

**A NEW SOURCE OF POSTHAUSTORIAL RESISTANCE  
TO SUNFLOWER BROOMRAPE DERIVED FROM  
*HELIANTHUS PRAECOX***

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**Abstract**

Genetic resistance to sunflower broomrape (*Orobancha cumana* Wallr.) is crucial for sustaining sunflower production in the Old World. Because of the capacity of the parasite to overcome resistance mechanisms in the host, new sources of resistance and new mechanisms of resistance must be continuously developed to ensure sustainability of the crop. From the first observations of broomrape attacks in the 19<sup>th</sup> century, wild *Helianthus* species have played a major role as donors of resistance alleles. In this research, we report the identification of a new source of genetic resistance to *O. cumana* race G in the annual wild species *H. praecox*. Eight plants of a *H. praecox* accession from the USDA-ARS germplasm collection were evaluated with *O. cumana* race G and none of them showed emerged broomrape shoots. Pollen of the *H. praecox* plants were used to pollinate sterile heads of the GMS line P21. All F<sub>1</sub> plants showed emerged broomrape shoots, but they all showed a strongly reduced growth when compared to the susceptible control. F<sub>1</sub> plants were fertile and produced sufficient number of seeds for evaluation of the F<sub>2</sub> generation. Around one fourth of the F<sub>2</sub> sunflower plants showed normally developed broomrape shoots, whereas the rest of the population showed no emerged shoots or emerged shoots with a considerably reduced growth. It was concluded that the trait is controlled by partially dominant alleles at a single gene that we have named *Or<sub>pral</sub>*.

**Keywords:** broomrape, *Helianthus annuus*, *Helianthus praecox*, race G, posthaustorial resistance