TESTING ANNUAL WILD SUNFLOWER SPECIES FOR RESISTANCE TO *OROBANCHE CUMANA* WALLR.

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ABSTRACT

Broomrape (*Orobanche cumana* Wallr.) is a holoparasitic weed that attacks the roots of sunflower (*Helianthus annuus* L.) causing yield losses in excess of 30%. It affects mostly warm and dry regions. Development of resistant cultivars and optimization of agricultural practices are the most important tasks for broomrape control in affected countries. In Serbia, first severe infestations were recorded in the early 90s. IFVCNS breeding program for transfer of *O. cumana* resistance from wild *Helianthus* species first pointed to *H. petiolaris* ssp. *petiolaris* as an excellent donor of *Or* genes. Resistance of annual wild species to *O. cumana* has been evaluated in a long term characterization program. Starting from 1996, multiple tests were performed in the greenhouse and in the field with broomrape presence. Total of 7 annual *Helianthus* species and 182 accessions were screened for resistance. The highest percentage of accessions with no segregation for resistance was found in *H. petiolaris* (81%) followed by *H. niveus* and *H. argophyllus*. If resistance is expressed per plant, *H. petiolaris* and *H. niveus* had more than 90% of plants with no infection. *H. argophyllus, H. debilis, H. praecox* and *H. neglectus* were in the range of 77-86%, while *H. annuus* had only 37% of resistant plants and proved to be the most susceptible of the tested annual species. The obtained results pinpoint the most useful species and accessions for further work on keeping cultivated sunflower resistant to broomrape.

Key Words : wild annual Helianthus, resistance, Orobanche cumana