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Dietary fiber profile and β-carotene content of corn kernels with specific traits under sustainable cultivation*

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Abstract

A two-year study was conducted with the aim of evaluating the impact of growing cover crops and the application of microbiological fertilizers on the nutritional value of sweet corn hybrid kernels grown in the experimental field of the Maize Institute Zemun Polje, Serbia. The experimental design was a randomized split plot with four replications, and the factors of year (A), cover crop (B) (4 plant species and 2 mixtures) and microbiological fertilizer (C) were observed. A sweet corn hybrid (ZPSC 421su, FAO group 400) was grown as the main crop. The research results show significant variations in the content of ß-carotene (7.08-8.47 μg g^{-1}), total dietary fiber (2.79-3.74%), soluble dietary fiber (0.27-0.56%) and insoluble dietary fiber (2.22-3.30%) depending on the treatment, cover crops and annual meteorological conditions. Cover crops, especially mixtures of winter fodder peas and winter oats, with the application of microbiological fertilizers, increased the content of ß-carotene to 8.47 μg g^{-1}, while total dietary fibers reached 3.74% in the second year of the research, which was more favorable in terms of meteorological conditions. The unfavorable weather in the first year of the research reduced the nutritional value of the kernel. The results indicate that the integrated application of cover crops and microbial fertilizers has the potential to enhance resilience to adverse weather conditions while improving the nutritional value of hybrid sweet corn kernels.

Keywords: quality, kernel, cover crops, production

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