

KOCH, HEINZ-JOSEF^{1*} and Melanie Hauer¹, ¹Institute of Sugar Beet Research, Holtenser Landstr. 77, 37079 Goettingen, Germany. **Beet cyst nematode control by trap crop cultivation and sugar beet variety choice in Northern Germany.**

An integrated strategy is required to control the sugar beet cyst nematode *Heterodera schachtii* which causes severe yield losses in sugar beet. This study aimed at evaluating the effect of trap crop cultivation (nematode resistant mustard, crop mixture (*Trifolium alexandrinum* L., *Lupinus angustifolius* L., *Pisum sativum* L., *Phacelia tanacetifolia* Benth., *Guizotia abyssinica* (L.F.) Cass., *Avena strigosa* Schreb., *Vicia sativa* L.), straw mulch as control), and sugar beet variety (susceptible, tolerant or resistant to *H. schachtii*) on population dynamics of *H. schachtii* and sugar yield. Field experiments were conducted in twelve environments (site x year) located in Northern Germany in 2012–2013, 2013–2014 and 2014–2015.

An insufficient trap crop dry matter yield (1.1–2.5 t ha⁻¹) mostly led to nonsignificant trap crop effects on the nematode population whereas in one environment a high dry matter yield of mustard (3.3 t ha⁻¹) resulted in a nematode reduction of 40%. However, there were no significant differences to the straw mulch control. In contrast, population dynamics of *H. schachtii* were strongly influenced by the sugar beet variety and the initial nematode population (PiSB). The highest reduction of 70% was achieved when a resistant sugar beet variety was grown, while the tolerant and susceptible varieties increased the nematode population in most environments. There was evidence that the sugar beet harvest date can highly influence population dynamics of *H. schachtii*. Sugar yield was influenced by variety and PiSB, but not by trap crop cultivation. Sugar yield decreased with increasing PiSB for all varieties. The resistant and tolerant varieties did not differ in sugar yield and response to *H. schachtii*, while the susceptible showed the steepest decline in sugar yield with increasing PiSB. The cultivation of the resistant sugar beet variety can be clearly suggested with respect to sugar yield and nematode control.