



Faculty of Agriculture  
University of Banja Luka



**XIII INTERNATIONAL SYMPOSIUM ON AGRICULTURAL SCIENCES**



# **BOOK OF ABSTRACTS**

27-30 May 2024, Trebinje, Bosnia and Herzegovina

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## Water characteristic of grassland soils (Eastern Serbia)

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### Abstract

Soil water characteristic (SWC) is an important hydraulic property. Changes in plant diversity in arid and semi-arid grassland ecosystems are closely related to soil moisture. The main objective of this study was to measure the SWC of Calcomelanosols (Leptosol and Phaeozems) under grassland vegetation in Eastern Serbia (Mts. Rtanj, Devica and Ozren). A total of ten representative soil profiles were excavated, described and sampled. Soil saturated water content (SSWC), field water capacity (FWC) and wilting point (WP) were measured at pressures of 0.0 kPa, -33 kPa and -1500 kPa, respectively. The plant available water capacity (AWC) and the water storage capacity (WSC) were calculated. The saturated hydraulic conductivity (Ksat) was measured using the falling water head test. The basic physical and chemical soil properties were determined by common methods. The average SSWC value was high (71.8±2.97%). The FWC showed high values (exceeding 35%) and the WP was estimated as relatively high (exceeding 23.1%). AWC values ranged from 8.09 to 11.9% (average 9.98±1.43%). Shallower soil depth mainly caused low to moderate soil WSC. The Ksat ranged from 21.1 cm h<sup>-1</sup> to 66.5 cm h<sup>-1</sup> (average 46.0±16.03 cm h<sup>-1</sup>). The Ksat measurements showed that the soils in the study area belonged to the high and very high classes. SWC showed a significant (p<0.05) correlation with the following soil parameters: depth, texture, structure, humus and CEC. The investigated soils are primarily characterized by a lower WSC, which is mainly influenced by the shallower soil depth. Nevertheless, the species richness was not affected by the moderate SWC, and the grassland vegetation, corresponding to the Festucion valesiacaе and Saturejion montanae alliances, is characterized by exceptional species diversity at the study sites.

*Key words:* calcomelanosols, SWC, FWC, WP, WSC