

Optimization of application techniques and dosages of *Heterorhabditis bacteriophora* for biologically controlling the larvae of the western corn rootworm

*Optimierung von Ausbringungstechnik und Konzentration von *Heterorhabditis bacteriophora* zur Bekämpfung der Larven des Westlichen Maiswurzelbohrers*

Peter Knuth¹ and Stefan Toepfer^{2,*}

¹Landwirtschaftliches Technologiezentrum Augustenberg, Stuttgart, Germany

²CABI, c/o Plant Protection Directorate, Hodmezovasarhely, Hungary

*Corresponding author, stoepfer@gmx.net

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In many European countries, the chemical control of the western corn rootworm is questioned. Seed coatings with neonicotinoids were reported to cause significant non-target effects on bees which led to a ban of such products in many European regions. Also the use of granular Tefluthrin-based soil insecticides is, due to their requested ban by the European Commission, only in few European regions still allowed. Entomopathogenic nematodes of the species *Heterorhabditis bacteriophora* are known to well-parasitize the rootworm larvae and can therefore reduce the damage of this pest to the maize roots.

Our study aimed to clarify which application techniques and which nematode concentrations are most feasible in terms of availability, practicability and costs. In 2011, field trials were conducted in southern Hungary to compare the application of nematodes via fine granules, fluid stream sprays, and seed coatings, and this versus standard pesticides. All three application techniques appeared to be technically possible. The fluid application is however most advanced in terms of the related state of the art knowledge and technical development. In 2012, five nematode concentrations were applied using a fluid stream spray of nematodes into soil at maize sowing in Hungary. Results revealed a good efficacy of the applied medium and high concentrations of nematodes at reducing western corn rootworm, and efficacies of less extent at reducing root damage. It is advised to repeat these experiments as dose 'efficacy trials' need to be conducted at different locations under different environmental conditions.

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