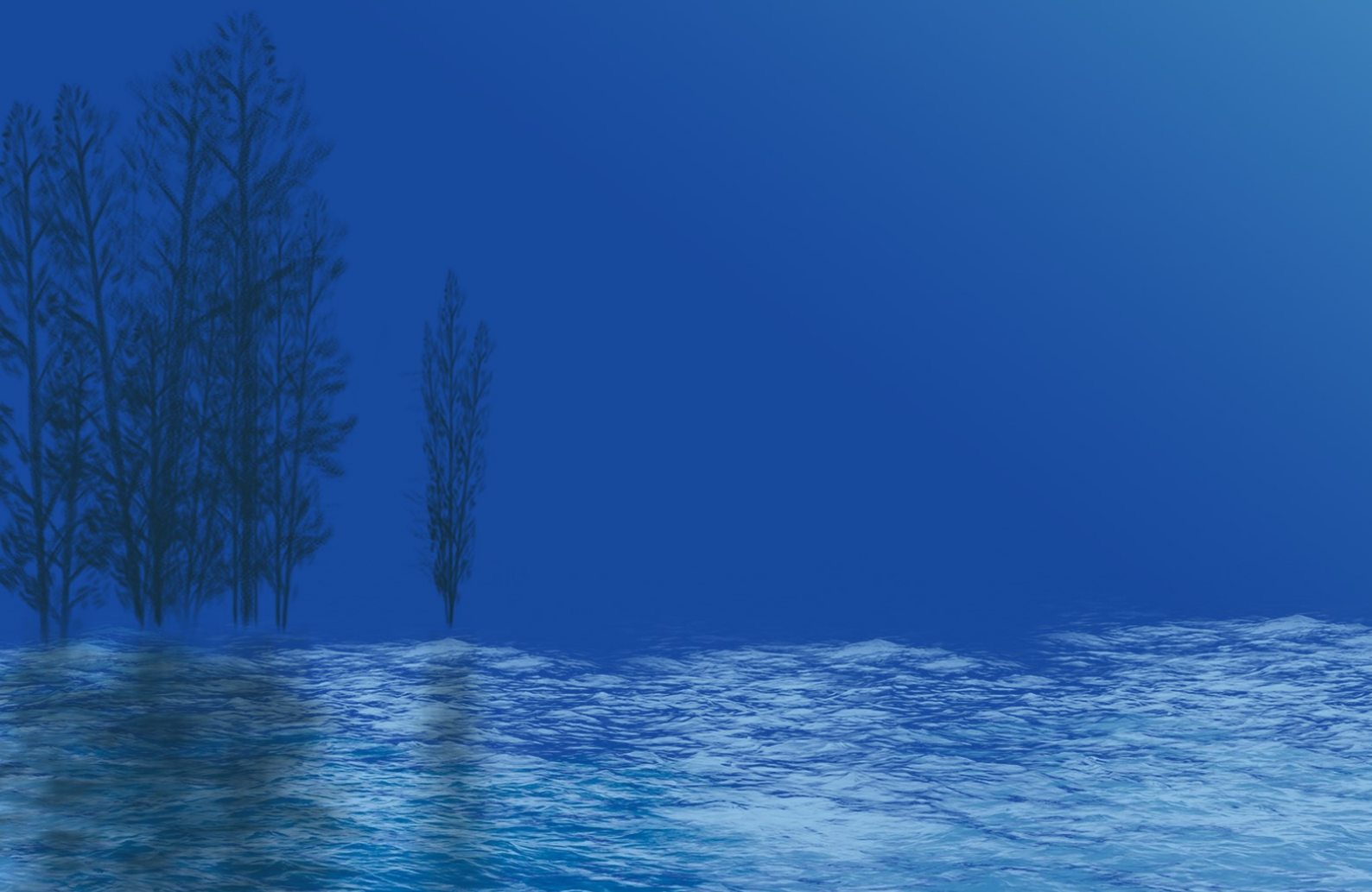
WASWAC

HOT NEWS

ISSUE 01, 2022



HOT NEWS

ISSUE 01 2022

WASWAC

CONTENTS

Dr. Ying Zhao will no longer serve as the editor of WASWAC Hot News due to work adjustment. Thanks for her efforts on editing WASWAC Hot News over the past two years. Good luck with all her future works.

Editor: Pengfei DU

MEMORIES OF PROFESSOR Martin Haigh

By Miodrag Zlatic

This is sad news that professor Martin Haigh, former president of WASWAC passed away. In the time of his presidency he proposed me to be deputy president and in next period I was the president. So, I have a special feeling to write this memory of Professor Haigh on my behalf and of course on behalf of WASWAC.

Martin was born in 1950 in Caerleon, Wales in United Kingdom.

In terms of career Martin Haigh was Professor of Geography and University Teaching Fellow in the School of Social Sciences and Law at Oxford Brookes University. Previously, he taught at the universities of Oklahoma (1975-1976 as professor assistant at the Department for Geography) and at the University of Chicago (1976-1979 as professor assistant at the Department for Geography studies).

Most commonly found leading fieldwork groups through land devastated by coal-mining, Martin's teaching combines muddy-boot experiential learning with hands-on applied sustainability education and philosophy. An avid developer of out-of-classroom learning experiences, Martin's signature exercises include tree planting as a stimulant for ethical reflection upon personal responsibilities, landscape assessment exercises that require learners to see the world through the lens of a different culture or belief system, and problem-solving exercises that try to marry technical environmental interventions with the conflicting needs of local stakeholder communities. Oxford Brookes University strongly endorsed the work its teachers do in the community. Martin was a leader in this respect. For 13 years he was team leader for biannual Earthwatch-funded field camps that empowered graduate adult learners with the capacity to rebuild damaged lands. The field demonstration sites he created have been used by generations of undergraduate and postgraduate students.

Martin was Co-Editor of the Journal of Geography in Higher Education (JGHE), which leads the world's Geography-discipline's drive toward better learning and teaching, and which Martin helped steer toward exploration of sustainability, internationalisation and global citizenship. On campus, Martin helped embed course evaluation in the 1980s, then the cause of education for sustainability for which he was awarded a University Teaching Fel lowship in 2003. He helped lead the University's Centre for Internationalisation of the Curriculum and Networking. His disciplines in teaching were Environmental Management, Gaia Hipothesis, Geomorphology, Field Research, Ethical Geography, Curriculum Theory, Education Theory, Teaching Methods, and Indian Religions.

From 1998 up to 2004 Martin was Deputy President of WASWAC for Europe. In the same year (2004) he was elected president of the World Association of Soil and Water Conservation. Because of illness, he was short time president, from January to March 2005.

He established new movement in WASWAC – Headwater control/Land use policy in Headwaters catchments: "Headwater control is a philosophy that strives to link the perspectives of the applied scientist with the practicioner and policy maker. It emphasise practical, field scale, action research and integrated environmental management strategies that work within nature and with local communities".

There were several conferences organized regarding Headwater control (in Prague/Czech Republic 1992; in New Delhi/India 1995; in Bergen/Norwy 2005), as well as several papers/manuscripts/brochures/books.

Also, under his professorship and under WASWAC his activities were connected to open coal spoils and technosoils. In this regard, Martin's works in Wales, Balkans and India were recognized wider.

Prof. Haigh: opening IYM conference

Balkans WASWAC Symposium,(Sofia, 2003)

Regarding Balkans

Prof. Haigh was the president of the Scientific Committee of the "International Year of Mountains" held in Belgrade in December 2002, and he opened this Conference. During the meeting, besides paper and poster presentations, it was held round table of WASWC where was established idea of regional cooperation.

Prof Haigh (WASWAC deputy president for Europe in that time) organised Symposium of the WASWAC for Balkan countries, held in Sofia in July 2003, where this idea was emphasized. At the plenary of Symposium, with the representative of United Nation University (UNU), was established initiative for regional cooperation.

Regarding this initiative it was organized workshop in Belgrade in 2004 under the WASWAC, United Nation University (UNU) and Belgrade University – Faculty of Forestry. Results of the workshop were the base for the conceptual programme of this regional project. Regarding this proposition prof. Haigh and prof. Zlatic visited demonstration sites in Macedonia, Turkey, Bulgaria and Serbia.

Conceptual programme was accepted by "Global Environment Facility (GEF) in January 2006, under the title "Community Based Rehabilitation of Central Balkan Mountains and Northern Turkey.

Martin's work in Balkans were also very much connected to Bulgaria regarding rehabilitation of open coal spoils and technosoils. This was recognised by awards from the University of Forestry, Bulgaria (Honorary Gold Medal, University of Forestry, Sofia, Bulgaria 1998), and the World Association of Soil and Water Conservation (Honorary Life Member of the World Association of Soil and Water Conservation, 2000).

WASWAC/UNU Workshop Belgrade (2004)

Regarding India

In addition to organizing and leading certain projects in the field of SWC, prof. Haigh had a part of professorship at the Jawaharlal Nehru University of Delhi. He was in Organising and Scientific Committee of ISCO Conference held in New Delhi in 1994, and organized nice professional and cultural visit to Shimla in Himalayan region. Together with R. B. Singh and Josef Krecekhe organized HEADWATER

CONTROL Conference in New Delhi in 1995. Besides of the mentioned he was involved in SWC projects in India and work with local NGOs. Also he was very much involved in India's culture, religim and its connection to the environment and natural resources.

Deep ecology education he presented through the "Learning from its Vaisnava roots: Vaisnava ethics such as humility,non-harming, non-possession, simple living, and devotional service helped inspire the Gandhian political economy of permanence called sarvodaya, which still influences thinking in the environment and peace movements".

Collected knowledge of Hindy NGOs projects, Martin presented in INTERNATIONAL DEVELOPMENT PROJECTS OF INDIA'S HINDU NGOS (published in Human Geography: A New Radical Journal 11(3), article 6, 2018).

Publications include: Environmental Regeneration in Headwater Areas (co-editor in NATO Science Series 2: Environmental Security; 2000); Reclaimed Land: Erosion Control, Soils and Ecology (editor, 2000); Sustainable Management of Headwater Resources – Focus on Africa and India (co-editor, United Nations University Press, Tokyo, 2005); Environmental Role of Headwater Wetlands (co-editor in NATO Science & Public Policy Division IV: Earth & Environmental Series, Vol 63, 2006); there are a number of 352 of all published material which includes books, book chapters and articles in professional and academic journals.

The Incopmplete Works as well as The Polog of Martin Haigh, was edited and compiled by his daughter Tamsin Olivia Haigh, 2021. There are a number of 352 published material from which are chosen here important ones through the Martin's disciplines of work:

Erosion & Erosion Control

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Open Coal Spoils; Technosoils

Haigh M, Reed H, D'Aucourt M, Bull C, Cullis M, Farrugia F, Flege A, Gentcheva-Kostadinova S, Hatton L, Křeček J, Plamping K, Powell S, Panhuis W, Sansom B, Sawyer S, Originally . 2021, Wilding G, Woodruffe P, Zheleva E. Reclaiming open coal spoils by mixed woodland: Varteg 10 Year Results. (Wales),(Originally titled: "Comparing Spent Mushroom Compost and Farmyard Manure for Establishing Mixed Woodland on Opencast Coal Spoils, Wales: 10 Year Results"). Minerals11(6): 624, pp 1-35. https://doi.org/10.3390/min11060624.

Haigh, M. (editor).2021, Special Issue: Biological Reclamation and Bio-Remediation of Former Mine Sites) special issue of Minerals (ISSN 2075-163X) ``(`o,10,8; 10;10,11;11,6), in the section "Environmental Mineralogy and Biogeochemistry"

Filcheva, E., Hristova, M., Haigh, M., Malcheva, B. and Noustorova, M. (2021) Soil organic matter and microbiological activity in technosols of Wales. Catena, (Elsevier), 201 (june, 2021), Art. 105203. Published online 19 February 2021. DOI:. ttps://doi.org/10.1016/j.catena.2021.105203

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Open Coal Spoils; Technosoils

Haigh M, Reed H, D'Aucourt M, Bull C, Cullis M, Farrugia F, Flege A, Gentcheva-Kostadinova S, Hatton L, Křeček J, Plamping K, Powell S, Panhuis W, Sansom B, Sawyer S, Originally . 2021, Wilding G, Woodruffe P, Zheleva E. Reclaiming open coal spoils by mixed woodland: Varteg 10 Year Results. (Wales),(Originally titled: "Comparing Spent Mushroom Compost and Farmyard Manure for Establishing Mixed Woodland on Opencast Coal Spoils, Wales: 10 Year Results"). Minerals11(6): 624, pp 1-35. https://doi.org/10.3390/min11060624.

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Křeček, J., & Haigh, M. (eds), 2019. Special section on land use policy in headwater catchments; Guest edited by Josef Křeček & Martin Haigh. Land Use Policy 80(4), 410-479. [ISSN: 0264-8377] https://www.sciencedirect.com/journal/land-use-policy/vol/80/suppl/C. (Published on line: 22 March 2018).

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Pedagogic Research in Geography Higher Education; Environmental Sustainability Education

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Pénzesné Kónya, E., Haigh, M. & Křeček, J., 2020. Environmental sustainability education

for a changing world: Inspiration for and by practitioners. Cham, Switzerland, Springer International with Capital, New Delhi, pp.3-18 July,. 2021).). ISBN 978-3-030-66383-4 ISBN 978-3-030-66384-1 (eBook). https://doi.org/10.1007/978-3-030-66384-1. July,. 2021)..

Haigh, M. 2021. Chapter 4. Learning from experience: Exploring the post-disaster environmental attitudes of university students in a Himalayan Headwater, pp 39-58. In: Pénzesné Kónya, E., Haigh, M. & Křeček, J. (eds),

Haigh, M. 2017. Ch.4. AQAL Integral: a holistic framework for pedagogic research, pp 38-55. In: Haigh, M., Cotton, D. & Hall, T. (eds). Pedagogic Research in Geography Higher Education. Abingdon, Routledge. (Reprinted from: Journal of Geography in Higher Education 37(2), pp 174-191). https://doi.org/10.1080/03098265.2012.755615.

Connection to India

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2022 Application Brochure for International Students of China Institute of Water Resources and Hydropower Research

- **Graduate Education**

IWHR started its graduate education in the 1950s and has excellent research facilities and equipment, a large number of cutting-edge research projects, adequate research funding, numerous literature resources, a top-notch team of graduate supervisors (206 master's supervisors and 107 doctoral ones). After more than 6 decades of exploration and development, IWHR has established a complete and unique system of graduate education.

- **Degree Programs in English**

8 programs for master's degree and doctoral degree:

Geotechnical Engineering

Hydrology and Water Resources

Hydraulics and River Dynamics

Hydraulic Structure Engineering

Hydraulic and Hydropower Engineering

Hydro-Environment

Hydro-informatics

Water Disaster and Security

Duration of Study:

At least 2.5 years for master's degree and 3 years for doctoral degree.

- **General information**

Application is open only to non-Chinese citizens who are in good health.

Educational Background and Age Limit

The applicant for a master's program must be under the age of 35 and has a bachelor's degree.

The applicant for a doctoral program must be under the age of 40 and has a master's degree.

- **Language Requirements**

Graduates from universities of English-speaking countries;

Graduates from universities where English is the official language;

IELTS: overall grade of 6.0 or above;

TOEFL: overall score of 80 or above.

- **Fees**

Application Fee: Free in 2022

Annual Tuition: CNY 26,000-CNY 39,000

Annual Accommodation: CNY 24,000

Annual Insurance: CNY 800

- **Scholarships**

IWHR Outstanding International Student Scholarship

In 2022, scholarships of up to CNY 113,600 per year are available for outstanding applicants, including all or part of the following items:

Waiver of the fees of tuition, accommodation and medical insurance;

Living stipend of up to CNY 49,800 per person per year.

Unit: CNY (1 USD = 6.4 CNY), in Nov. 2021

Category	Scholarship Grade	Waiver of	Waiver of Accommodation	Waiver of Medical In-	Living Stipend	Total
Master	I	26000	24000	800	38400	89200
	II	26000	24000	800	19200	70000
	III	26000		800		26800
Ph.D.	I	39000	24000	800	49800	113600
	II	39000	24000	800	24900	88700
	III	39000		800		39800




- **Application Methods**

Applicants for academic degree programs shall submit application documents to iwhrgraduateoffice@163.com.

- **Required Application Documents**

See details at http://gs.iwhr.com/skyyjsy/en/Admission/How/A06110303index_1.htm

- **Important Dates**

Application Deadline:

Applicants for academic degree programs shall submit their acceptable application materials before **31st May** 2022.

Admission Notice Time:

Between **10th June and 15th July** 2022.

Beginning of the Semester:

In **early September** 2022(See the specific date on the admission notice).ONTACT US

- **Contact Us**

Office of International Student Affairs, Graduate School

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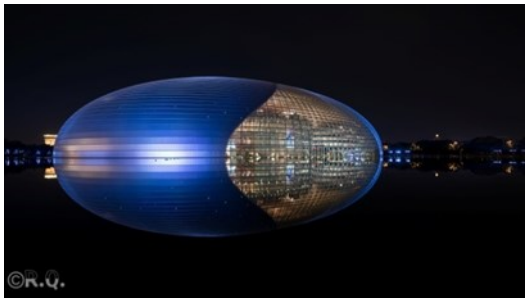
Turret

Summer Palace

Bird's Nest (National Stadium)



National Grand Theater

Welcome to Beijing

Welcome to IWHR

Benefits of cover crops extend to dry areas

By Adityarup "Rup" Chakravorty

Cover crops do far more than cover soils. They provide an array of benefits, such as the ability to reduce soil erosion and increase soil health. They can help attract pollinators, repel pests, turn into 'green manure,' or can be used as feed for livestock.

A new study shows that the benefits of cover crops extend even into semi-arid areas. This review was recently published in the Soil Science Society of America Journal, a publication of Soil Science Society of America.

"Much of the research data we have on cover crops is from regions with high precipitation," says Humberto Blanco, lead researcher at the University of Nebraska – Lincoln. "So, questions remain about ecosystem services provided by cover crops in drier regions."

Harvesting and soil sampling sorghum after a cover crop was planted. Beyond covering soil, cover crops can reduce soil erosion and increase soil health. Credit: John Holman

Some skeptics have argued that growing cover crops in more arid areas could use too much water. In turn, it could reduce subsequent food crop yields. But the research concludes that isn't necessarily the case.

"We found that cover crops can improve most ecosystem services in water-limited environments," says Blanco. "In the majority of cases, these improvements come without negative effects on food crop yields."

To determine how well cover crops work in semi-arid areas, Blanco and colleagues assembled and analyzed the limited number of studies on cover crops in dry regions. They emphasized studies focusing on the semi-arid Great Plains in the United States.

The researchers looked at cover crops in connection with several ecosystem services. These included the amount of organic carbon in soils, soil microbial properties, weed management, and food crop yields, among others.

One of the key soil features the researchers focused on was soil organic carbon.

"Soil organic carbon is the catalyst for many other changes in soil properties and soil services," says Blanco. "Soils in water-limited regions are often low in organic carbon."

The researchers found that in dry areas cover crops increased soil organic carbon levels close to 60% of the time.

"This accumulation of organic carbon is critical to these soils," says Blanco. That's because soil organic carbon is the food source for many soil organisms, like microbes. Ultimately, these soil organisms play a vital role in maintaining healthy, fertile soils.

Cover crops also suppress weeds in dry areas. This is especially important because several

Comparing grazed and non-grazed portions of a cover crop field in Alexander, KS. This study focused on semi-arid environments like the Great Plains in the United States. Credit: Augustine Obour

weed species are resistant to current herbicides. The suppression of weeds by cover crops has a knock-on effect on increasing water conservation and preventing soil erosion.

Cover crops also provide food for livestock in dry areas. "Grazing or haying cover crops can improve net returns without negating benefits to soils," says Blanco. That's because even when grazed, a significant portion of cover crops remain on fields. Also, cover crop roots persist even when grazed, holding soils together and providing many benefits.

The study found that cover crops can reduce food crops' yields in some cases. These instances typically coincided with intermittent drought conditions. Water availability for cover and food crops decreased during these years.

"Adapting crop rotations and cover crop use to accommodate weather conditions is critical," says Blanco. "Farmers in drier areas may not be able to plant a cover crop every year. They can target wet years when cover crops can be successful."

Blanco aims to continue researching cover crops in dry areas.

"Long-term research is critical to identify the enduring effects of cover crops," he says. "Yet, long-term research data for cover crops in arid and semi-arid areas are virtually absent in the literature."

Sources: *https://www.soils.org/news/science-news/benefits-cover-crops-extend-dry-areas/*

Microorganisms could be 'gamechangers' in ecosystem restoration

by Wageningen University

Soil provides a variety of services that are indispensable to life on Earth. The global decline in soil quality is therefore a major concern. One solution may lie in the hands of tiny organisms that can direct ecosystem recovery: microorganisms. They are so small that they cannot be seen by the naked eye, but they can make a big difference to restoring soils and ecosystems. This is argued by scientists from Wageningen in the scientific journal Science.

Microorganisms, such as fungi and bacteria, are indispensable for the soil. They determine how plants can take root, suppress plant diseases and break down dead plant material, from which new nutrients for plants arise. They also determine the sponge function of the soil: for example, how much water is filtered and retained. Because of their indispensable function, microorganisms are often seen as indicators of soil health. Less attention is paid to their potential as directors of soil recovery. Scientists at Wageningen University & Research emphasize the importance to change this.

Game changers

They say microbiota, the collective name for all types of microorganisms, are the 'game changers' in soil recovery. To get a better idea of how far this potential reaches, the authors have made an overview of the most promising microbial groups. In doing so, they also indi-

indicate how each group can help in different forms of restoration.

"That microorganisms determine soil functions has been known for at least two decades," says Oksana Coban, microbiologist and lead author of the Science study. "Yet there are hardly any experiments that look at how microorganisms can influence soil properties in such a way that they can help degraded soil ecosystems (ecosystems that have declined in quality)." This idea arose during an Open Mind project of NWO. Coban: "I went into that with an open mind. As a microbiologist, soil restoration was a new topic for me, but I was surprised how little is known in this area."

Hydrological restoration

The study pays special attention to so-called hydrological restoration. This involves the sponge effect of the soil: allowing enough water to infiltrate while retaining some for plants. Water is needed for plant growth, which in turn is an essential step for the recovery of degraded soils. "Although only 0.05% of the world's freshwater supply is stored in soil, soil water is essential for life on land," explains co-author Martine van der Ploeg. "The interaction between soil biology and the sponge effect of the soil plays an essential role in the water cycle. This also requires cooperation between soil biologists and hydrologists. This is rare so far and therefore makes this study very unique."

In the overview of most promising microbial groups for soil restoration, the authors start with the most promising groups for hydrological soil restoration. The data are the result of an in-depth analysis into the composition of microbiota in drylands and how they respond to changes in soil water. Using this information, it was possible to stimulate the growth of microbiota by adding "food" that they love and in this way improve the sponge action of the soil. Once the health of the soil is sufficiently improved, it is possible to add vegetation that will work together with microorganisms to further strengthen the soil.

Sources: *https://phys.org/news/2022-03-microorganisms-gamechangers-ecosystem.html*

Would micro-ecology be damaged by a plastic film that kills a harmful soil insect?

by Higher Education Press

Chinese chive (Allium tuberosum) is a perennial herbaceous vegetable with medicinal qualities. Unfortunately, Chinese chive crops are severely damaged by the soil insect Bradysia cellarum. B. cellarum are mainly found in the surface soil to a depth of 5 cm. Department of Plant Protection, Institute of Vegetables and Flowers, Chinese Academy of Agricultural Sciences Investigator Youjun Zhang and his team showed that thermal treatment of B. cellarum adults, eggs, larvae, and pupae at 40 °C for 3 hours produced mortalities of 100%, 100%, 100% and 81%, respectively, and the fecundity of B. cellarum significantly decreased with increasing temperature and exposure time, completely inhibiting egg-laying at 37°C for 2 hours. These data suggested that B. cellarum is quite sensitive to elevated temperatures. As long as soil temperature to a depth of 5 cm is increased and remains over 40°C for 4 hours, the mortality rate of B. cellarum will be 100%. Therefore, the team has been studying how to improve soil temperature without destroying the ecological environment.

Chinese chive

Youjun Zhang and his team had believed that applying a light blue anti-dropping film of 0.10 or 0.12 mm thickness would be enough to kill B. cellarum under a sufficient intensity of sunlight (e.g., between late April and mid-September in Beijing, China). The method was called soil solarization. However, it was not known whether soil solarization affects soil microbial diversity. If soil solarization can kill B. cellarum and also avoid affecting Chinese chive growth and the soil microbial ecological balance, it will be an environmentally friendly control technology.

In this study, Youjun Zhang and his team show that on the first day after soil solarization, 100% control of B. cellarum was

achieved. Growth of Chinese chive was lower in solarized plots than in control plots over the first 10 days after treatment, but 20 days after treatment, plants in the solarized plot had recovered and leaf height and yields were equivalent among the treatments. Moreover, the soil microbial community diversity in the

treatment group decreased initially before gradually recovering. In addition, the abundance of beneficial microorganisms in the genus Bacillus and in the phyla Proteobacteria, Chloroflexi and Firmicutes increased significantly.

Soil solarization is a promising strategy to control B. cellarum. It is simple to implement, pesticide-free and non-destructive to soil microbial diversity, and it may also promote the abundance of beneficial microorganisms. Soil solarization is practical and worth promoting as a new method of control of B. cellarum infestations in Chinese chive-growing regions.

The soil solarization process involves covering the ground with a tarp, usually a transparent polyethylene cover, to trap solar energy (Fig. 1). The sun heats the soil to temperatures that kill bacteria, fungi, insects, nematodes, mites, weeds, and weed seeds.

To solarize your soil:

- Clear the area of plants and debris.
- Water the soil deeply until it is wet.
- Cover the area with clear plastic (such as 1 to 4 mil painter's plastic). Don't use white or black plastic; they don't allow enough heat to get to the soil.
- Bury the plastic edges in the soil to trap the heat.
- Leave the plastic in place for at least 4 weeks in the hottest part of the summer.
- Remove the plastic.

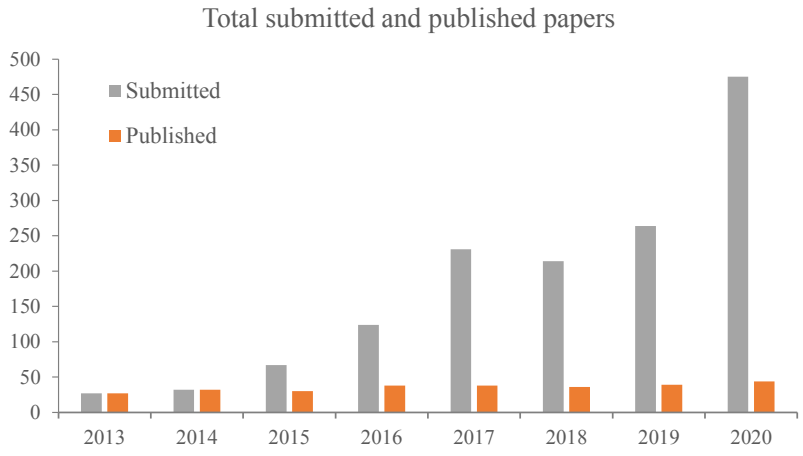
Sources: *https://phys.org/news/2022-03-microorganisms-gamechangers-ecosystem.html*

https://agrilifeextension.tamu.edu/library/gardening/soil-solarization/

Updated submission data of ISWCR in January 2022

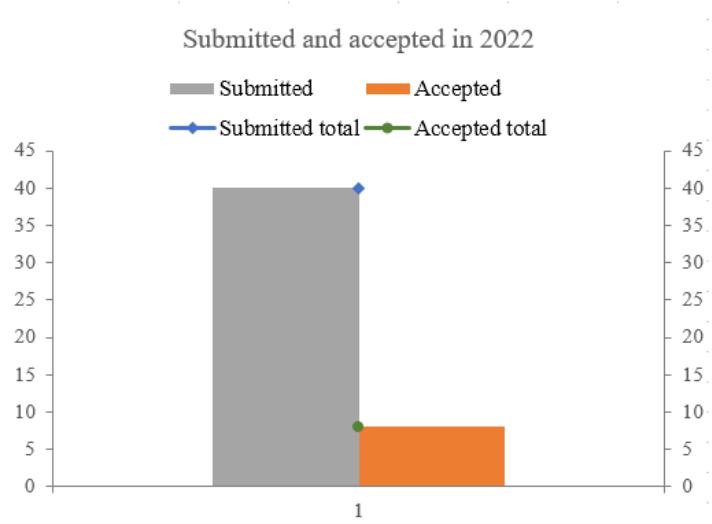
Annual Volume of Submissions and Publishing since 2013

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
2021	55	618



Monthly Submissions & Acceptance in the current year (2022)

Month	Submitted	Accepted
1	40	8



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Contents of Issue 1, 2022 for ISWCR

Changes in hydrologic components from a mid-sized plots induced by rill erosion due to cyanobacterization

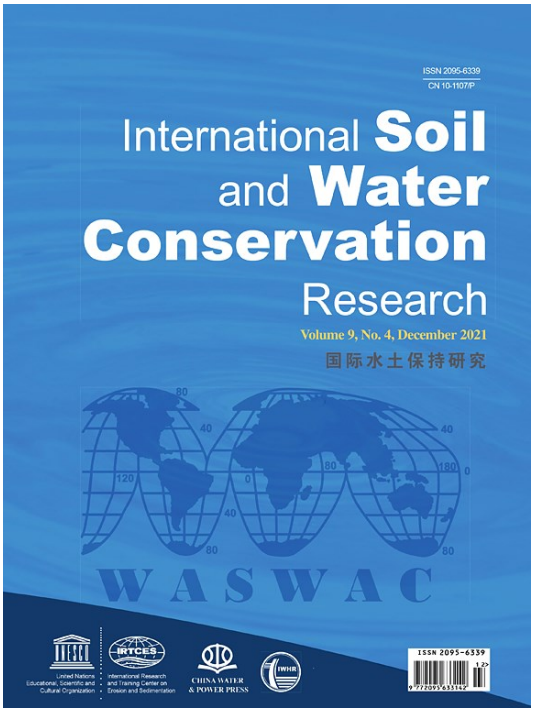
Atefeh Jafarpoor, Seyed Hamidreza Sadeghi, Behrouz Zarei Darki, Mehdi Homaee

Pages 143-148

A detailed reconstruction of changes in the factors and parameters of soil erosion over the past 250 years in the forest zone of European Russia (Moscow region)

Andrey Zhidkin, Daria Fomicheva, Nadezhda Ivanova, Tomáš Dostál, ... Josef Krása

Pages 149-160



Contents of Issue 1, 2022 for IJSR

Papers Published in the ***International Journal of Sediment Research*** Volume 37, No. 1, 2022
Pages 1-138 (February 2022)

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