„New Trends in Soil Science”*

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Distinguished President and colleagues from the Romanian Academy,
Vice President and colleagues from the Academy of Agricultural and Forestry Sciences,
Colleagues from the Academy of Sciences of Moldova,
Participants from the research stations, universities and Dear students,

We are opening our International Conference titled „Trends in Soil Science” organised by the Commission of Soil Science of the Agriculture and Forestry Section of the Romanian Academy, with the support of the other two Academies from Romania and Moldova.

For me is an honour to have at the opening our president of the Romanian Academy, Academician Ioan-Aurel Pop, who will start the first speech.

Let me introduce the next speaker, the vice president Aurel Badiu from the Academy of Agriculture and Forestry Sciences.

And now our Honorary president from our Section of the Romanian Academy, Academician Cristian Hera.

I will finish the opening with a short speech as president of the Agriculture and Forestry Section of the Romanian Academy.

Dear participants,

Whether during lectures for our students on Soil Science or during discussions with our researchers or farmers we never forget to reveal that soil is the foundation of our health and wealth. Soils are the basis of our economy and prosperity, supporting our cultural heritage and landscapes.

Practically, life on Earth depends on healthy soils and unfortunately, land and soils are today dramatically degrading, not only in Europe but worldwide.

Soils are a finite and non-renewable natural resource that store, filter, and transform many substances, including water, nutrients, and carbon.

All these are crucial for climate change mitigation and adaptation, agricultural production and food security, preserving nature and biodiversity, and are vital to achieve key objectives, which for Europe represents the Green Deal, the ultimate goal to reach healthy soils by 2050, in line with the EU Zero Pollution ambition.

For all these goals, we have an EU soil strategy for 2030, which sets out a framework and concrete measures to protect and restore soils and ensure that they are used sustainably.

We also hope to have a new Soil Monitoring and Resilience Law, which will put the EU on a route to healthy soils by 2050. Such a new EU legislation on soils will provide not only a harmonised definition of soil health but will put in place a comprehensive and rational monitoring framework and will forward a sustainable soil management and remediation of contaminated sites. This strategy sets a vision and objectives to achieve healthy soils by 2050, by concrete actions by 2030.

The soil strategy is also a deliverable key to the EU biodiversity strategy for 2030. Healthy soils are essential for achieving climate neutrality, a clean and circular economy and stopping

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desertification and land degradation. Both strategies are also essential to reverse biodiversity loss, provide healthy food, and safeguard human health.

Last year in Brussels, on 17 June, the Proposal for a Directive of the European Parliament and Council on Soil Monitoring and Resilience was approved (Soil Monitoring Law). The document indicates that soils host more than 25% of all biodiversity and are the second-largest carbon pool of the planet. Due to their ability to capture and store carbon, healthy soils contribute to the achievement of the Union's objectives on climate change. Healthy soils also provide a favourable habitat for organisms to thrive and are crucial for enhancing biodiversity and the stability of ecosystems.

Soil organic matter is crucial for the provision of soil ecosystem services and functions, by reducing soil degradation such as erosion and compaction, while increasing the buffering, water holding and infiltration as well as cation exchange capacity of the soil.

Soil organic matter, generally measured through soil organic carbon, can improve the structural stability of soils, reflected by their soil organic carbon to clay ratio, and the development of biomass, including an increase in crop yields.

Additionally, soil organic matter positively affects soil biodiversity and can increase the amount of carbon sequestered in soils, contributing to climate change mitigation and adaptation.

Later to this proposal, another important document of the European Environment Agency, was released by the scientists from the Joint Research Centre (JRC). This publication aimed to provide evidence-based scientific support to the European policymaking process. The document reveals that over 60% of European soils are unhealthy and are further degrading due to unsustainable management of the land, sealing, contamination and overexploitation, combined with the impact from climate change and extreme weather events.

Degraded soils reduce the provision of ecosystem services such as food, feed, fibre, timber, nutrient cycling, carbon sequestration, pest control or water regulation. The loss of these essential soil ecosystem services costs the EU at least 50 billion euros per year. More details will be presented by Cristina Arias Navarro, who will present this data at the start of our conference.

The State of the soils will also be presented by scientists from Romania and Moldova in the same context of EU soil strategy for 2030 and as a perspective of a durable agriculture. The challenges created by the health of the soils, are even more turbulent in the context population grows and tourism and we have a case study to take advice from what happened in other countries.

In the second part of our conference, some Romanian scientists will contribute with their data on the same problems as: soil health, soil tillage and environment protection, soil quality and humus dynamics, and with a new database of Romanian soils.

We entitled our Conference „Trends in Soil Science" after we found an existing publication on the same subject, which was recently published. I contacted one of the authors, dr. Hailong He, who accepted to make a presentation on this subject, but being in Canada at midnight during our conference time he sent a video with Romanian translation.

Before starting the conference, and giving the microphone to our moderator, prof. Martin Gerzabek from BOKU University in Vienna, who was recently elected as an honorary member of our Academy I would also like to mention another fact related to this subject.

Some NGOs, experts, and Romanian farmers are calling for the EU climate finance to be targeted at smallholder farmers to support their transition to regenerative practices and to facilitate farmers' access to finance for soil restoration.

Both Academies will sustain their proposals to include farmers' access to climate finance to adopt regenerative agroecological practices, increasing climate finance for farmers to create carbon sinks on agricultural land, developing infrastructure and enabling policies for sustainable land management, mobilizing private investment in soil restoration, and mainstreaming soil restoration into global climate finance strategies.

This will be another support to put soil sciences into practice, remembering that „From farm to fork" will always start from the bottom, from the soil.