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**Induced resistance in crops against parasitic weeds**

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**Abstract**

The holoparasitic weed *Orobanche cumana* is a serious threat for sunflower (*Helianthus annuus*) cultivations in Eastern and Southern Europe as well as in Western Asia (Sauerborn, 1991). So far neither common control methods of the pathogen nor breeding for resistance in sunflower proved to be successful. In recent times there is evidence that the use of specific chemicals, like benzothiadiazole, may activate the resistances in plants based on the principle of systemic acquired resistance (SAR). This proved to be very efficient for several cereals and their bacterial or fungal pathogens but was never used with sunflower nor with parasitic flowering plants.

Treatment of sunflower seeds with 40ppm of the resistance inducing chemical benzo(1,2,3)thiadiazole-7-carbothioic acid S-methyl ester (BTH) for 36h completely prevented infection in root chambers. In pot trials using  $2,86 \times 10^{-4}$  g *Orobanche* seeds per g soil as inoculum total number of *O. cumana* was reduced by 84 and 95% in the 60ppm BTH treatment in the first and second trial, respectively (Sauerborn et al. 2001). Corresponding to the concentrations of BTH there was an increasing production of secondary metabolites in the sunflower roots. The functions of these compounds are defence related as well as antioxidative. The data show that the phenomenon of Induced Resistance is not restricted to viral, bacterial and fungal disease and demonstrate the great benefit of this protection strategy as an effective component of future plant production systems.

**REFERENCES:**

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Sauerborn, J., Buschmann, H., Ghiasvand Ghiasi K. and Kogel, K-H. (2001): Benzothiadiazole Activates Resistance in Sunflower (*Helianthus annuus*) to the Root-Parasitic Weed *Orobanche cumana* Phytopathology, in print.