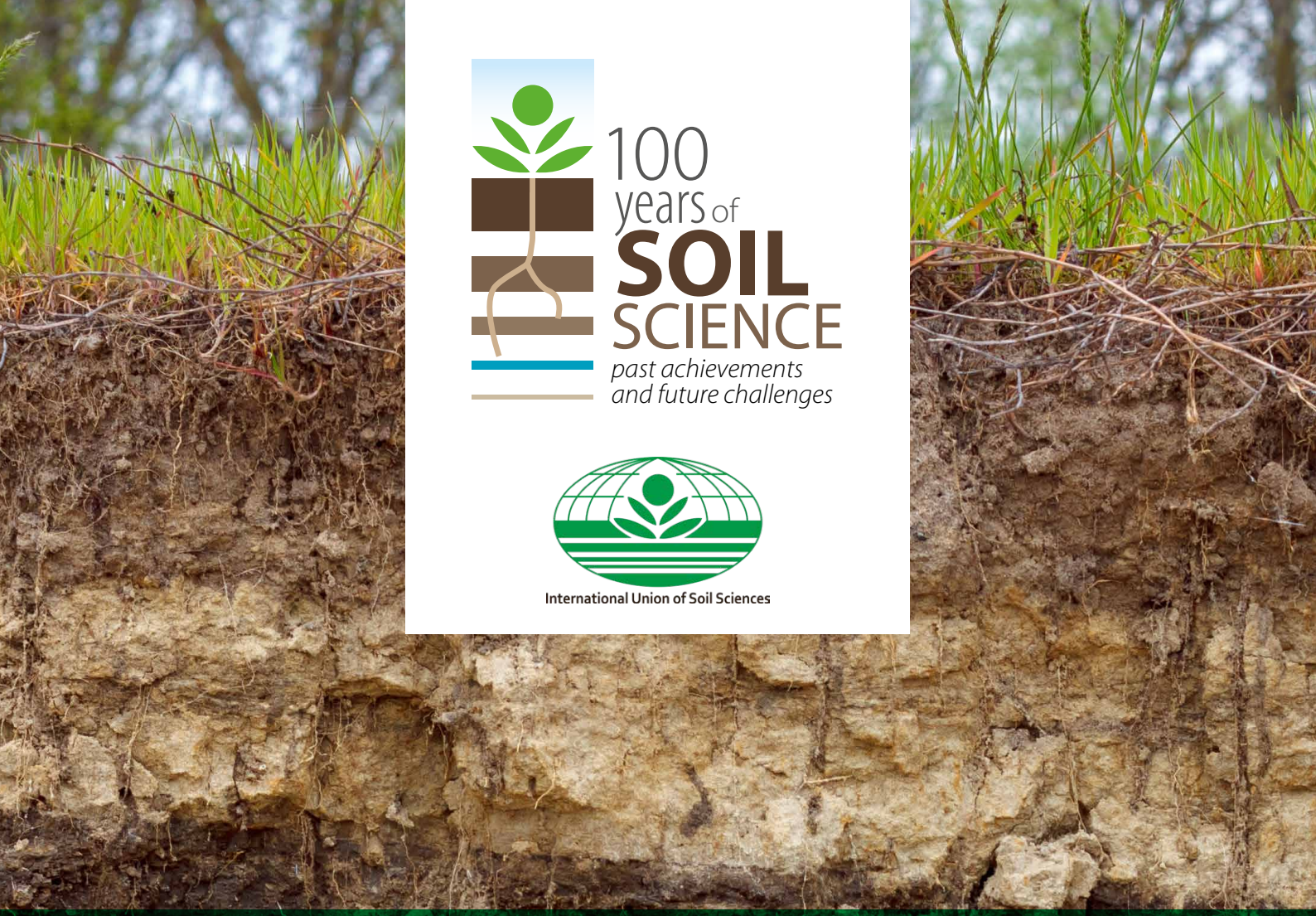

100 years of SOIL SCIENCE
past achievements and future challenges

International Union of Soil Sciences

Centennial Celebration and Congress of the International Union of Soil Sciences

Florence - Italy

May 19 - 21, 2024

ABSTRACT BOOK

Under the Auspices:

MINISTERO DELL'AGRICOLTURA DELLA SOVRANITÀ ALIMENTARE E DELLE FORESTE

REGIONE TOSCANA

COMUNE DI FIRENZE

ACCADEMIA DEI GEORGOFILI

ACCADEMIA ITALIANA DI SCIENZE FORESTALI · FIRENZE

Accademie per le Scienze Agrarie UNASA

CA4SH COALITION OF ACTION 4 SOIL HEALTH

ENEA Italian National Agency for New Technologies, Energy and Sustainable Economic Development

ESSC EUROPEAN SOCIETY for SOIL CONSERVATION

Federazione Italiana Dottori in Scienze Agrarie e Forestali

International Science Council The global voice for science

GLOBAL SOIL PARTNERSHIP

ITALIAN SOIL PARTNERSHIP

SICA

SIPe Società Italiana di Pedologia Italian Society of Pedology

SOCIETÀ GEOLOGICA ITALIANA 1881

SOCIETÀ ITALIANA DI AGRONOMIA S.I.A.

WASWAC

SISEF

S.It.E. - Società Italiana di Ecologia

EJP SOIL European Joint Programme

ANA Accademia Nazionale di Agricoltura

CIHEAM BARI

SIN Società Italiana di Nematologia

Consiglio Nazionale delle Ricerche

SOIL HUB

anci toscana

crea Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria

SIA Società Italiana d'Arboricoltura - o.n.l.u.s. Sezione Italiana dell'International Society of Arboriculture

RE SOIL FOUNDATION Regeneration for a clean and healthy soil.

SUSTAINABLE SOILS ALLIANCE

ID ABS WEB: 137798

4. Soil health in achieving the Sustainable Development Goals
4.13 133539 - Development of efficient soil education scheme for tomorrow

HOW DOES PLASTIC POLLUTION AFFECT SOIL QUALITY IN PLASTICULTURE?

E. SALJNIKOV [2], T. GRUJIC [1], M. JOVKOVIC [1], S. KRNJAJIC [2], T. KOSAKI [3], S. BELANOVIC SIMIC [4], Z. MARJANOVIC [2]

[1] Institute of Soil Science, Belgrade, SERBIA
[2] University of Belgrade, Institute for Multidisciplinary Research, Belgrade, SERBIA
[3] Aichi University, Nagoya, JAPAN
[4] University of Belgrade, Faculty of Forestry, Belgrade, SERBIA

Growing crops in plastic greenhouses and mulching with plastics is one of the largest sources of microplastics in the environment around the world and especially in Serbia. Plastic waste is known for its stability and recalcitrance in the environment, so it is generally assumed that standard plastic waste is not degradable. The determination of microplastics in soil is a major challenge due to the complexity of the soil matrix. The aim of the study was to show the effects of plastic particles on the chemical, physical and biological properties of arable soils. Alluvial soils from three major river basins (Danube, Morava and Sava) in Serbia, which are most affected by seasonal flooding, were selected. Soils from MP-polluted (plasticulture) and non-polluted (open field) sites, located next to each other, were sampled in 2022 from two depths 0-15 and 15-30 cm. Preliminary results showed that the physical, chemical and biological properties of the soil were significantly affected by the presence of plastics. Plastic contamination in the soil environment has an impact on organic matter cycling, global carbon dioxide production, plant production, soil properties, water quality, etc. It is time to raise awareness that the pollution of our environment with plastic waste can lead to serious disruptions of the ecosystem and its ability to fulfil its functions, such as the production of sufficient and high-quality quantities of food.

Keywords: plastic waste,alluvial soil,soil quality,plasticulture