Učinak gnojidbe fosforom i kalijem na prinos soje

Milan MESIĆ[1], Igor BOGUNOVIĆ[1], Aleksandra PERČIN[1], Zoltan KIŠMARTIN[2], Stanislav STRACENSKI[2], Željka ZGORELEC[1]

[1]Sveučilište u Zagrebu, Agronomski fakultet, Svetošimunska cesta 25, 10000 Zagreb, Hrvatska, (e-mail: mmesic@agr.hr)
[2]PIK Vinkovci d.d. Matije Gupca 130, 32100 Vinkovci, Hrvatska

Sažetak

Cilj istraživanja bio je utvrditi učinak gnojidbe fosforom i kalijem na promjene u tlu i prinos soje u 2013. godini. U tu svrhu postavljen je pokraj Vinkovaca stacionarni poljski pokus (tabla S-T1, Arkod ID: 1404818) s ukupno 10 gnojidbenih varijanata. Pokus je postavljen na površini od 24000 m^2, sastoji se od 10 tretmana u slučajnom bloknom rasporedu u 4 ponavljanja. Veličina svake parcele je 24 x 25 m, a ukupno je pokusom obuhvaćeno 40 parcela. Tretmane čine različiti režimi gnojidbe pojedinačnim fosfornim i kalijevim gnojivima (triplex – 45% P_2O_5, kalijeva sol 60% K_2O) 1. NP_0K_0, 2. NP_0K_{150}, 3. $NP_{50}K_{150}$, 4. $NP_{100}K_{150}$, 5. $NP_{150}K_{150}$, 6. $NP_{200}K_{150}$, 7. $NP_{150}K_0$, 8. $NP_{150}K_{50}$, 9. $NP_{150}K_{100}$ i 10. $NP_{150}K_{200}$. Na svim je tretmanima primijenjeno 180 kg N/ha, kao redovna gnojidba i ona se ne smatra zasebnim tretmanom pokusa. Prosječan sadržaj fosfora (P_2O_5) prije gnojidbe iznosio je 27,5 mg/100 g tla, a kalija (K_2O) 25,4 mg/100 g tla. Sam prinos varirao je u vrlo uskom rasponu od 5,3 do 5,7 t/ha sjemena soje, ovisno o varijanti gnojidbe. Pokus nije bio statistički opravdan. Najniži prinos odnosi se na kontrolnu varijantu, a najviši na varijantu s 150 kg P_2O_5 i 150 kg K_2O. Sadržaj dušika u suhoj tvari zrna varirao je od 6,54 do 6,75%, sadržaj fosfora (P) od 6,67 do 7,34 g/kg, kalija (K) od 17,4 do 18,5 g/kg. Osim sjemena utvrđen je i prinos mase stabljike. Iznosio je od 3,18 do 3,93 t suhe tvari po ha. Sadržaj dušika u suhoj tvari stabljike soje bio je u rasponu od 1,21 do 1,48%, fosfora od 3,89 do 5,02 g/kg, a kalija od 12,3 do 14,3 g/kg.

Ključne riječi: soja, gnojidba fosforom i kalijem, prinos, promjene u tlu

sa2016_a0107

Influence of phosphorus and potassium fertilization on soybean yield

Milan MESIĆ[1], Igor BOGUNOVIĆ[1], Aleksandra PERČIN[1], Zoltan KIŠMARTIN[2], Stanislav STRACENSKI[2], Željka ZGORELEC[1]

[1]University of Zagreb, Faculty of Agriculture, Svetošimunska cesta 25, 10000 Zagreb, Croatia, (e-mail: mmesic@agr.hr)
[2]PIK Vinkovci d.d. Matije Gupca 130, 32100 Vinkovci, Croatia

Abstract

The aim of this study was to determine the effect of phosphorus and potassium fertilization on changes in soil and on the soybean yield in 2013. For this purpose, in the vicinity of Vinkovci a stationary field trial was established (parcel C-T1, ARKOD ID: 1404818) with a total of 10 fertilization treatments. The experiment was set up on an area of 24,000 m^2, and it consisted of 10 treatments in a randomized block design, with four replications. The size of each plot was 24 x 25 m and a total experiment included 40 experimental parcels. Treatments are different doses of fertilization with single phosphorus and potassium fertilizers (triplex - 45% P_2O_5, potassium salt 60% K_2O); 1. NP_0K_0, 2. NP_0K_{150}, 3. $NP_{50}K_{150}$, 4. $NP_{100}K_{150}$, 5. $NP_{150}K_{150}$, 6. $NP_{200}K_{150}$, 7. $NP_{150}K_0$, 8. $NP_{150}K_{50}$, 9. $NP_{150}K_{100}$ i 10. $NP_{150}K_{200}$. For all the treatments 180 kg N/ha was applied, as a regular fertilization and it is not considered a separate treatment. The average content of phosphorus (P_2O_5) in soil before fertilization was 27.5 mg/100 g soil, and potassium (K_2O) 25.4 mg/100 g soil. Yields fluctuated in a very narrow range of 5.3 to 5.7 t/ha soybean, depending on fertilization treatment. The experiment was not statistically significant. The lowest yield refers to the control, and the highest in the variant with 150 kg P_2O_5 and 150 kg K_2O. The nitrogen content in the dry matter of the grain varied from 6.54 to 6.75%, the content of phosphorus (P) from 6.67 to 7.34 g/kg, and potassium (K) from 17.4 to 18.5 g/kg . Apart from the seeds we determined also the weight of the soybean stubble. It ranged from 3.18 to 3.93 t of dry matter per hectare. The nitrogen content in the dry matter of soybean stubble was in the range from 1.21 to 1.48%, phosphorus from 3.89 to 5.02 g/kg, and potassium from 12.3 to 14.3 g/kg.

Key words: soybean, phosphorus and potassium fertilization, yield, changes in the soil

sa2016_a0107