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## The Efficacy of Resistance Inducing Agents for the Control of Sunflower Broomrape (*Orobanche cumana*)

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### Abstract

The resistance inducing product BION<sup>®</sup> (Syngenta) has been demonstrated in triggering defence reactions in crop plants against bacterial, fungal and viral pathogens but also against parasitic weeds of the genus *Orobanche*. In this study, pot experiments were conducted under greenhouse conditions to evaluate the efficacy of different concentrations of BION and other resistance inducing agents in order to control *Orobanche cumana* in sunflower.

The elicitors were applied on sunflower plants (cv. HA 89) grown in pots (13×13×13 cm) as soil drenching three times in intervals of 14 days. Evaluation of disease incidences as well as biochemical analysis were conducted as described elsewhere.

BION applied in a concentration of 10 mg a.i./pot resulted in a complete inhibition of infestation of sunflower roots with *Orobanche cumana*. However, it reduced as well the weight and size of the sunflower heads of about 70 % in contrast to non-diseased and untreated controls. BION in 2 and 5 mg a.i./pot controlled about 83.2 % and 86.9 % of total number of *O. cumana* at the first trial, respectively and in 2.5 mg a.i./pot controlled about 54.2 % at the second trial. In these concentrations no significant effect on sunflower head size was observed.

With the exception of the chemical dichloro-isonicotinic acid (DCINA) none of the other 14 resistance inducing agents had an effect on the infestation with *O. cumana*. DCINA applied in 3 and 10 mg/pot reduced the total number of *O. cumana* by 65.5 % and 100 %, respectively. However, the development of sunflower heads was completely inhibited.

The results show that the commercially available resistance inducing agent BION is able to reduce infection with *O. cumana* when applied as soil drench. Applied in low concentrations the compound even does not reduce the productivity of the crop. This control method can be significant part in integrated management of the parasitic weeds of the genus *Orobanche*.

**Keywords:** BION, induced resistance, *Helianthus annuus*, *Orobanche cumana*