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YIELD DEVELOPMENT IN ASSESSMENT TRIALS WITH NEMATODE TOLERANT VARIETIES

ABSTRACT

Value for Cultivation and Use (VCU) trials are carried out annually by the Austrian Agency for Health and Food Safety (AGES), Vienna. One of the main targets of these investigations is to characterize the incoming material on its tolerance against *Cercospora*, nematodes and *Rhizomania*. The occurrence of nematodes in Eastern Austria is described for well-known areas. Breeding for nematode tolerance achieved progress in root and sugar yield. Better results with new sugar beet genotypes as well as differentiation in the appearance of *Rhizomania* symptoms signaled changes, either in the virus concentration itself, or in its aggressiveness.

Results of the official assessment trials are summarized in a report, including the last three test years (2012-2015). An additional variety screening carried out in 2015 by AGRANA Research & Innovation Center, Tulln, focused on variety performance on heavily *Rhizomania* infested sites. Special attention was paid to the interaction between tolerance against *Rhizomania* and nematodes.

Compared to a standard variety, one genotype with extended tolerance against *Rhizomania* and two nematode tolerant cultivars were analyzed. Without pest and disease pressure, these genotypes exceeded the standard in sugar yield by 2% to 3%. Nematode infested sites showed an advantage for nematode tolerant cultivars of approximately 15 to 20%. Increase in sugar yield in a similar range can be achieved by extended tolerance against *Rhizomania* on heavily infested sites, free of nematodes. This yield progress allowed to close up to a usual yield level or even to exceed it. Severe occurrence of nematodes in heavily *Rhizomania* infested sites limited the performance of varieties only tolerant against one of the restricting factors, although sugar yield exceeded the standard by about 20%. Only one of the genotypes allowed to overcome the restrictions of both limiting factors, increasing yield by nearly 40%.
