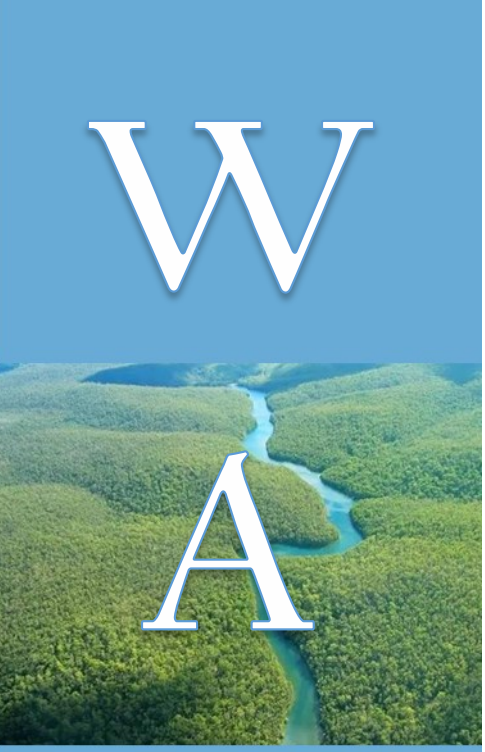

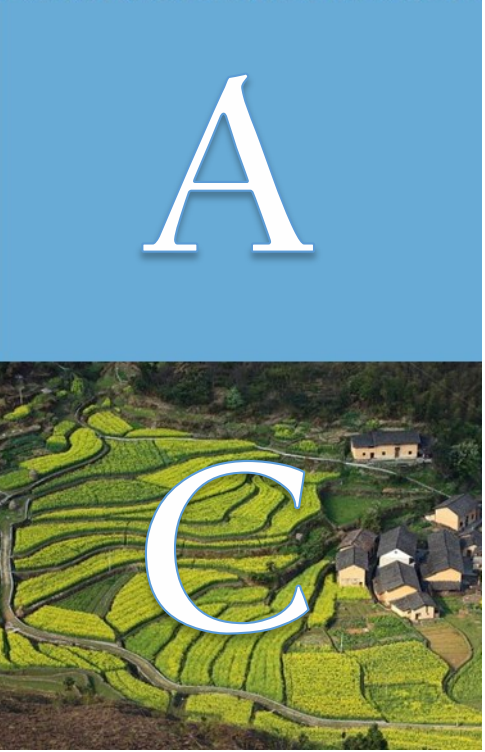

HOT NEWS

ISSUE 4, 2021

WASWAC

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Pengfei Du
Liqin Qu
Xiaoying Liu

The 5th International Conference on Soil, Bio– and Eco-Engineering

Conference venue: Museum of natural history

Bernastrasse 15, 3005 Bern, Switzerland

Hosts: Bern University of Applied Sciences, EcorisQ

Congress SBEE2021

As in the preceding SBEE conference series, we will bring together researchers, practitioners, geotechnical and civil engineers, biologists, ecologists, geomorphologists and foresters to discuss current problems in soil-resource sustainability, soil- erosion and slope-stability research, and how to address these problems using soil, bio- and eco-engineering techniques.

Conference topics include

- Root-soil interactions and distribution
- Root reinforcement
- Soil erosion and conservation
- Riverbank and coastline protection measures
- Slope stability modelling
- Effects of vegetation on hillslope hydrology
- Bioengineering, ecology and biodiversity
- Eco-DRR measures, protection forests, and soil bioengineering
- Risk management and decision support systems
- Benefits and liabilities in slope and erosion control

Conference schedule

	19th Sat	20th Sun	21th Mon	22th Tue	23th Wed	24th Thu	25th Fri
8.30 a.m. - 10 a.m.	Tools courses	Tools courses	Keynote S1	Keynote S5	Keynote S9	Excursion	Pratical courses
10.30 a.m. - 12 a.m.	Tools courses	Tools courses	Keynote S2	Keynote S6	Keynote S10	Excursion	Pratical courses
1.30 p.m. - 3 p.m.			Keynote S3	Keynote S7	Keynote S11	Excursion	Pratical courses
3.30 p.m. - 5 p.m.		Welcome gala	Keynote S4	Keynote S8	Keynote S12	Excursion	Pratical courses
5 p.m. - 7 ap.m.		Welcome gala	Posters	Posters	Posters	Excursion	EcorisQ GA
		Welcome gala			Dinner	Excursion	

Pre-conference courses (at BFH HAFL, Zollikofen) from 19th to 20th June

- Academic workshops (for PhD students, post-docs, research associates, etc.).
- RBM and field measurements (Murgia I. & Giadrossich F.), root reinforcement modeling and measurements

Scientific sessions, Monday – Wednesday (at Museum of natural history, Bern)

21th June

- S1 Root distribution modelling and measurements (keynote: I.C. Meier; chair: A. Stokes)
- S2 Root reinforcement modelling and measurements (keynote: F. Giadrossich; chair: K. Loades)
- S3 Surface erosion and vegetation (keynote: J. Poesen; chair: S. Burgos)
- S4 Shallow landslides and vegetation (hillslope scale) (keynote: Z. Mao; chair: D. Cohen)

22th June

- S5 Shallow landslides and vegetation (catchment scale) (keynote: T. Hales; chair: C. Phillips)
- S6 Hydropedology and vegetation (keynote: T. Bogaard; chair: M. Schwarz)
- S7 Riverbank stability and vegetation (keynote: P. Perona; chair: E. Gasser)
- S8 Protection forest management (keynote: R. Sidle; chair: J.J. Thormann)

23th June

- S9 Soil bioengineering and temporal technical construction in slope stability (keynote: G. De Cesare; chair: G.B. Bischetti)
- S10 Soil bioengineering and temporal technical construction in riverbank stability (keynote: P. Raymond; chair: H.-P. Rauch)
- S11 Bio-economics for SBEE (keynote: L.M. Castro; chair: F. Lechthaler)
- S12 The role of vegetation in eco-DRR in mountain regions (keynote: C. Moos; chair: L. Dorren)

Excursions

24th June

- Protection forest management in the Swiss Alps (disturbances, coppice woods, neophytes): Adelboden, canton of Bern (J.J. Thormann)
- Bioengineering and torrent control measures: canton of Bern (M. Schwarz)

Post-conference courses on model applications (at BFH HAFL, Zollikofen)

25th June

Post-conference courses are the moment where science meet practice! Choosing one of the courses, scientists and practitioners have the opportunity to discuss in detail the application of methods or tools for issues related to bioengineering measures:

- SOSlope (D. Cohen), slope stability and vegetation (hillslope scale): SOSlope is a hydromechanical model of slope stability (depth< 2 m) that computes the factor of safety considering the mechanical forces due to roots and soil at the hillslope scale (Cohen and Schwarz, 2017).
- Rockyfor3D (L. Dorren), rockfall and vegetation: Rockyfor3D is an application that explicitly and realistically integrates the barrier effect of trees on falling rocks.
- BankforNET (M. Schwarz), streambank stability and vegetation: BankforNET (Gasser et al., 2020) is a one-dimensional, probabilistic and scenario-based model to simulate hydraulic streambank erosion considering the effects of roots and randomness in the Shields entrainment parameter

- SlideforMAP (F. van Zadelhoff), slope stability and vegetation (catchment scale): SlideforMAP is a probabilistic and event-based model that generates a spatial distribution of shallow landslide probability considering the effect of vegetation at regional scale.
- Tree stability (L. Sani), method for the tree stability assessment: this course gives the possibility to have a deeper understanding of the mechanisms that lead to tree falling and how to prevent it.

Further information

New: The option to participate online in the scientific sessions (Monday to Wednesday) is introduced

Conference fee

CHF 500 (late registration: 650) | Conference dinner: CHF 60 | Pre-conference courses: CHF 150 (late registration: 200) | Excursions: CHF 150 | Post-conference courses: CHF 250 (late registration: 350)

Online conference fee

CHF 250 (late registration: 350)

Registration

Please register at: www.ecorisqevents.com (Early-bird registration closes: 30 April 2021)

Directions

Museum of natural history, Bernastrasse 15, 3005 Bern (Switzerland) www.nmbe.ch/en/planing-your-vist

BFH-HAFL, Länggasse 85, 3052 Zollikofen (Bern, Switzerland) https://www.bfh.ch/hafl/en/about-hafl/locations-facilities/

Contact

Niels Hollard - niels.hollard@bfh.ch or

Dr.Massimiliano Schwarz - massimiliano.schwarz@bfh.ch

Partner organisations

Manure improves soil and microbe community

by Kaine Korzekwa

In the dry air and soil of Texas' Southern High Plains, improving soil health can be tough. We usually think of healthy soil as moist and loose with lots of organic matter. But this can be hard to achieve in this arid area of Texas.

Lindsey Slaughter, a member of the Soil Science Society of America, set out with her fellow researchers to test a solution that kills two birds with one stone. They put excess cow manure on these soils to see if they could make them healthier.

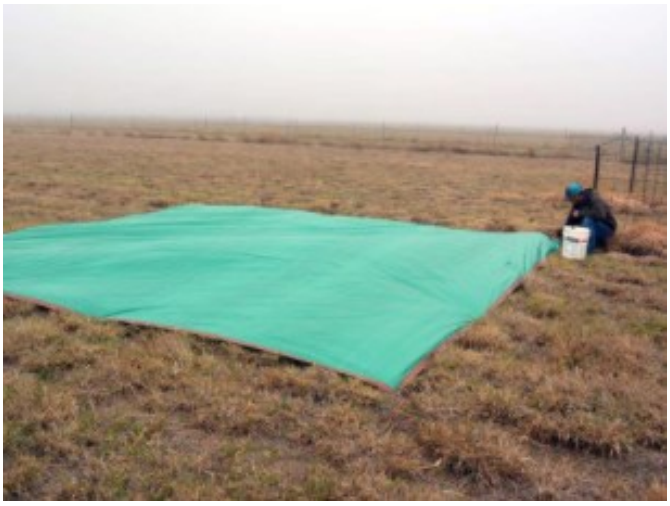
The team recently published their research in the Soil Science Society of America Journal.

"We know that planting perennial grasslands for cattle production can help protect and restore soil in semi-arid lands that are likely to erode and degrade from intense farming," Slaughter says. "But producers need additional ways to increase soil carbon and nutrient stores."

The researchers used excess cattle manure from local producers. Here a donor deposits composted cattle manure prior to spreading it over the field sites. Credit: Paul Green

What makes a healthy or unhealthy soil?

Slaughter describes soil health as the ability of a living soil ecosystem to perform a variety of important functions. These include cycling nutrients, storing and purifying water, helping plants and animals, and more.



Farm manager Paul Green of Texas Tech University anchors tarps in the pasture just before compost was spread onto the fields. This created treatment areas in each field where compost application was excluded. Credit: Phil Brown

This "living" part is made up of various microorganisms that help a soil be healthy. They, for example, help break down materials like manure so that it and its nutrients become

part of the soil.

"Improving the soil's ability to perform these roles and support plant and animal life is our target for soil health," Slaughter says. "Adding the manure can provide a boost of material that can be incorporated into soil organic matter. This helps provide a stronger foundation for more microbial activity and nutrient cycling."

This is why in their study they applied a low one-time amount of manure to two types of pastures to look into this. The pastures they put the manure on had either grass only that was fertilized occasionally or were a mix of grass and legumes that was not fertilized.

Manure helps, but results take time

Overall, they did find that manure helped increase soil organic carbon and the number of microbes in the soil. These are two important characteristics of a healthy soil.

It took almost a year and a half to see these changes, although they say this is not totally surprising.

"This tells us that it can take a long time for even a little added compost to become incorporated into the soil organic matter of semi-arid grasslands, but it definitely helps," Slaughter explains.

"We think this is mostly due to the dry climate at our study site," says Slaughter. "We commonly get little rainfall per year. The microbial community was not able to work quickly or efficiently to decompose the manure without water."

Some of the research pastures included warm-season old world bluestem grass (left) mixed with legumes including alfalfa (purple blooms, center) and yellow sweetclover (yellow blooms, lower left). The legumes provide an organic source of nitrogen to the grasses and microbes, as well as a source of protein for grazing cattle in the pastures. Credit: Lindsey Slaughter

Their results also showed that the pastures receiving fertilizer responded better to the manure. They believe this is because the nitrogen in the fertilizer helped the microbes decompose the manure better.

"Microbes help directly with releasing nutrients from organic material in a form that plants can use, as well as decomposing those residues to build soil organic matter," Slaugh-

ter says. "A lot of work has been done on how this can help improve cropping systems. However, we wanted to also test this on forage pastures."

Slaughter adds that the next steps in this work include whether more manure or multiple applications would get faster results. In addition, they hope to investigate if irrigation or fertilizer would help incorporate the manure faster.

"We need more research along these lines to help us design strategies that quickly and effectively increase soil health and productivity in these grasslands," she says. "This helps farmers save money on nutrients and amendments while building soil organic matter and nutrient cycling capacity. This also saves them water and protects against soil degradation."

Lindsey Slaughter is an assistant professor at Texas Tech University. Funding for this work was provided by the Southern Sustainable Agriculture Research and Education and the USDA's National Institute of Food and Agriculture. Funding and student support was also provided by the Department of Plant and Soil Science in the College of Agricultural Sciences and Natural Resources at Texas Tech University.

Sources: *https://www.soils.org/news/science-news/manure-improves-soil-and-microbe-community*

Breeding barley for a changing climate

by Emily Matzke

Climate change is a global issue. It affects our environment and our food supply.

Increasing temperatures, changing rainfall patterns, and extreme weather events influence crop yields and where crops can live. These events limit the number of crops humans can use.

Cereal crops, like wheat and barley, are important to human diets. They provide starch, protein, and fiber, and can be used in livestock feed.

But climate change has had a significant impact on cereal crops. Rising temperatures make it hard to grow these crops in their usual environments.

One way to compensate for yield losses related to heat stress is to move the production northward. Nevertheless, more frequent extreme weather events can negatively affect yield.

Knowing these global issues, Magnus Göransson and his team researched how different cli-

mate conditions impacted cereal crop growth. They observed how different day length and temperature impacted the maturity time and height in Nordic spring barley adapted to high latitudes in Iceland.

The team's research was recently published in Crop Science, a journal of the Crop Science

A mature barley field at a farm in southern Iceland. Credit: Magnus Göransson

Society of America.

"It is thought that climate change will impact cereal crop production," said Göransson. "Breeding crops to better fit local environments can help close the expected yield gap."

The team used barley from their breeding program adapted to conditions found in Iceland. These plants had been selected to reach maturity earlier compared to similar barley varieties from other regions.

"Climate affects barley production in Iceland," explains Göransson. "In the fall, it is very cool and we have lots of storms."

"Unfortunately, farmers see high seed loss with these storms," Göransson explains. "If we can produce a crop that is ready to harvest earlier in the year, it will help avoid these issues."

Despite these challenges, barley is the most reliable cereal crop in higher latitudes. To have a successful crop in the future, the plants need to mature earlier, have good straw quality, and be resistant to diseases.

"We wanted to know that the plants we selected for early maturity did well in a controlled environment," says Göransson. "We used four different growth chambers with different day lengths and temperatures to recreate the environment in Iceland and compare

Researchers grew different types of barley in a field trial in Reykjavik, Iceland. Credit: Magnus Göransson

with other climate conditions."

Growth chambers are rooms in greenhouses where researchers can carefully control the environment the plants live in.

They observed day lengths from 12 hours to 20 hours, and temperatures of 50 to 68 degrees Fahrenheit. From these trials, they determined the effect on flowering time, time to maturity, and height of the new barley plants.

"Following our controlled studies, we found genetic markers associated with the traits we observed," says Göransson. Genetic markers are segments of DNA that correspond with certain plant characteristics.

Researchers grew different types of barley in a field trial in Reykjavik, Iceland.
Credit: Magnus Göransson

"Our goal was to find what genes are important for breeding the desired barley traits. From there, we can develop breeding tools to use in programs to precisely predict maturity," says Göransson.

Their research uncovered information about the timing of maturity and plant height. It also gave insight on environmental factors and genetics in cereal crops.

"On a global scale, we have looked at many early barley varieties from gene banks and have not found anything that matures earlier in the cold Icelandic environment," says Göransson.

"In warmer regions of the world, early maturity is a way to escape the summer heat," he explains. "In the future, traits from the Icelandic barley could be used to breed other crops with improved performance in warmer climates."

"This study showed how important it is to select crops for their environment," says Göransson. "Crops perform differently in different locations. Our study can be used as a model for other cereal crops because they have similar genes. This will lead to greater success in breeding early maturing wheat as well as other crops."

Magnus Göransson is a PhD student at the Department of Plant Sciences at the Norwegian University of Life Sciences. This research was supported by the Norwegian Genetic Resource Centre, the Research Council of Norway, and Graminor.

Sources: *https://www.soils.org/news/science-news/breeding-barley-changing-climate/*

Updated Citation and submission Data of ISWCR in April 2021

Calculating the CiteScore is based on the number of citations to documents (articles, reviews, conference papers, book chapters, and data papers) by a journal over **four years**, divided by the number of the same document types indexed in Scopus and published in those same **four years**. Below is the updated information on Scopus website:

International Soil and Water Conservation Research

Open Access

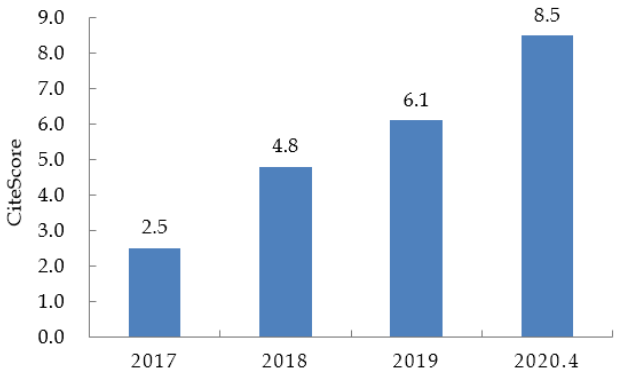
Scopus coverage years: from 2013 to present

Publisher: International Research and Training Center on Erosion and Sedimentation & China Water and Power Press

ISSN: 2095-6339

Subject area: Environmental Science: Water Science and Technology
Environmental Science: Nature and Landscape Conservation
Agricultural and Biological Sciences: Agronomy and Crop Science
Agricultural and Biological Sciences: Soil Science

Category	Rank	Percentile
Environmental Science └ Water Science and Technology	#17/217	92nd
Agricultural and Biological Sciences └ Agronomy and Crop Science	#28/334	91st
Environmental Science └ Nature and Landscape Conservation	#14/160	91st
Agricultural and Biological Sciences └ Soil Science	#17/126	86th



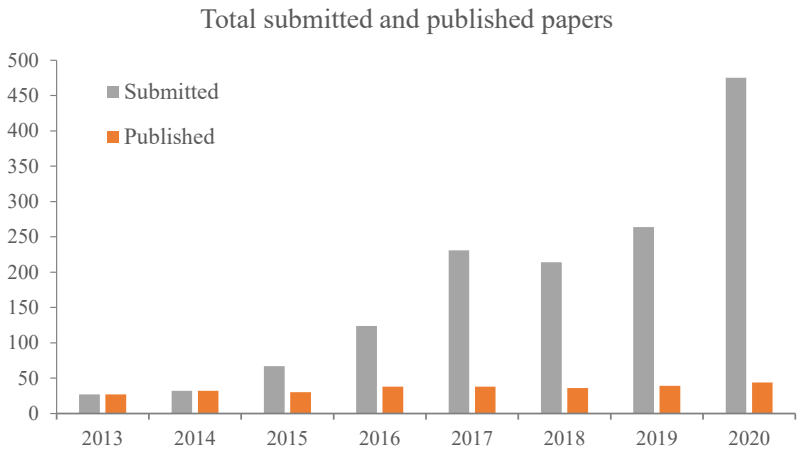
CiteScoreTracker 2020

$$8.5 = \frac{1{,}303 \text{ Citations to date}}{154 \text{ Documents to date}}$$

Last updated on 06 April, 2021 • Updated monthly

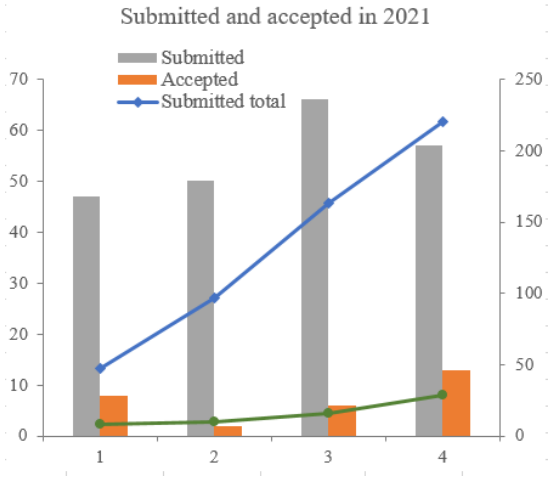
Annual Volume of Submissions and Publishing since 2013

Year	Published	Submitted
2013	27	27
2014	32	32
2015	30	67
2016	38	124
2017	38	231
2018	36	214
2019	39	264
2020	44	475



Monthly Submissions & Acceptance in the current year (2021)

Month	Submitted	Accepted
1	47	8
2	50	2
3	66	6
4	57	13



The International Soil and Water Conservation Research (ISWCR), initiated in June 2013, is a quarterly academic journal in English and publishes in Science Direct of Elsevier with open access globally. Since initiation, ISWCR has developed rapidly and established a good reputation in both international academia and publishing industry. It was indexed by Chinese Science Citation Database (CSCD) in April 2015, covered by SCOPUS in January 2017, and was indexed by Emerging Sources Citation Index (ESCI) of Clarivate Analytics in October 2017. In July 2019, ISWCR was officially indexed by SCIE and the first impact factor, obtained in June 2020, is 3.770.

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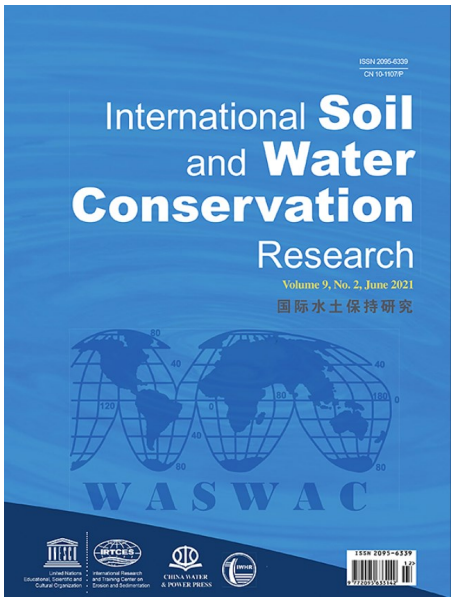

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