

APPLICATION OF BIOFERTILIZERS IN SOYBEAN PRODUCTION

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ABSTRACT – APPLICATION OF BIOFERTILIZERS IN SOYBEAN PRODUCTION

Usage of biological renewable resources in soybean production is possible by application of micro organisms which fixates atmospheric nitrogen. Those are symbiotic *Bradyrhizobium* and associative micro organisms which belongs to family *Azotobacter*, *Beijerinckia*, *Azospirillum*, *Klebsiella*. In three years lasting research of soybean breeding, seed bacterization with symbiotic nitrogen fixators *Bradyrhizobium japonicum* and mixed (symbiotic and associative) nitrogen fixators is applied. In liquid inoculums were high frequent varieties of next species *Azotobacter chroococcum*, *Azospirillum lipoferum*, *Beijerinckia Derox* i *Klebsiella planticola*. Besides bacterization, various quantum of straight nitrogen per ha is used (0, 40, 60, 80 kg N/ha). It is estimated influence of various kinds of nitrogen fixators, as bio fertilizers, at different levels of mineral nitrogen on the mass of 1.000 seeds and total quantum of protein in seed. In average, for three years period, it can be concluded that bacterization is influenced on increment of tested parameters with various intensity. During bacterization with mixed nitrogen fixators higher values for 1.000 seed mass by the usage of 40 kg N/ha are gotten, and content of protein was the highest through the usage of 60 kg N/ha. According results it could be concluded that in soy bean production besides symbiotic, associative nitrogen fixators as bio fertilizers can be used too. That is important by ecological aspect, according the importance of soy bean as first sowing in organic production.

Keywords: soy bean, nitrogen fixators, mineral nitrogen, mass of 1.000 seeds, protein

SAŽETAK - PRIMENA BIOFERTILIZATORA U PROIZVODNJI SOJE

Primena biološki obnovljivih resursa u proizvodnji soje je moguća primenom mikroorganizama koji fiksiraju atmosferski azot. To su simbiozni *Bradyrhizobium* i asocijativni mikroorganizmi koji pripadaju rodovima *Azotobacter*, *Beijerinckia*, *Azospirillum*, *Klebsiella*. U trogodišnjim istraživanjima gajenja soje primenja je bakterizacija semena sa simbioznim azotofiksatorima *Bradyrhizobium japonicum* i bakterizacija sa mešanim (simbioznim i asocijativnim) azotofiksatorima. U tečnom inokulumu nalazili su se visokoefektivni sojevi sledećih vrsta *Azotobacter chroococcum*, *Azospirillum lipoferum*, *Beijerinckia Derox* i *Klebsiella planticola*. Pored baktrizacije obavljena je aplikacija različitim količinama čistog azota po hektaru (0, 40, 60, 80 kgN/ha). Određivan je uticaj različitih vrsta azotofiksatora kao biofertilizatora pri različitim nivoima mineralnog azota na masu 1.000 zrna i količinu ukupnih proteina u znu. U proseku za trogodišnji period može se zaključiti da je bakterizacija uticala na povećanje ispitvanih parametara različitog inteziteta. Pri bakterizaciji sa mešanim azotofiksatorima dobijene su veće vrednosti mase 1.000 zrna pri upotrebi 40 kgN/ha, a sadržaj proteina bio je najveći prilikom primene 60 kgN/ha. Na osnovu dobijenih rezultata može se zaključiti da se u proizvodnji soje pored simbioznih mogu primeniti i asocijativni azotofiksatori, kao biofertilizatori. Ovo je značajno sa ekološkog aspekta, s obzirom na značaj soje kao pred useva u organskoj proizvodnji.

Ključne reči: soja, azotofiksatori, mineralni azot, masa 1.000 zrna, proteini