

BOOK OF ABSTRACTS



*XIV International Scientific Agriculture Symposium
"Agrosym 2023"
Jahorina, October 05-08, 2023*



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INFLUENCE OF INTERCROPPING AND BIO-FERTILIZER ON THE LEVEL OF ANTIOXIDANTS IN SOYBEAN AND COMMON MILLET GRAINS

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Abstract

While climate change severely affects food production and its security, each practice which boost yield and quality of crops in an eco-friendly way is required. Soybean (S) and common millet (M) present valuable crops regarding nutritive quality of grains, and their intercropping (IC) can be used to enhance performance of both crops in a sustainable way. Field experiment was performed during 2018 and 2020, as completely randomized block design. Three combinations of intercrops: S-M, SS-MM and SS-MMMM, as well as sole crops were included in trial. Additionally, the influence of bio-fertilizer Coveron (containing *Glomus sp.*, *Trichoderma atroviride* and plant growth-promoting rhizobacteria) was also investigated. The quality of grains was determined by measuring the level of three important antioxidants: yellow pigment - YP, total phenolic compounds - TPC and phytic phosphorus - PPhy. In terms of soybean, IC was insignificant for variability in concentration of antioxidants, while in millet grains, concentrations of Pphy, TPC and YP were significantly affected by IC. Pphy and TPC levels were mainly increased by IC, but not YP level. The only combination that influenced simultaneous increase of all three parameters was SS-MM combination. Consequently, this planting pattern is suggested as an effective for increasing antioxidants level in millet grain. On the other side, BF significantly affected only Pphy in soybean, increasing its concentration, which proved positive effect of BF on enhanced phosphorus availability and accumulation in grain. These findings indicate the importance of planting pattern in managing nutritive quality of grains, emphasizing 1:1 ratio set as alternating strips in soybean-common millet intercropping.

Keywords: *Yellow pigment, Total phenolic compounds, Phytic phosphorus, Sowing pattern, Grain quality.*