Suppression of *Globodera pallida* in monoculture cropping of potato

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Potato cyst nematodes*, Globodera pallida* and *G. rostochiensis*, can cause serious yield losses in potato. Plant-parasitic nematodes inhabit the soil matrix that supports microbial communities. In some soils, microbes confer soil suppressiveness. In these, plant-parasitic nematodes cannot develop to high population densities, despite the presence of a susceptible host and favorable environmental conditions. Specific suppressiveness against soil-borne diseases is transferable with small portions of soil to non-suppressive soils. Potentially, suppressive soils are sources of highly effective biological control organisms. For example in previously published studies, *Dactylella oviparasitica* isolated from suppressive soil in California reduced population densities of the sugarbeet cyst nematode (*Heterodera schachtii*) as well as root-knot nematodes (*Meloidogyne* spp.). The objectives of this study were to determine whether a potato monoculture soil had become specifically suppressive to *G. pallida*, and if *D. oviparasitica* can suppress the population density of *Globodera* spp. In the first experiment, soil taken from microplots infested with *Globodera pallida*, and untreated or treated with *D. oviparasitica*, were tested for specific soil suppressiveness against *G. pallida*. In two consecutive cropping cycles of potato in these plots, nematode eggs had increased in 2009 but decreased in 2010. In greenhouse pot tests, population density development of added *G. pallida* was compared after one potato crop in sandy soil amended with 10% untreated or pasteurized portions of soil from these microplots. In contrast to the hypothesis, population densities did not decline in the untreated soil containing treatment. In a second greenhouse experiment with potato, suppressive potential of *D. oviparasitica* to different pathotypes of PCN (*G. pallida* Pa2 and Pa3, and *G. rostochiensis* Ro 1 and Ro2) was evaluated. Soil amendment with *D. oviparasitica* did not impact the number of cysts, eggs and juvenile of these nematode species. Further studies to elucidate the soil suppressiveness to nematodes are ongoing.