Utjecaj folijarne prihrane ratarskih kultura na sadržaj mikroelemenata u zrnu

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Sažetak

Moderna poljoprivreda visoke prinose bazira kako na suvremenim sortama, tako i na agrotehnici, gdje gnojidba zauzima ključno mjesto u ostvarivanju visine prinosa svih poljoprivrednih kultura. Osim kao čimbenik stabilnosti prinosa, gnojidba kao agrotehnička mjera, sve je više u slubi biofortifikacije, odnosno, povećanja kakvoće prinosa. Kombinirana NPK folijarna gnojiva, s dodatkom ostalih makro i mikro elemenata koriste se u poljoprivrednoj proizvodnji za razne kulture s različitim učinkom na povećanje koncentracije mikroelemenata u zrnu. Stoga je cilj ovog istraživanja bio utvrditi utjecaj folijarne prihrane gnojivom Mortonic na promjenu koncentracije mikroelemenata u zrnu ratarskih kultura (pšenica, kukuruz i soja) u Republici Hrvatskoj. Pokusi su postavljeni na tri različita lokaliteta u Osječko-baranjskoj županiji, na tri različite površine tvrtki: Novi Agrar d.o.o. PC Klisa-kukuruz hibrid PR34N43; PPK Valpovo PC Zelčin-pšenica sorta Matea i soja sorta Julijana. Pokus je postavljen u tri tretmana: kontrola (standardna gnojidba i prihrana u tlo), jedna prihrana Mortonicom folijarno (soja), dvije prihrane Mortonicom folijarno za kukuruz i pšenicu. Mortonic je kompleksno folijarno gnojivo, proizvođača iz Grčke, pogodno za primjenu u prihrani s omjerom hraniva NPK 19-9-27, te obogaćeno mikroelementima Fe, Zn, B, Mn, Cu. Nakon vegetacije utvrđena je koncentracija Cu, Mn, Fe i Zn u zrnu pri čemu je najveću prosječnu koncentraciju mikroelemenata imala soja (Cu 12,47 mg/kg, Mn 22,66 mg/kg, Fe 74,84 mg/kg, Zn 47,16 mg/kg) zatim pšenica (Cu 3,57 mg/kg, Mn 38,29 mg/kg, Fe 31,68 mg/kg, Zn 19,95 mg/kg), a najniže koncentracije zabilježene su kod kukuruza (Cu 1,42 mg/kg, Mn 4,26 mg/kg, Fe 18,71 mg/kg, Zn 14,05 mg/kg). Prihrana Mortonicom rezultirala je povećanjem svih navedenih mikroelemenata u zrnu kod istraživanih kultura. Utvrđen je statistički značajan utjecaj ($P \leq 0,05$) primjene Mortonica na povećanje sadržaja Fe, Zn, Mn i Cu posebice nakon prvog tretmana dok je drugi tretman utjecao statistički značajno na povećanje koncentracije mikroelemenata samo u zrnu kukuruza.

Ključne riječi: folijarna prihrana, mikroelementi, pšenica, kukuruz, soja

Effect of foliar top dressing on the content of microelements in the arable crops grain

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Summary

Modern agriculture bases high yields on modern cultivars and technology, where fertilization is a crucial part in achieving of agricultural crops yields. Except as a factor of yield stability, fertilization as agro-technical measure is increasingly in function of biofortification in order to increase the quality of yield. Combined NPK foliar fertilizers, with the addition of other macro and micro elements are used in agricultural production for different cultures with different effect on the microelements concentration increase in the grain. Therefore, the aim of this study was to determine the effect of foliar top dressing by Mortonic fertilizer on trace elements concentration change in the grain of field crops (wheat, corn and soybean) in the Republic of Croatia. Trials were set up in different locations in Osijek- Baranja County: Novi Agrar PC Klisa - corn hybrid PR34N43; PPK Valpovo PC Zelčin - wheat cultivar Matea and soybean cultivar Julian. The trial was set up with three treatments: control (standard fertilization and top dressing applied in the soil), one application of Mortonic foliar top dressing (soybean), two applications of Mortonic foliar top dressing (corn and wheat). Mortonic is the complex foliar fertilizer produced in Greece, suitable for use in top dressing with ratio of NPK nutrients 19-9-27, and enriched with microelements Fe, Zn, B, Mn, Cu. After the growing season, the concentration of Cu, Mn, Fe and Zn in the grain where determned and the highest average concentration of trace elements was found in soybean grain(Cu 12,47 mg/kg, Mn 22,66 mg/kg, Fe 74,84 mg/kg, Zn 47,16 mg/kg) , then in wheat (Cu 3,57 mg/kg, Mn 38,29 mg/kg, Fe 31,68 mg/kg, Zn 19,95 mg/kg), while the lowest concentration was observed in maize (Cu 1,42 mg/kg, Mn 4,26 mg/kg, Fe 18,71 mg/kg, Zn 14,05 mg/kg). Tretaments with Mortonic increased concentration of the microelements in grain for all studied cultures. Statistically significant effect ($P \leq 0.05$) of Mortonic application was determined for Fe, Mn, Zn and Cu content increase especially after the first top dressing while the second top dressing significantly impacted on the microelements concentration increase only for maize.

Key words: foliar top dressing, microelements, wheat, corn, soybean