

“Nematode-based off-season biocontrol tool for *Ceratitis capitata* (Medfly)”

Short description

Entomopathogenic nematodes are parasites that forage and can parasitize immature insects predominantly in the soil and in other substrates e.g., wood. This novel tool to control the Mediterranean fruit fly (medfly), *Ceratitis capitata*, developed by the FF-IPM project, consists in the Off-Season application of commercially available strains of entomopathogenic nematodes (EPN) as a soil drench. While On-Season (during the fruit ripening period) application of EPN would not be economically feasible, because multiple EPN applications per year at high doses and dispersed in large areas would be required to control high populations of medfly with large numbers of larvae in the soil over a long period, the Off-Season approach requires only one application with low dose, targeting the overwintering population and is therefore economically viable.

The nematodes can stay active in the soil for up to 4 weeks, killing mature larvae just before they pupate, leading to a 50% suppression of the adult medflies emerging from the soil. Moreover, the nematodes can move and kill medfly larvae that develop inside oranges and apples that rest on the soil surface. The FF-IPM project demonstrated that the most effective EPN when used Off-Season for biocontrol of soil inhabiting stages (larvae, pupae) of *C. capitata* were *Steinernema feltiae*. Other tested EPN species (strains of *Steinernema carpocaspae* and *Heterorhabditis bacteriophora*) were less effective.

The nematodes can easily be applied by preparing the formulate in a water suspension and drenching it in the soil, beneath the canopy of the trees. For obtaining maximum efficacy it is recommended that the application of the suspension should take place in a well irrigated orchard and moisturized soil.