

***Diabrotica v. virgifera* management using a genetically improved strain of *Heterorhabditis bacteriophora*.**

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The Western Corn Rootworm (*Diabrotica virgifera virgifera*) is one of the most damaging pests of maize. Since the ban of neonicotinoid seed treatments most European farmers rely on the application of less effective granular soil insecticides. As a sustainable non-toxic alternative, the entomopathogenic nematode, *Heterorhabditis bacteriophora*, has been tested for the last 12 years in field trials with plants artificially infested with insect eggs to ensure an even population density. The nematodes were applied into the furrow with 200 l ha⁻¹ together with the maize seeds, using special injectors mounted on the single-seed drilling machine. At this time of application *Diabrotica* eggs are still in diapause. Nematodes survived and remained virulent until larvae hatched at approximately 4-6 weeks later. With this precise application method, nematodes achieved a mean reduction of the pest population of 65% (ranging from 33-82%) and in 11 of 16 trails outperformed results obtained with the chemical standard. Reduction of the population will in the long-term reduce the problems with this invasive pest. Nevertheless, entomopathogenic nematodes are still more expensive than chemical insecticides and therefore, we aimed at a reduction of the application density by genetically improving persistence and virulence of *H. bacteriophora*. Results of field trials indicate a better performance of the improved strain, justifying a reduction of the application density from 2 to 1 billion ha⁻¹ and bringing application costs into the range of synthetic chemicals.