

SOILS FOR FUTURE UNDER GLOBAL CHALLENGES

SERBIAN SOCIETY OF SOIL SCIENCE
University of Belgrade, Faculty of Agriculture
Sokobanja, 21-24 September 2021
III International and XV National Congress
<https://congress.sdpz.rs/>

CONTENT ORGANIC CARBON SOLUBLE IN HOT WATER (HWOC) OF CHERNOZEM IN THE SYSTEM OF PLOWING WINTER COVER CROPS AND SUBSEQUENT SOWING OF MAIZE

Bojan Vojnov^{*a}, Srdjan Šeremešić^a, Branko Ćupina^a, Djordje Krstić^a, Svetlana Vujić^a, Milorad Živanov^b, Dragan Radovanović^a

^aUniversity of Novi Sad, Faculty of Agriculture, Department of Field and Vegetable Crops, Sq Dositeja Obradovića 8, Novi Sad, Serbia

^bInstitute of Field and Vegetable Crops, Maksima Gorkog 30, Novi Sad, Serbia

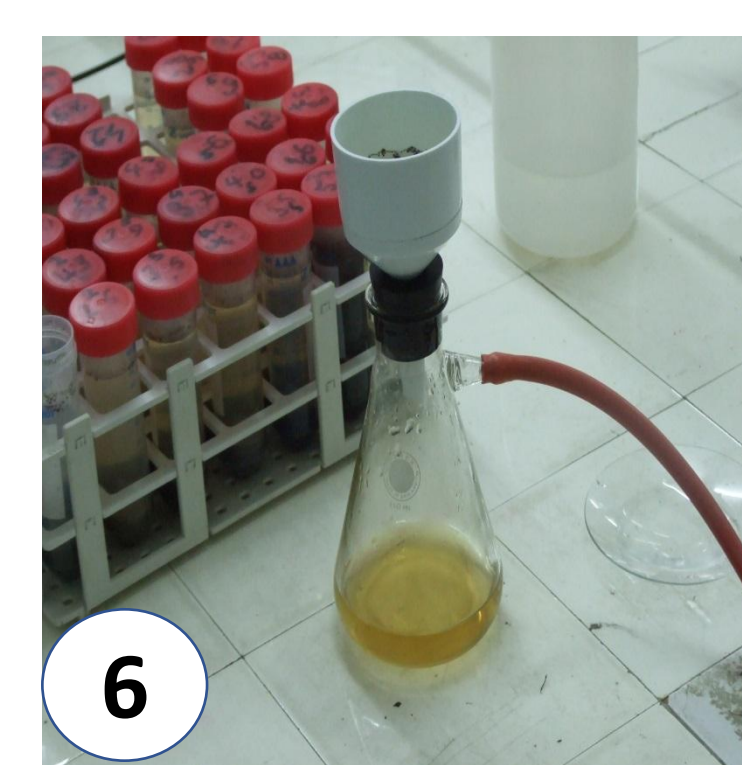
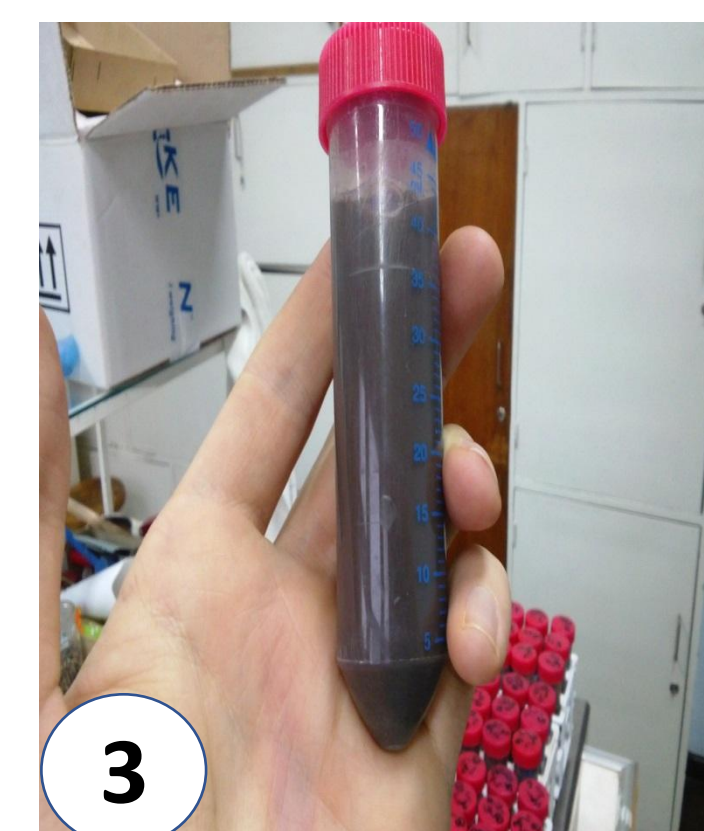
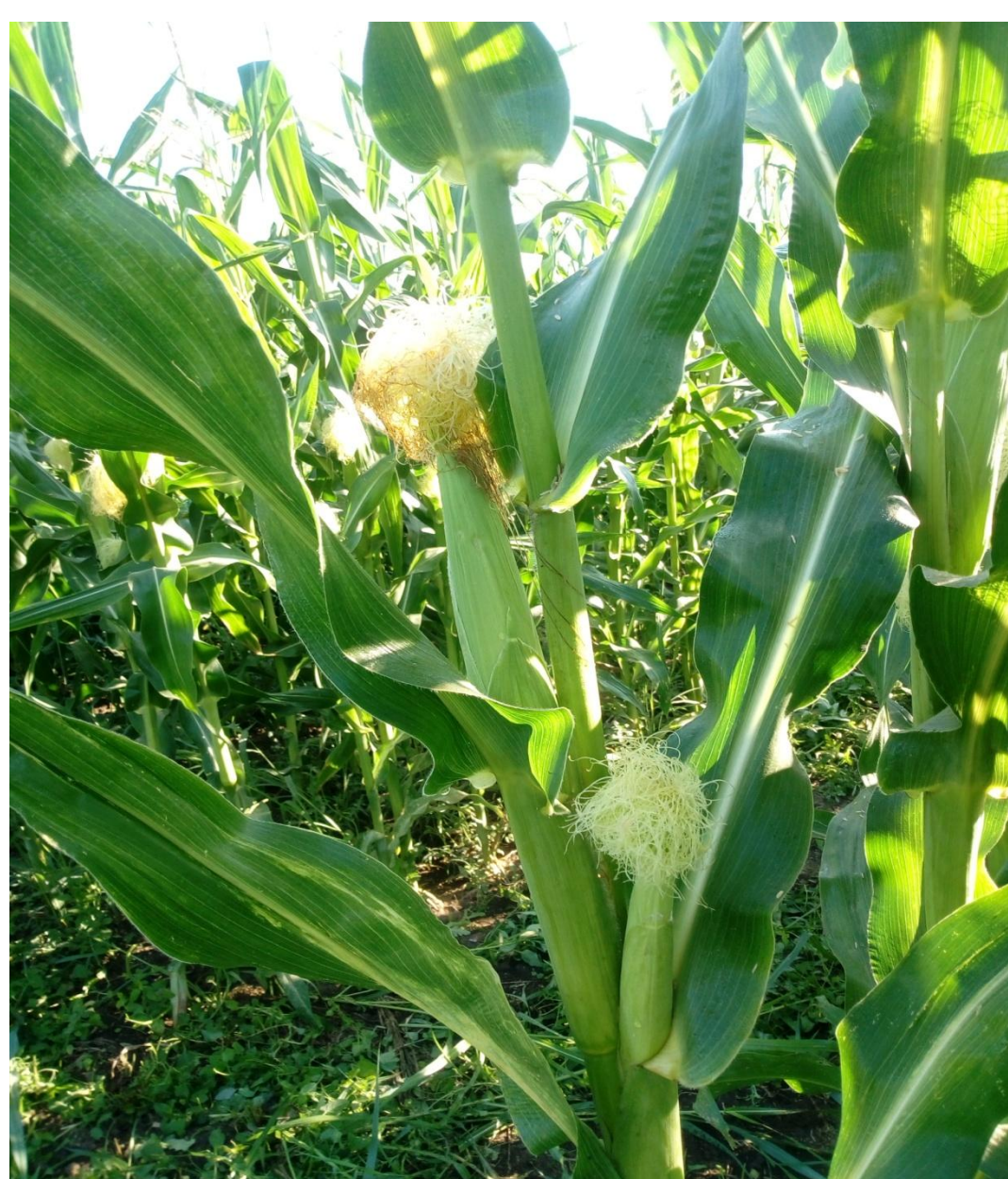
* Corresponding author: bojan.vojnov@polj.uns.ac.rs

INTRODUCTION

Preservation of soil quality is a continuous process in order to prevent negative effects of conventional cultivation. One of the main indicators of soil quality, reflected in its fertility. Due to insufficiently developed livestock production in the Republic of Serbia and insufficient amount of organic fertilizer (animal manure), there is a growing need for the introduction of alternative organic fertilizers that will be useful from both economic and environmental aspects. Therefore, the aspiration to maintain and preserve organic matter (OM) levels is considered one of the preconditions for proper soil use and environmental protection. In the agro-ecological conditions of Vojvodina, there is an increasing need for the introduction of cover crops in order to improve soil fertility and increase the level of organic matter. On the other hand, there is no sufficient research on the impact of plowing cover crops on the content of labile organic matter (HWOC).

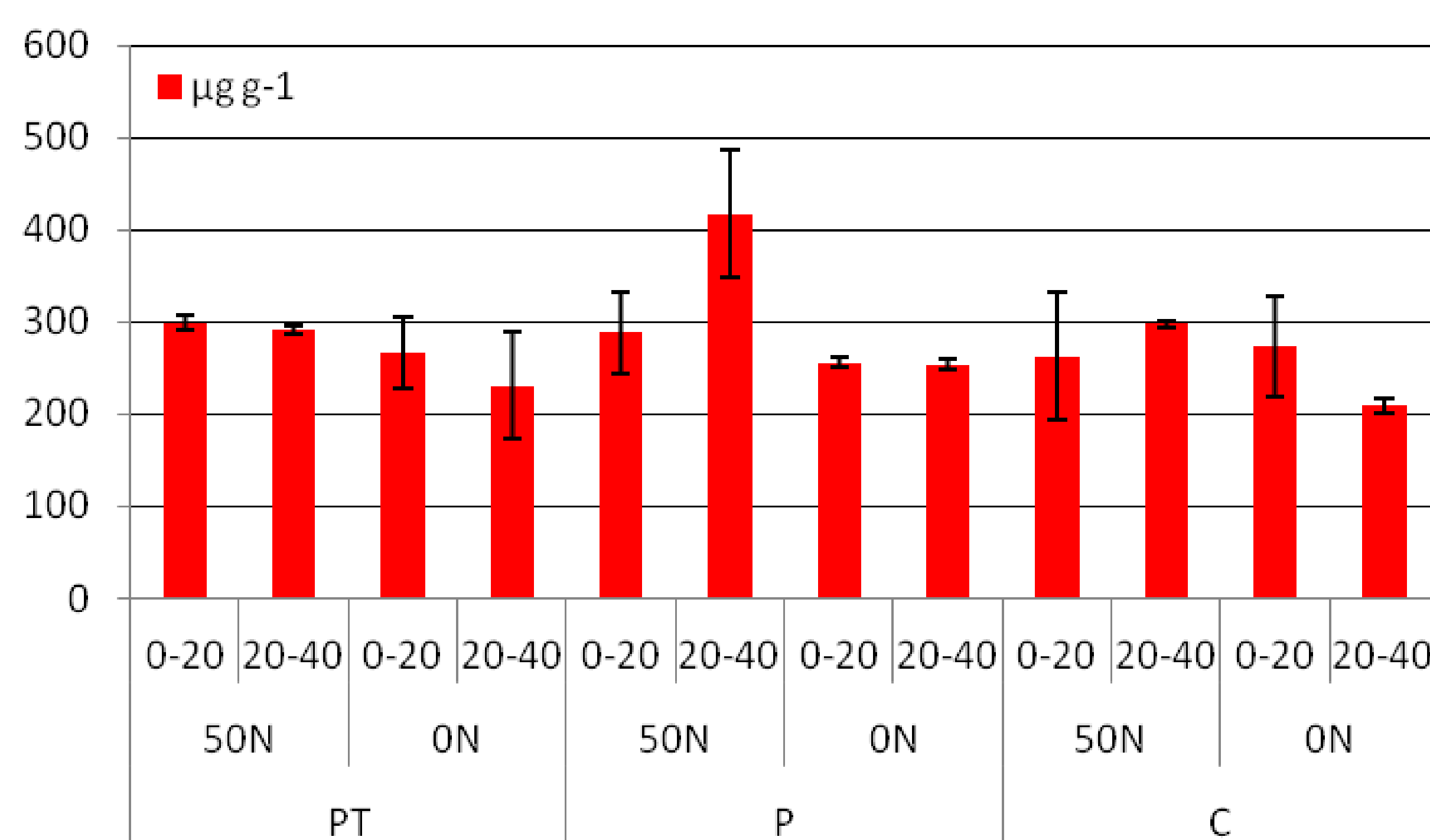
MATERIALS AND METHODS

The aim of the study was to determine the influence of different species of winter cover crops (CC) and maize on the content of OM levels as well as the dynamic of labile HWOC. Research was carried out at the Rimski Šančevi experimental station. Type of soil chernozem. The winter CC consisted of the combined intercrops: winter pea (*Pisum sativum* ssp. *Arvense* L.) + triticale ((\times Triticosecale Wittm. ex A. Camus) (WPT) and single-species CC winter pea (WP) and control (C) (without CC). Plowing of CC and control plots was carried out at a depth of 27 cm in the last decades of May 2020, and the sowing of maize was done in early June. Nitrogen fertilization was performed in the form of top dressing with 50 kg N ha⁻¹. Soil was sampled in October at depth of: 0-20 cm, 20-40 cm.



RESULTS AND DISCUSSION

The analysis of variance determined a significant effect of cultivated crops (maize) in the subsequent sowing period on the change of the content of HWOC, as well as the interaction of cover crops and fertilization. The lowest value of HWOC in maize was measured on the control plots C N₀ (20-40 cm), and the highest value was found on the treatment WP N₅₀ (20-40 cm) (417.3 µg g⁻¹). The highest share of HWOC in the total OM content was measured on the variant WP N₅₀ (20-40 cm) (3.21%), while the lowest share was found on variant C N₀ (20-40 cm) (1.39%).



CONCLUSION

Given that HWOC has seasonal dynamics, in the coming period it would be necessary to conduct a series of research in terms of selecting appropriate cover crops as well as the time of soil sampling to be adjusted to the purpose of the research.

ACKNOWLEDGEMENTS: Realization of the research was provided by the Ministry of Education, Science and Technological development of the Republic of Serbia (agreement 451-03-9/2021-14/200117)