

ZBORNİK APSTRAKATA

X SIMPOZIJUMA DRUŠTVA SELEKIONERA I SEMENARA REPUBLIKE SRBIJE

i

VII SIMPOZIJUMA SEKCIJE ZA OPLEMENJIVANJE ORGANIZAMA
DRUŠTVA GENETIČARA SRBIJE

BOOK OF ABSTRACTS

X SYMPOSIUM OF THE SERBIAN ASSOCIATION OF PLANT BREEDERS AND
SEED PRODUCERS

and

VII SYMPOSIUM OF THE SERBIAN GENETIC SOCIETY
SECTION OF THE BREEDING OF ORGANISMS

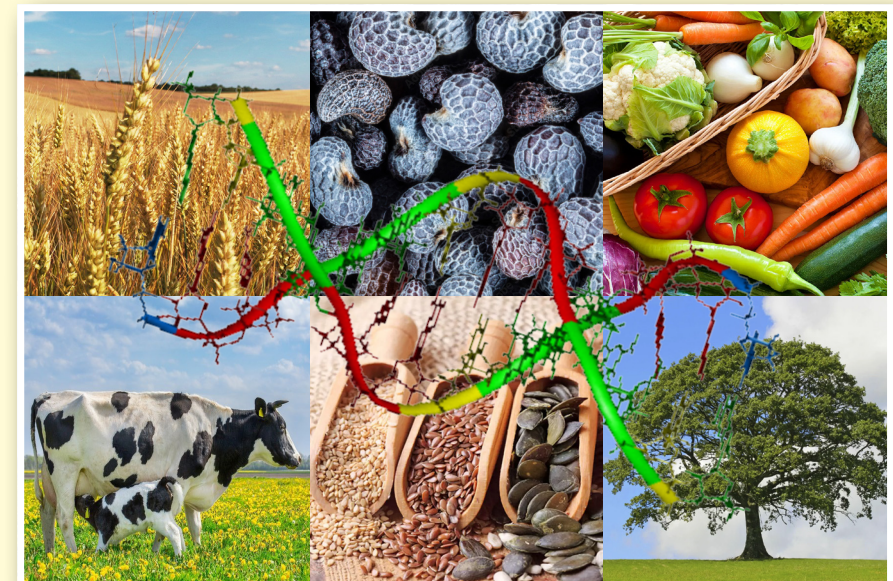
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SERBIAN GENETIC SOCIETY
SECTION OF THE BREEDING OF ORGANISMS



DRUŠTVO SELEKIONERA I SEMENARA
REPUBLIKE SRBIJE

SERBIAN ASSOCIATION OF PLANT
BREEDERS AND SEED PRODUCERS



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UVIDI U NASLEDNE MEHANIZME OTPORNOSTI SUNCOKRETA NA UGLJENASTU TRULEŽ: GENETSKI FAKTORI

Nemanja Čuk¹, Sandra Cvejić¹, Velimir Mladenov², Dragana Miladinović¹, Siniša Jocić¹, Miloš Krstić¹, Brankica Babec¹, Milan Jocković¹, Boško Dedić¹

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Ugljenasta trulež prouzrokovana gljivom *Macrophomina phaseolina* (Tassi) Goid, predstavlja jednu od ekonomski značajnih bolesti suncokreta u svetu, posebno u suvim i toplim klimatskim regionima. Ovo istraživanje imalo je za cilj ispitivanje mehanizama nasleđivanja otpornosti na *M. phaseolina* analizom dve populacije suncokreta. Obe populacije su formirane ukrštanjem otpornih i osetljivih inbred linija. Osetljiva inbred linija, AB OR8, bila je zajednička za obe populacije, dok je otporni roditelj u prvoj populaciji bila inbred linija PB 21, a u drugoj populaciji inbred linija VL A8. Prva populacija obuhvatala je 200 genotipova, a druga populacija 190. Genotipovi su klasifikovani u četiri grupe prema nivou otpornosti, a odnos ovih grupa je upoređen sa teorijskim očekivanim odnosima. Ispitivani odnosi uključivali su dominantnu epistazu (12:3:1), recesivnu epistazu (9:3:4), potpunu dominaciju (9:3:3:1), potpunu dominaciju sa recesivnom epistazom (9:4:3), dvostruko recesivnu epistazu (9:7), dvostruke interakcije sa kumulativnim efektima (9:6:1), dvostruka dominantna epistaza (15:1) i kombinacije dominantne i recesivne epistaze (13:3). Kroz uporednu analizu eksperimentalnih i teorijskih podataka zaključeno je da otpornost suncokreta na *M. phaseolina* ne sledi navedene nasledne mehanizme. Posledično, može se zaključiti da nasledna osnova otpornosti suncokreta na ovaj patogen uključuje više gena sa minor efektima. S obzirom na poligenu prirodu svojstva otpornosti, važno je sprovesti dalja istraživanja kako bi se utvrdili i razumeli svi efekti koji utiču na otpornost suncokreta na *M. phaseolina*.

Ključne reči: geni, mikoze, F2 populacija, inbred linija

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INSIGHTS INTO THE INHERITANCE MECHANISMS OF SUNFLOWER RESISTANCE TO CHARCOAL ROT: UNRAVELING THE GENETIC FACTORS

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Charcoal rot, caused by soil-borne fungus *Macrophomina phaseolina* (Tassi) Goid, stands out as a significant sunflower disease globally, particularly in arid and warm climatic regions, with notable economic implications. This study aimed to examine the inheritance mechanisms of resistance to *M. phaseolina* by investigating two sunflower populations. In this experiment, the progeny populations of F₂ plants were examined. Both populations were formed through the strategic crossing of resistant and susceptible inbred lines. The susceptible inbred line AB OR 8, was common to both populations, while the resistant parent in the first population was inbred line PB 21, and in the second population inbred line VL A 8. The first population included 200 genotypes, and the second 190. Genotypes were classified in four groups according to resistance level and ratio of these groups was compared with theoretical expectations of progeny ratio. The experimental ratios included dominant epistasis (12:3:1), recessive epistasis (9:3:4), complete dominance (9:3:3:1), complete dominance with recessive epistasis (9:4:3), duplicate recessive epistasis (9:7), duplicate interactions with cumulative effects (9:6:1), duplicate dominant epistasis (15:1), and combinations of dominant and recessive epistasis (13:3). Through comparative analysis of experimental and theoretical data, it was deduced that the inheritance of sunflower resistance to *M. phaseolina* did not correspond to any of the experimental ratios outlined above. Consequently, it was concluded that the inheritance basis of sunflower resistance to this fungus involves multiple genes with minor effects. Given the polygenic nature of the resistance trait, it is important to conduct further research to pinpoint and understand all the effects governing sunflower resistance to *M. phaseolina*.

Key words: genes, fungus, F₂ populations, inbred line

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