

# Orobanche Resistance in Sunflower

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## **Abstract**

This report will present the current knowledge of Orobanche-resistance in sunflower from the breeder's view and from the biochemists' view. A major difficulty for the breeder is the fast development of new pathotypes of *Orobanche cumana*, which overcomes the resistance of newly developed sunflower lines. The basis of increasing aggressiveness of *Orobanche cumana* pathotypes is discussed. Nevertheless, there is still great potential for resistance breeding in the genus *Helianthus*, since very different resistance factors are already known or shall be elucidated. A survey is presented on known resistance factors, like low stimulant, mechanical barriers and how they develop, phytoalexins, *Orobanche* seed germination inhibitors, inhibition of the exoenzymes of the *Orobanche* radicle, in particular of polygalacturonase. In this context an interesting new approach may be found in the polygalacturonase-inhibitory proteins occurring in cell walls, which inhibit the invasion of pathogenic fungi. The need for molecular biological studies will be stressed. Interdisciplinary collaboration of the breeders with biochemists and molecular biologists may lead to more advanced breeding strategies. Key words: *Orobanche cumana* resistance in sunflower, resistance factors, phytoalexins, polygalacturonase inhibitors. Seed Conditioning of Orob