ABSTRACT BOOK

2024

INTERNATIONAL SOIL SCIENCE SYMPOSIUM on

SOIL SCIENCE & PLANT NUTRITION

(10th International Scientific Meeting)

13 – 14 December 2024

Samsun, Türkiye

Editors

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Dr.Coşkun GÜLSER

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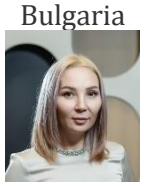
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Preface I

Dear Colleagues,

On behalf of the Federation of Eurasian Soil Science Societies (FESSS), it is with great pleasure that we welcome you to the "Soil Science and Plant Nutrition" (EURASIAN SOIL Symposium 2024). We are honored by your participation, which highlights the shared dedication of our community to advancing soil science and plant nutrition.

Continuing the tradition established in previous years, this symposium provides an exceptional platform for exchanging ideas, presenting groundbreaking research, and fostering collaboration among scientists, researchers, and practitioners. Under the enduring theme of "Soil Science and Plant Nutrition," this year's symposium will again explore applied research and innovative approaches to understanding soil's physical, chemical, and biological properties, plant nutrition, and fertility mechanisms across diverse ecosystems.

Spanning scales from molecular to global perspectives, the symposium embraces a multidisciplinary approach, encouraging the integration of diverse fields to tackle contemporary challenges. We remain committed to highlighting the latest advancements in soil science, innovative technologies, and fundamental concepts that drive progress in sustainable agriculture and environmental stewardship.

The EURASIAN SOIL Symposium 2024 provides a unique opportunity to deepen our understanding of soil systems, build valuable connections, and inspire new collaborations among participants from both academic and private sectors. It is our belief that the knowledge and ideas exchanged during this event will contribute significantly to the ongoing efforts to promote sustainable soil management and enhance plant productivity.

We are deeply grateful for your presence and contributions, which are the cornerstone of this symposium's success. We look forward to a program filled with insightful presentations, engaging discussions, and meaningful interactions that will enrich the soil science community and further its impact globally.

Once again, thank you for joining us. Let us make this symposium another memorable and impactful event for the advancement of soil science and plant nutrition.

Prof.Dr.Ayten Namlı
President, FESSS

Preface II

Dear Distinguished Colleagues and Esteemed Guests,

Good morning, and it is my great privilege to address you as the Secretary General of the Federation of Eurasian Soil Science Societies (FESSS) for the opening of the 10th Annual International Symposium on Soil Science and Plant Nutrition. I warmly welcome each one of you to this esteemed gathering, and I am delighted to see such a distinguished audience from across the globe.

First and foremost, I extend my heartfelt gratitude to our co-organizer, the Erasmus Mundus Joint Master Degree in Soil Science Programme (emiSS), and its dedicated Coordinator, Dr. Coşkun Gülser, for their ongoing collaboration and invaluable contributions. This year marks the continuation of a fruitful partnership between FESSS and emiSS, reinforcing our shared commitment to advancing soil science education and research.

I also wish to extend a special welcome to our esteemed colleagues from the University of Agriculture in Krakow, Poland, Agricultural University Plovdiv in Bulgaria, and the many other international participants who have joined us for this symposium. Your presence here is a testament to the power of global collaboration in addressing the pressing challenges in soil science and plant nutrition.

The theme of this year's symposium, "Soil Science and Plant Nutrition," remains at the forefront of efforts to understand the intricate relationships between soil health, plant productivity, and ecosystem sustainability. This symposium is designed to bridge theoretical research and practical applications, delving into the physical, chemical, and biological properties of soils and their interaction with plant nutrition and fertility mechanisms. Discussions will span a range of scales, from molecular-level processes to field-scale applications, emphasizing a multidisciplinary approach to solving complex environmental and agricultural challenges.

This event serves as a vital platform for showcasing recent advances in soil science, fostering dialogue among scientists, and building bridges between public and private sectors. It underscores the Federation's commitment to addressing critical issues through research and collaboration, with a focus on integrating innovative solutions and advancing fundamental knowledge.

Since its founding in 2012, the Federation of Eurasian Soil Science Societies has grown into a dynamic network of eight member countries, including Romania, Kyrgyzstan, Bosnia & Herzegovina, and Serbia. Together, we remain united in our mission to promote soil science, bridge the gap between research and policymaking, and raise public awareness about the critical role of soils in global sustainability.

I would like to extend my deepest thanks to the program steering committee for organizing an exceptional lineup of speakers, and my sincere appreciation to every speaker, moderator, and participant for their invaluable contributions. Your active engagement and insightful discussions will undoubtedly make this symposium a memorable and impactful event.

Wishing you all a productive and inspiring symposium filled with enriching interactions and collaborative opportunities.

Thank you.

Prof.Dr.Rıdvan Kızılkaya
Chair, Organization Committee

Preface III

Dear participants,

It is my great pleasure to join the 10th Annual International Soil Symposium on "Soil Science & Plant Nutrition" as a member of the organizing committee. This symposium has been collaboratively organized by the Federation of Eurasian Soil Science Societies (FESSS) and the ERASMUS MUNDUS Joint Master Degree in Soil Science (emiSS) programme. I would like to extend my sincere gratitude to FESSS and Prof. Dr. Rıdvan Kızılkaya, Chairman of the Symposium, for providing us with this valuable opportunity to represent the emiSS programme at this prestigious international event.

The emiSS programme, founded with the support of the Erasmus+ Programme of the European Union, is a collaborative initiative organized by a consortium of four universities: Ondokuz Mayıs University (OMU-Türkiye), University of Agriculture in Krakow (UAK-Poland), Agricultural University Plovdiv (AU-Bulgaria), and Jordan University of Science and Technology (JUST-Jordan). Since its establishment in 2019, the programme has aimed to address the growing need for skilled soil scientists through a comprehensive master's degree curriculum, focusing on soil science, soil management, soil fertility, soil ecosystems, and the development of intercultural and language skills.

To date, the emiSS programme has welcomed 73 international students from diverse regions around the globe, with 50 of them having successfully graduated. We are particularly proud that some emiSS students will be participating in this symposium, contributing to the scientific sessions with their oral presentations.

This symposium embodies the mission of fostering scientific exchange and collaboration. It serves as a platform for sharing novel approaches to soil science and plant nutrition, addressing contemporary challenges, and shaping future research directions. It also provides an exceptional opportunity for researchers, including young scientists, to enhance their knowledge and presentation skills while engaging with experts in the field.

I am confident that the discussions and presentations during this symposium will enrich our collective understanding and inspire innovative ideas in soil science. Once again, I extend my heartfelt thanks to the organizing committee and all participants for their invaluable contributions and for sharing their expertise.

Wishing you a productive and insightful symposium experience.

Prof.Dr.Coşkun Gülser
emiSS Coordinator


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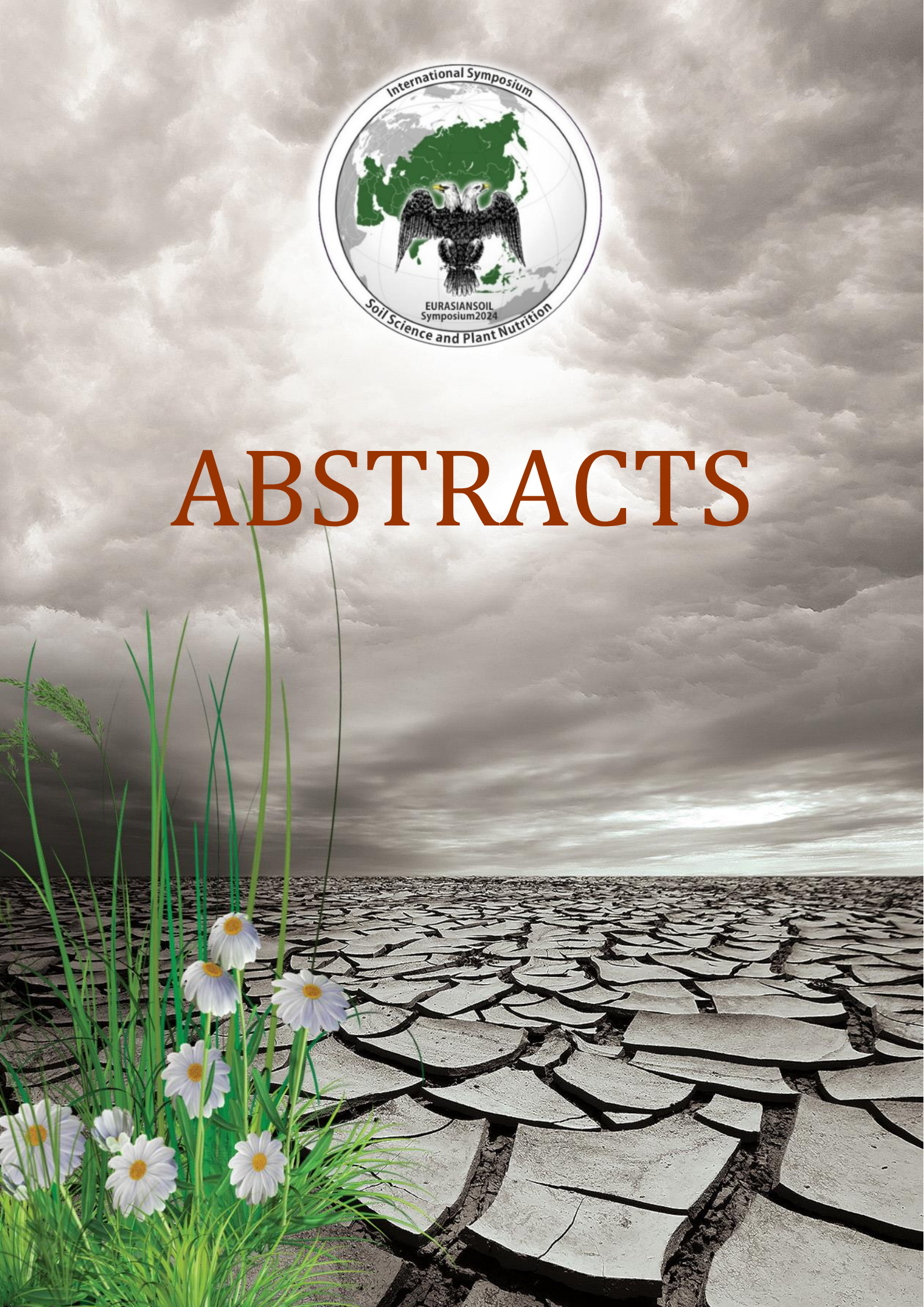

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Effects of saturated sludge on pseudoglay properties and plant yield

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ABSTRACT

A large part of arable land in the Republic of Serbia consists of soils with an acidic reaction. It is estimated that 43% of arable land in western Serbia, Šumadija and central Serbia consists of acidic soils with unfavorable physical and chemical properties, on which agricultural production is difficult, without the application of amelioration measures, the purpose of which is to remove or reduce the negative production properties of these soils. Of the total area of arable land in western and central Serbia, 250,000 ha are pseudogley soils, the main characteristic of which is the long-term retention of surface water during the wet period of the year, unfavorable oxidation-reduction processes and a high degree of hydrolytic acidity. The application of saturation sludge, which is created in the process of sugar production, is a very favorable amelioration tool for reducing hydrolytic acidity and improving other chemical properties of the soil. After the experimental work was completed, where we treated the soil with different amounts of saturation sludge, we came to the conclusion that the plants respond positively to the reduction in the degree of hydrolytic acidity, which can be seen in the higher growth of plants in treatments with a larger amount of saturation sludge, as well as a higher yield. During the experiment, it was observed that the plants in treatments where doses of 15 t ha-1 and 25 t ha-1 saturation sludge were applied have higher growth, higher above-ground mass, higher yield and higher coverage than plants grown in the control and 5 t ha-1 treatment. It was also observed that the soil in the 15 t ha-1 and 25 t ha-1 treatments has a lower degree of hydrolytic acidity as well as a higher content of easily accessible forms of K and P than the soil in both the control and the 5 t ha-1 treatment. The correct and timely use of melioration agents in combination with organic fertilizers leads to the improvement of physical and chemical properties of soil with negative production properties, which positively affects the size and stability of yields, which further leads to successful agricultural production and economic stability of agricultural producers.

Key words: Saturation mud, pseudoglay, soil, agriculture

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