

ISPITIVANJE VIGORA SJEMENA NEKIH DOMAĆIH KULTIVARA SOJE (*Glycine max* (L.) Merrill)

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SAŽETAK

Starenje sjemena jedan je od glavnih uzroka smanjenog vigora i slabijeg poljskog nicanja, što dolazi do izražaja u nepovoljnim uvjetima. U ovom istraživanju ispitan je vigor sjemena soje kroz četiri laboratorijska testa (energija klijanja-EK, standardna klijavost-SK, cold test-CT i električni konduktivitet sjemena-EC) te u poljskom pokusu (rani rok sjetve-RRS i optimalni rok sjetve-ORS). U istraživanju je korišteno sjeme 5 kultivara soje Poljoprivrednog instituta Osijek, proizvedenih tijekom tri godine (1999., 2000. i 2001.). Prije ispitivanja, sjeme je čuvano u skladišnim uvjetima u trajanju 6, 18 ili 30 mjeseci.

Pod utjecajem starosti sjemena, tretmana sjemena fungicidom (Vitavax 200 FF), kultivara i roka sjetve, utvrđene su značajne razlike u vigoru testiranog sjemena soje. Visokokvalitetno sjeme s EK i SK iznad 85% dalo je odgovarajuće sklopove biljaka u oba roka sjetve, kao i sjeme s CT iznad 70% ili EC ispod $42 \mu\text{Scm}^{-1}\text{g}^{-1}$. Nasuprot tomu, kod sjemena smanjenog vigora postoji velika mogućnost reduciranog poljskog nicanja, posebno u RRS. Međutim, tretman sjemena fungicidom, kao i sjetva u ORS, mogu značajno pridonijeti poboljšanju kvalitete sjemena i sklopa biljaka u polju.

Korelacijska analiza potvrdila je značajnu vezu (sign. 99%) svih ispitanih pokazatelja vigora sjemena. Poljsko nicanje u ranom roku sjetve bilo je u najjačoj vezi s CT i kod netretiranog ($r=0.949^{**}$) i kod tretiranog sjemena ($r=0.951^{**}$), dok je s poljskim nicanjem u optimalnom roku sjetve najjače korelirala SK (za netretirano sjeme $r=0.938^{**}$, a za tretirano sjeme $r=0.942^{**}$).

Zdravstvenom analizom sjemena utvrđena je značajna razlika u intenzitetu zaraze sjemena gljivicama, ovisno o tretmanu fungicidom, kultivaru i starosti sjemena. Ukupna zaraza sjemena, kao i zaraza patogenom *Fusarium spp.*, bila je u značajnoj negativnoj vezi s pokazateljima vigora sjemena.

Svi ispitani činitelji vigora sjemena soje indirektno su djelovali na urod zrna putem ostvarenog sklopa biljaka.

Ključne riječi: vigor sjemena, soja, kultivari, starost sjemena, tretman sjemena fungicidom, gljivične bolesti, poljsko nicanje, konduktivitet sjemena, klijavost, cold test

SEED VIGOR TESTING OF SOME DOMESTIC SOYBEAN CULTIVARS (*Glycine max* (L.) Merrill)

Master's thesis

SUMMARY

Seed ageing is an important cause of low vigor and bad field emergence, especially in adverse seedbed conditions. Therefore, in this investigation, soybean seed vigor was tested by four laboratory tests (germination energy GE, standard germination SG, cold test CT, electrical conductivity EC) and in field trial, as well (early planting dates Epd and optimal planting dates Opd). The soybean seed of 5 cultivars from Agricultural Institute Osijek, produced in the 3 years (1999., 2000., 2001.) was used in the investigation. The seed was stored in a warehouse conditions for 6, 18 or 30 months prior to testing.

Tested soybean seed showed significant differences in seed vigor influenced by seed age, seed treatment with fungicide (Vitavax 200 FF), cultivar and planting date. High quality seed with GE and SG over 85%,

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*performed quite well in both planting dates, as well as seeds with the CT over 70% or with EC under $42 \mu\text{Scm}^{-1}\text{g}^{-1}$. On the contrary, considering seed with reduced vigor there is a very great possibility of reduced FE especially in *Epd.* However, seed treatment with fungicide and sowing in optimal seedbed conditions can significantly contribute to improvement of soybean seed performance and stand establishment.*

*Correlation analyses showed that all tested seed vigor parameters were significantly connected (sign. level 99%). At early planting, the strongest correlation was established between the field emergence and CT (untreated seed, $r=0.949^{**}$ and for treated seed $r=0.951^{**}$) whereas in optimal planting date was between the field emergence and SG (for untreated seed $r=0.938^{**}$ and for treated seed $r=0.942^{**}$).*

*Laboratory seed health testing showed significant differences in fungal disease intensity influenced by fungicide seed treatment, cultivar and seed age. Total seed infection and infection with *Fusarium* spp. was adversely correlated with all vigor parameters.*

All tested vigor parameters of soybean seed had influence on grain yield indirectly by crop stand establishment.

Key-words: seed vigor, soybean, cultivars, seed age, fungicide seed treatment, fungal diseases, field emergence, seed conductivity, germination, cold test