

Reproductive potential of *Heterodera schachtii* on various weeds in fallow periods before sugar beet cultivation

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The sugar beet cyst nematode *Heterodera schachtii* is one of the most important pests in sugar beet production and causes severe yield losses. In Europe, typical prevention methods are the use of wide crop rotations, resistant cover crops, and resistant and tolerant cultivars of sugar beet. It is not fully understood to what extent weeds can support reproduction of *H. schachtii* in fallow periods prior to sugar beet. Objectives of this study were (A) to determine the weeds present in otherwise fallow fields during late summer, and (B) to analyze their reproductive potential. In these experiments over three years, the most important weeds were: white goose foot, black nightshade, annual mercury, chickweed, field penny-cress, ivy-leaved speedwell, red-root amaranth, field bindweed, red deadnettle, earth, smoke black bindweed, redshank, small nettle, corn chamomile, chamomile, field mustard and gallant soldier. For greenhouse experiments, additional weed species were selected primarily some that belong to the families of Brassicaceae, Amaranthaceae,

Caryophyllaceae, Asteraceae and Fabaceae. In the greenhouse experiments with susceptible and resistant sugar beet cultivars as controls, mustard, pepperweed, field penny-cress, cowherb, chickweed, tall mustard, shepherd's-purse and black mustard supported high levels of reproduction of *H. schachtii*, similar to those of susceptible standards. Red sorrel, hare's ear mustard, hairy tare, night-flowering catchfly, chamomile, yellow pea, corn cockle, black nightshade, cleavers and common vetch allowed low levels of cyst nematode reproduction comparable to the resistant standards. Additional field experimentation with a smaller range of weed species is ongoing to test how the results from the greenhouse relate to nematode reproduction under field conditions.

The overall aim of this project is to determine the relative reproductive potential of weeds to generate management recommendations for weed control before sugar beet cultivation in *H. schachtii*-infested fields.