Detection of resistance to diseases in a trial with diallel crosses of tobacco

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Summary

Investigations were made with ten varieties of tobacco types: Prilep (P- 23 , P- 76 , P- 66 , NS-72), Yaka (YK 10-7/1), Djebel (Xanthe, HDj-M), Basmak (MB- 3), Samsun (SM- 1), Sirdili (SM-LL) and Virginia (MV-1) and their 45 diallel crosses for resistance to diseases, with an emphasis on black shank - *Phytophthora parasitica* var. *nicotianae*. The trial with parental genotypes and their hybrids was set up in 2011 and 2012 at the Experimental field of the Scientific Tobacco Institute - Prilep in randomized block design with three replications. Traditional agricultural practices were applied during the growing season. The resistance/susceptibility degree was estimated according to a scale recommended by FAO. The aim of this paper is the detection of resistance to black shank and creation of resistant lines, using diallel analysis to obtain knowledge on the genetics of this disease. The highest resistance to the disease was recorded in YK 10-7/1 and SM-LL, while the varieties MV-1 and P-76 showed to be the most susceptible. The highest resistance in the diallel was recorded in the crosses where one of the parents was YK 10-7/1, which indicates a possession of dominant gene of resistance. In the process of breeding, the method of Back-cross hybridization was used in order to increase the varieties resistance to the black shank disease.

Key words: tobacco (*Nicotiana tabacum* L.), diallel crosses, back-cross hybridization, resistance, black shank (*Phytophthora parasitica* var. *nicotianae*)