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### **INTEGRATED CONTROL OF BEET CYST NEMATODES BY CATCH CROP CULTIVATION AND SUGAR BEET VARIETY CHOICE**

#### **ABSTRACT**

Nematodes (*Heterodera schachtii*) are among the most severe pests in sugar beets in Northern Germany. 40 to 50% of all fields are estimated to be infested with *H. schachtii*. This estimation was confirmed by a monitoring program (12,000 soil samples analyzed). So far, the main measures to secure a high yield on nematode infested fields are growing (i) nematode resistant catch crops and (ii) nematode tolerant sugar beet varieties. Growing resistant sugar beet varieties is not yet very common due to the substantially lower yield of such varieties as derived from the German coordinated variety trials. The potential of each of the two measures (catch crop cultivation, sugar beet variety choice) separately and in combination for reducing the nematode infestation level has not been evaluated on field scale so far. Thus, in a series of field trials three variants (without catch crop, nematode resistant white mustard, catch crop mixture) were grown after cereal pre-crop followed by the cultivation of a susceptible, tolerant and resistant sugar beet variety each under different *H. schachtii* infestation levels. Nematode infestation was investigated before and after catch crop and sugar beet cultivation, respectively, and sugar beet yield was measured. Catch crop mixtures came up recently in Germany as growers may use them to fulfill the EU greening obligations.

The main results of the field trials were:

- The higher the nematode infestation the higher the yield loss was. In the susceptible variety yield loss was higher than in the tolerant and the resistant variety.
- Differently from the results of the German coordinated variety trials the resistant sugar beet variety performed as good as the tolerant variety!
- If the catch crop was not established well (e. g. sown late) the effect of both reducing nematodes and increasing sugar yield was very low or even not existing.
- Recommendations derived from these results are:
- Growers must know whether their fields are nematode infested or not, and how high the infestation level is.
- Resistant catch crops must be sown as early as possible in order to establish a good stand securing high nematode reduction and providing a positive yield effect in the subsequent sugar beet crop.
- In case of having a high nematode infestation level growing a resistant sugar beet variety is a suitable alternative to the tolerant varieties existing.
- The German coordinated variety trials (3-row-plots) do not properly establish the yield of varieties with decreased canopy growth such as the nematode resistant variety.