2002-2004 and reelected for a second period 2004-2006. Now he is serving as one of the deputy presidents of WASWAC.



The President of Córdoba National University, Dr. Hugo O. Juri and the Vice President Dr. Ramón P. Yanzi Ferreira have the pleasure to invite you to the ceremony on which occasion Agronomic Engineer Mr. Roberto Atilio Peiretti will be awarded an Honorary Doctorate from this University.
The Award Ceremony will take place on Wednesday, August 28th, 10 a.m. in the Graduates Hall of the Córdoba National University, Obispo Trejo Street 242, 5000 Córdoba City , Argentina.

Córdoba, August 2019

Agronomic Engineer Roberto Peiretti graduated from the Córdoba National University in 1971. He was given the "University Award" and a "Golden Medal" for his academic achievements. He was part of the first class of Agronomic Engineering graduates of the Cordoba National University. He received several distinctions and awards from various agriculture-related national and international institutions for his outstanding contribution to soil conservation. He has participated as lecturer and presenter in numerous highly relevant meetings, conferences and events related to his area of expertise. He is the author of many publications in different languages in specialized newspapers, journals and books. He has served in several positions of different hierarchical level in organizations ranging from academic and research institutions, to NGO´s and private companies, with responsibilities in different roles including technical advisor, auditor, consultant and farmer.

UNC Universidad Nacional de Córdoba

S.R.C: 0351- 5353779 protocolo@rectorado.unc.edu.ar

UNC

Congratulations!

The world needs topsoil to grow 95% of its food – but it's rapidly disappearing

Without efforts to rebuild soil health, we could lose our ability to grow enough nutritious food to feed the planet's population.

▲ *The Sarigua desert, west of Panama City, Panama, seen after overgrazing by livestock and the loss of topsoil through erosion. Photograph: Tomas Munita/AP*

The world grows 95% of its food in the uppermost layer of soil, making topsoil one of the most important components of our food system. But thanks to conventional farming practices, nearly half of the most productive soil has disappeared in the world in the last 150 years, threatening crop yields and contributing to nutrient pollution, dead zones and erosion. In the US alone, soil on cropland is eroding 10 times faster than it can be replenished.

If we continue to degrade the soil at the rate we are now, the world could run out of topsoil in about 60 years, according to Maria-Helena Semedo of the UN's Food and Agriculture Organization. Without topsoil, the earth's ability to filter water, absorb carbon, and feed people plunges. Not only that, but the food we do grow will probably be lower in vital nutrients.

The modern combination of intensive tilling, lack of cover crops, synthetic fertilizers and pesticide use has left farmland stripped of the nutrients, minerals and microbes that support healthy plant

life. But some farmers are attempting to buck the trend and save their lands along with their livelihoods.

“We never want to see our soil unless we go looking for it,” says Keith Berns, a Nebraska farmer whose land hasn’t seen a plow in three decades. He and his brother, Brian, began the practice of no-till on their 2,100-acre corn and soybean farm when they learned it could increase the carbon, nutrients and water available in the soil. Their farm is in a particularly dry area of the country, and keeping moisture on their land is a top priority. For every 1% increase of carbon, an acre of land can hold an additional 40,000 gallons of water. Once they stopped tilling, the Berns family saw organic matter in the soil increase, which can have the added benefit of making foods grown in the soil more nutritious.

Organic matter, a section of soil that contains decomposing plant or animal tissue, serves as a reservoir of nutrients that microbes can feast upon while they provide nitrogen to growing plants and sequester carbon. The more organic matter, the more organisms the soil can support. “If you had a handful of soil, you’d have more organisms than people on earth,” says Rob Myers, a soil scientist at the University of Missouri. With increased organic matter, the Bernses grew more food using less water and fertilizer.

In the 1990s, they began planting cover crops between harvests. The rye and buckwheat, among other cover crops, provided more organic matter to the soil, further feeding microorganisms like bacteria and fungi. The crops also kept nitrogen in the soil and reduced erosion.

Amid growing concerns about topsoil loss, no-till and cover crops are becoming more popular, according to the 2017 US Census of Agriculture. Forty per cent of US cropland is grown on no-till farms, up from 32% in 2012.

Though still not widely adopted, cover crops are becoming more popular with farmers, too, particularly in the country’s corn belt. Nationwide, farmers planted cover crops on 15m acres, a 50% increase from five years earlier.

The Berns brothers saw this change first-hand. When they first decided to plant cover crops, they had trouble finding seeds. Seeing a hole in the market, they began their own cover crop seed company in 2009, putting together what farmers now call a cover crop cocktail to sow in the fall. In

their first year, they sold enough seed to cover 2,000 acres. Last year, they sold enough to cover 850,000.

The sense of urgency over topsoil is growing as the planet is projected to reach 9 billion people by 2050. Without a healthy farm system, farmers won't be able to feed the world's growing population, says Dave Montgomery, a geologist at the University of Washington and author of the book Growing a Revolution: Bringing Our Soil Back to Life.

To see what can happen to civilizations that lost the topsoil they needed to grow food, look no further than Syria or Libya. Roman tax records show that those areas grew ample amounts of wheat, but as farmers continued to plow their fields, they exposed valuable microbes and topsoil eroded. Today those areas barely have any soil to grow crops.

"Societies that lose their topsoil, their descendants pay the price," Montgomery says. "Nature takes a long time to build soil." By some estimates, it can take 500 years for healthy topsoil to develop and less than a century to degrade.

The world is also facing a crisis in nutrition. A 2004 study published in the Journal of the American College of Nutrition compared nutrients in crops grown in 1950 to those grown in 1999 and found declines in protein, calcium, phosphorus, iron, vitamin B2 and vitamin C.

The practice of farming one or two crops, like corn and soybeans, hastened soil degradation, according to Montgomery. Government policy encouraged US farmers to specialize, resulting in monocultures that require an increasing amount of water and fertilizer and pesticides.

Practices, however, are changing, say Montgomery and Myers. "I think you are seeing a big movement, but it's just getting rolling," Montgomery says.

Berns suggests that farmers make these changes slowly, employing them on one patch of the farm at a time. In mid-Atlantic states like Maryland and Virginia, local governments have incentivized farmers with grants to plant cover crops, resulting in high adoption rates over the last 20 years.

The stakes are high. If farmers in the US and around the world don't continue to put a higher value on what nurtures their crops, we could be facing an unimaginable catastrophe, according to Myers: "We have to have that topsoil; it's paramount to our survival."

Source: https://www.theguardian.com/us-news/2019/may/30/topsoil-farming-agriculture-food-toxic-america

Nitrogen from biosolids can help urban soils and plant growth

By Adityarup "Rup" Chakravorty

The "zero waste" trend could have a friend in the form of biosolids. Biosolids are the materials produced after domestic waste is treated in urban wastewater systems. In the past, most of this solid material was transferred to landfills. But, processes developed over the past few decades can create "exceptional quality" biosolids.

These new "EQ" biosolids are low in pollutants and pathogens, but high in nutrients. They can be applied to agricultural or urban soils needing fertilizer and other soil health improvements. That reuses a former "waste" material – and helps the environment along the way.

Tall fescue grows in an area of urban degraded soil used in this research. The disturbed soil includes a large presence of rocks and foreign materials such as asphalt and cement. Credit: Odiney Alvarez-Campos

Biosolids are valuable because they are rich in nitrogen, a key nutrient for plants. But, only a fraction of the nitrogen in biosolids used as fertilizer becomes available to plants. This fraction is called bioavailable nitrogen. "We need to know how much nitrogen becomes bioavailable when we add biosolids to the soil," says Odiney Alvarez-Campos, a researcher at Virginia Tech. "We want to supply enough for healthy crop growth and yields, but not surplus nitrogen."

That's because too much nitrogen can pollute the environment. It can enter surface and groundwater and affect aquatic ecosystems. "It's a balance between supporting plant growth, while not polluting," says Alvarez-Campos. In a new study, Alvarez-Campos and her colleagues tested how much of the nitrogen in different biosolid products became bioavailable in an urban soil. They discovered a complicating factor. The degraded nature of urban soils might reduce biosolids' nitrogen availability for plants.

"Urban soils are often compacted, degraded soils. They can have low organic matter and nutrients," says Alvarez-Campos. Human activities, like construction and heavy vehicle traffic, can degrade urban soils. "Biosolids have what we need to help restore these soils," she says. For example, the organic matter in biosolids can reduce soil compaction. That can make soils easier to till and help plants' roots grow. Biosolids can also increase water infiltration and retention in soils, which are important for plant growth.

The researchers tested five different biosolids products. All the products were of "exceptional quality". Some of the biosolids had other materials mixed in. These materials included dry organic and mineral material. The goal was to dry the biosolids. "One of the main challenges faced when applying biosolids to urban areas is their high moisture content," says Alvarez-Campos. Biosolid products that have high moisture are harder to transport, handle, and spread.

The study showed that biosolids that are not mixed with woody materials yield more bioavailable nitrogen than biosolids products mixed with woody materials. The low organic matter and high clay content of the urban soil reduced the amount of bioavailable nitrogen from biosolids. They also reduced the effectiveness of laboratory methods to estimate available nitrogen.

In addition, the researchers homed in on one commonly used laboratory method that provided best estimates of nitrogen availability from biosolids. This method is called 7-day anaerobic incubation. "It showed the greatest potential to be used as an indicator of a biosolid's nitrogen availability," says Alvarez-Campos. Knowing that nitrogen availability might be lower in degraded soils is key. "It will help adjust biosolid application rates to match the degree of soil degradation," says Alvarez-Campos.

Biosolids compost (left) shows the presence of woody material mixed in during the composting process. Bloom biosolids product (right) shows the product's dry, crumbly texture. Credit: Odiney Alvarez-Campos

These findings are an important first step. The researchers are evaluating the reliability of quick tests to estimate nitrogen availability from biosolids applied to urban soils. They are also looking to expand their study area. "In this study, we used a soil representative of urban soils in southwest Virginia," she says. Future studies will evaluate the impact of biosolid applications across a greater variety of urban soils and landscapes.

"Recycling biosolids into the soil is one of the most sustainable ways to manage waste," says Alvarez-Campos. "It returns carbon and nutrients – like nitrogen – to the soil, and helps vegetation grow." If biosolids are not applied to agricultural fields or urban landscapes, they are disposed of in landfills or incinerated. "When applied to soils, biosolids become a valuable resource rather than an unpleasant waste," she says.

This research was recently published in the Soil Science Society of America Journal. Funding was provided by Metropolitan Washington Council of Governments, DC Water, the Water Environment Research Foundation, the Virginia Agricultural Experiment Station, and the Hatch Program of the National Institute of Food and Agriculture, U.S. Department of Agriculture.

Source: https://www.soils.org/discover-soils/story/nitrogen-from-biosolids-can-help-urban-soils-and-plant-growth

PhD position in "Modelling Phosphorus cycle in EU agricultural soils and assessing land impact and land mitigation options"

The CDP scheme intends to enhance the science-policy link through strategic collaborations with higher education institutions characterized by research excellence and international reputation, in order to: (1) Train a new generation of doctoral graduates in science and technology with a focus on the science-policy interface, able to understand the research needs at different stages of the policy cycle, capable of providing scientific support to policy and of using transferable skills in science communication and knowledge management. (2) Co-develop, co-host and co-supervise doctoral studies between higher education institutions and the JRC. (3) Strengthen collaboration between the JRC and higher education institutions by promoting mutual enhancement of related skills and competences, combining existing knowledge and capacities, and enhancing networking in key scientific areas.

Within the CDP framework, we are looking for a PhD candidate to enhance and apply a spatially explicit crop and ecosystem models integrated with life cycle impact assessment at EU scale. Agriculture is driving the global impacts on land and water use, as well as on eutrophication. The objective of this PhD will be to find most sustainable practices for food provision considering impacts on land and water related to the fertilization and irrigation. In the first phase, the PhD candidate will calibrate and validate the Phosphorus component of the JRC-D.3 biogeochemical modelling framework (based on DAYCENT model) at European scale, on top of the already available Carbon and Nitrogen components. This phase will also take advantage of the extensive soil sampling LUCAS, providing the main chemical soil properties and change for 2009 and 2015 at high spatial detail for ~22'000 geo-referenced samples distributed in 28 countries. In a second phase during her/his stay in ETHZ, the PhD candidate will integrate the modelling outputs (phosphorus flows from DayCent model) with a LCA framework (including inventory data and impact assessment results). At a final stage, the PhD candidate will analyze the system-wide effects of different forms of nutrient supply, including manure and other organic fertilizers (incl. mulching of intercrops), phosphate from mines

and waste recovery, and synthetic nitrogen fertilizers. Organic fertilizer cannot be transported over larger distances and is therefore not everywhere available. Additional limitations of organic fertilizers include sub-optimal N/P ratios and requirement of land and water to either produce fertilizing intercrops or manure (as a by-product of meat and dairy). The PhD candidate will also analyze different supply chains and related environmental impacts, benefits and tradeoffs between various fertilization schemes with particular emphasis on the P cycle.

We offer a four-year PhD position in collaboration with the Joint Research Centre (JRC) of the European Commission. The PhD research will be realized at the Joint Research Centre (JRC) in Ispra, Italy, for a period of up to 24 months. We offer a competitive fellowship. While at the JRC in Ispra, you will get a contract as a Grant Holder 20.

Requirements: (1) You have(or are near completion of) a Master in Earth Sciences, Bioscience Engineering, Soil Science, Agricultural Sciences, Environmental Sciences, Geography (or a related field). (2) You have a strong interest in soil (biogeochemical processes) research and process-based modelling, and a demonstrable experience in these topics. (3) Experience with the spatial analysis of large-scale datasets and remote sensing is a major asset. (4) Experience in LCA or sustainability assessments is an advantage. (5) You have excellent knowledge of GIS and experience with R, Matlab or Python scripting. (6) You work proactively and independently and have good communication skills. (7) You have a very good knowledge of English, both spoken and written. (8) Relevant publications in peer review journals should be highlighted. (9) You are highly motivated, ambitious and result-oriented.

We look forward to receiving your online application via the following link: https://emea2.softfactors.com/job-opening/rgum-Gb0JUkJqcJFgV6d3xF#/?lang=en.

Applications sent by e-mail or post will not be considered. The selection process is based on the CV, tests and interviews.

For further information, please visit our website https://esd.ifu.ethz.ch/. Questions regarding the position should be directed by email to Prof. Stefanie Hellweg, stefanie.hellweg@ifu.baug.ethz.ch (no applications).

Database: Soil loss due to crop harvesting in the European Union

Soil loss due to crop harvesting in the European Union. The regional estimates of total Soil Loss by Crop Harvesting (SLCH) are presented at country and regional level.

Resource Type: Datasets

Publisher: Joint Research Centre of the European Commission

Registration is requested

Year: 2019

Language: en

Description: Considerable amounts of soil can be removed fromthe field due to soil sticking to the harvested roots. **Soil Loss due to Crop Harvesting (SLCH)** is defined as the loss (or export) of top soil from arable land during harvesting of crops such as potato, sugar beet, carrot or chicory roots. We performed a research study to scale up the findings of past studies, carried out at plot, regional, and national level, in order to obtain some preliminary insights into the magnitude of soil loss from cropland due to **sugar beets** and **potatoes** harvesting in Europe. We address this issue at European Union (EU) scale taking into account longterm (1975–2016) crop statistics of sugar beet and potato aggregated at regional and country levels.

Four Shape files are available for download (corresponding to the 4 figures of the publication):

- Impact of soil texture, expressed by the textural index on Soil Loss by Crop Harvesting SLCH
- Aggregated data (at country level) on Soil Loss by Crop Harvesting (SLCH) for sugar beet and potato
- Soil Loss (1000 tons) by Crop Harvesting (SLCH) crops at regional level (NUTS2) and contribution of crop harvesting (sugar beet and potato) to area-specific soil loss (t ha−1) from all arable lands.
- Decrease (%) of Soil Loss due to Crop Harvesting (SLCH) during the 3 study periods (1975–1986, 1987–1999 and 2000–2016).

Spatial Coverage: 28 Member States of European Union

Resolution: NUTS2

Time Reference: 3 periods 2000-2016, 1987-99, 1975-86

Format: Shape files and excel files

Projection: Lambert_Azimuthal_Equal_Area

Input data: Statistical data for crop harvesting in the European Union (Origin: Eurostat)

Release Date: 13/02/2019

Reference of source (Citations) :
Panagos, P., Borrelli, P., Poesen, J., 2019. Soil loss due to crop harvesting in the European Union: A first estimation of an underrated geomorphic process. *Science of The Total Environment*. **664**: 487-498. DOI: 10.1016/j.scitotenv.2019.02.009.

Science of the Total Environment 664 (2019) 487–498

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Science of the Total Environment

journal homepage: www.elsevier.com/locate/scitotenv

ELSEVIER

Soil loss due to crop harvesting in the European Union: A first estimation of an underrated geomorphic process

Panos Panagos [a,*], Pasquale Borrelli [b], Jean Poesen [c]

[a] European Commission, Joint Research Centre (JRC), Ispra, Italy
[b] Environmental Geosciences, University of Basel, Switzerland
[c] Division of Geography and Tourism, Department of Earth and Environmental Sciences, KU Leuven, Belgium

HIGHLIGHTS

- Soil Loss by Crop Harvesting (SLCH) is estimated at continental scale.
- SLCH is less intense compared to the water, wind, piping, tillage and gully erosion.
- The 4.2 million ha of roots crops in EU contribute to 14.7 million tons of SLCH.
- SLCH is declined by 37% between 1987–99 and 2000–2016 due to sugar beet decrease.
- SLCH may increase the overall soil loss rate in Netherlands, Belgium and Ireland.

GRAPHICAL ABSTRACT

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Keywords:
Sugar beets
Potatoes
Crop harvesting
Soil loss
Erosion
Root crops

ABSTRACT

Over the last two decades or so, there has been many research carried out to understand the mechanics and spatial distribution of soil loss by water erosion and to a lesser extent of wind, piping and tillage erosion. The acquired knowledge helped the development of prediction tools useful to support decision-makers in both ex-ante and ex-post policy evaluation. In Europe, recent studies have modelled water, wind and tillage erosion at continental scale and shed new light on their geography. However, to acquire a comprehensive picture of soil erosion threats more processes need to be addressed and made visible to decision-makers. Since 1986, a small number of studies have pointed to an additional significant soil degradation process occurring when harvesting root and tuber crops. Field observations and measurements have shown that considerable amounts of soil can be removed from the field due to soil sticking to the harvested roots and the export of soil clods during the crop harvest. This study aims to scale up the findings of past studies, carried out at plot, regional, and national level, in order to obtain some preliminary insights into the magnitude of soil loss from cropland due to sugar beets and potatoes harvesting in Europe. We address this issue at European Union (EU) scale taking into account long-term (1975–2016) crop statistics of sugar beet and potato aggregated at regional and country levels.
During the period 2000–2016, sugar beets and potatoes covered in average ca. 4.2 million ha (3.81%) of the EU-28 arable land estimated at 110 million ha. The total Soil loss by Crop Harvesting (SLCH) is estimated at ca. 14.7 million tons yr^{-1} in the EU-28. We estimate that ca. 65% of the total SLCH is due to harvesting of sugar beets and the rest as a result of potatoes harvesting.

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https://doi.org/10.1016/j.scitotenv.2019.02.009

Upcoming meetings

The conference theme, "Soil Organic Matter in a Stressed World" has the dual objectives of better understanding and quantifying the functions that SOM sustains in both natural and managed systems, and understanding the stressors that impact on both its stability, and its ability to continue to deliver these key ecosystem functions.

Themes:

- Ecological significance and function of SOM
- Impacts of climate change and land use on SOM
- Impacts of fire and ecosystem restoration through SOM recovery
- C sequestration – opportunities, costs, trade-offs
- Going down under: Deep SOM dynamics
- The living part of SOM – microbes, microfauna, mesofauna, macrofauna
- SOM, modelling, and data science
- Organic resource management: the role of recycled "wastes"
- The economic and social value of SOM and the UN SDGs
- Stoichiometry – Does it matter?
- Transport of SOM through landscapes
- Rapid and high resolution techniques
- Blue carbon

Important dates:

Early Bird Registration Closes: 30 August 2019

Symposium: 6-11 October 2019

SOILS4EU Workshops on Impacts of Soil Degradation on Human Health and Potential of Earth Observation for Improved Soil Monitoring

- **2-7 September 2019, Barcelona, Spain.**
- **Potential of Earth Observation for improved soil monitoring**

These interactive workshops are organized as side events of the TERRAenVISION 2019 Conference "Working towards the Sustainable Development Goals" (Barcelona, 2-7 Sept 2019). The aim of the workshops is to present and discuss two in-depth reports on the above topics prepared by SOILS4EU for the DG for Environment, and to gather expert opinions and feedback on the content of both reports. Please feel free to contact Antonio López-Francos (lopez-francos@iamz.ciheam.org) if you have any further questions.

Read more: https://terraenvision.eu/the-program/ and https://www.iuss.org/media/soils4eu_workshops_5and6_2sept2019.pdf

Sessions

- Land and water degradation and restoration
- Ecosystem services
- Nature-based solutions
- Fire in the earth system
- Tools in science
- Science policy interface

LAND AND WATER DEGRADATION AND RESTORATION

Analysis and Fate of Emerging Contaminants in Water, Soil, Plants and other Biota

Conveners: Yolanda Picó and Damià Barceló

Environmental and anthropogenic drivers of soil pollution. Fundamentals and practical solutions

Convener: Irena D. Atanassova

Land Degradation and Restoration: the State-of-the-Art

Conveners: Artemi Cerdà and David Finger

ECOSYSTEM SERVICES

Natural and pyrogenic organic C and N in soils, function, fate, analytical challenges and how this relates to the concept of humic substances

Conveners: Heike Knicker and Marco Panettieri

A biophysical and socio-economic approach to the fate of the Terroir

Conveners: Jesús Rodrigo Comino and María José Marqués

Grazing as a management tool to build cultural landscapes

Conveners: Manuel Pulido, Miguel Cortés Tamayo, Ali El-Keblawy and Tobias Plieninger

NATURE-BASED SOLUTIONS

Diversification in agricultural production systems – from management challenges to socio-ecological benefits

Manuel Seeger and Felix Dittrich

THE ROLE OF ENVIRONMENTAL CITIZENSHIP ON NATURE BASED SOLUTIONS

Conveners: Rares HALBAC-COTOARA-ZAMFIR, Lenka SLAVIKOVA, Carla Sofia FERREIRA, Cristina HALBAC-COTOARA-ZAMFIR, Zahra KALANTARI, Aleksandra FIGUREK

Remote sensing and GIS for water-related risk assessment in vulnerable urbanizing regions

Conveners: Rares Halbac-Cotoara-Zamfir, Carla S.S. Ferreira, Zahra Kalantari, Anca Moscovici

Nature-based solutions in urban and peri-urban areas: a state of the art

Conveners: Carla S.S. Ferreira, Zahra Kalantari, Rares Halbac-Cotoara-Zamfir, Jannes Stolte

Nature-based solutions and best management practices in agriculture

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