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IMPACT OF SOYBEAN-PROSO MILLET INTERCROPPING ON PRODUCTIVITY AND MICRONUTRIENT ACCUMULATION IN BIOMASS

Milena Šenk[1*], Milena Simić[1], Dušanka Milojković-Opsenica[2], Milan Brankov[1], Slađana Đurđic[2], Vesna Dragičević[1]

[1] Maize Research Institute, Zemun Polje, Slobodana Bajića 1, 11185 Belgrade, Serbia
[2] University of Belgrade - Faculty of Chemistry, Studentski trg 12–16, 11000 Belgrade, Serbia

*Corresponding author e-mail address: mmilena@mrizp.rs

Intercropping, as one of the most beneficial sustainable agriculture practices that increase biodiversity, includes planting of two or more crops simultaneously at the same field. Advantages of intercropping are reflected through the more efficient use of natural resources by the complementary crops, resulting in increased yield and improved biomass quality. One of the most useful ways to express the impact of intercropping is land equivalent ratio (LER) as well as nutrient land equivalent ratio (NLER). The aim of this research was to examine the influence of different intercrop combinations of soybean and proso millet on biomass yield and concentration of essential minerals (Fe, Zn), shown as LER, Fe-LER and Zn-LER. Soybean and proso millet were sown in three combinations (S-M, SS-MM and SS-MMMM), as well as sole crops, in 2018 and 2020. The effect of bio-fertilizer Coveron (containing *Glomus sp*. and *Trichoderma*) was also investigated. The results showed that SS-MM and SS-MMMM combinations contributed to greater accumulation of Fe in biomass of soybean and proso millet. In regard to Zn concentration, situation was opposite. While all intercrop combinations expressed positive effect on the accumulation of this element in soybean, more Zn was absorbed by proso grown as sole crop in relation to the intercrops. Fe-LER and Zn-LER values showed that year had no significant impact, while the influence of intercropping had significantly highlighted SS-MM combination (the highest values were 1.20 and 1.25 for Fe and Zn, respectively). The effect of bio-fertilizer could be observed just in the case of Fe-LER, where Coveron expressed negative impact. Similarly, the LER value for yield was only in the SS-MM combination >1. Based on these results, it can be concluded that soybean-proso millet intercropping had beneficial effect on productivity and micronutrient absorption by biomass, emphasizing SS-MM combination as the most efficient.

Key words: *land equivalent ratio, nutrient land equivalent ratio, iron, zinc, biomass.*