

An experimental autoinoculation device to control an invasive Asiatic pest, *Drosophila suzukii*

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Unlike most drosophilids, which typically infest overripe or decaying fruit, it has been observed that *Drosophila suzukii* (Matsumura) also oviposits eggs into the skin of immature and/or ripening fruit through the use of a serrated ovipositor. *Drosophila suzukii* is an important pest of fruit such as strawberry, cherry, blackberry, blueberry, peach, plum, nectarines and grapes. Spotted wing *D. suzukii* was first found in Spain in 2008. Managing this pest is a challenge, and new methods of control are being developed. In our research, the transmission potential of EAMa 01/58-Su *Metarhizium brunneum* strain was evaluated against *D. suzukii* adults in experiment cages, using an experimental autoinoculation device which consists in a plastic mineral water bottle with fermented food as lure, and a tissue with the fungal propagules. *D. suzukii* adults entered and exited the autoinoculation device for the 48 h of exposure and became infected with the fungus with 100.0% mortality followed by mycosis. These results show the potential of the lure and infect as a strategic option for the control of *D. suzukii* using EAMa 01/58-Su strain, with the persistence of the inoculum in the device and the time course evolution of the adult fly infection being actually investigated.

Use of a commercial *Metarhizium anisopliae* s.l. formulation to control *Rhipicephalus microplus* ticks in pen study

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The present study evaluated the effect of the commercial product Metarril[®] SP Organic of *Metarhizium anisopliae* s.l. plus 10% mineral oil to control *Rhipicephalus microplus* ticks in a pen study. Three groups were formed with six animals each: the first group was exposed to Metarril[®] plus 10% mineral oil; the second group was exposed to sterile distilled water plus 10% mineral oil (oil control group) and the third group received no treatment (control group). Fungal formulation contained 1×10^8 conidia mL⁻¹. Each animal was sprinkled with 3L of formulation. Fallen ticks were counted daily and a sample of 20 engorged females per group was incubated for assessment of biological parameters. Throughout the study period, Metarril[®] oil-based formulation showed an efficiency ranging from 19.20% to 67.39% in comparison with the control group; and from 8.18% to 61.38% in comparison with the oil control group. Average efficiency of Metarril[®] oil-based formulation was 47.74% and 40.89% in comparison with control and oil control groups, respectively. Changes in the biological parameters of *R. microplus* females were observed in the first three days after treatment. There was statistical significant reduction in females' egg mass weight, larval hatching percent, nutritional index and egg production index. We concluded that Metarril[®] SP Organic plus 10% mineral oil was efficient against *R. microplus* ticks in

pen studies. Further *in vivo* studies are required in order to increase efficiency of this product aiming establish a protocol for the use of Metarril[®] in field conditions against the cattle tick.

Two Colombian entomopathogenic fungi are highly efficient on *Cerotoma tingomariana*

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The Chrysomelids (Coleoptera: Chrysomelidae) are a limiting soybean pest in Colombia. These insects can affect seeds, nodules, leaves and roots, reducing the yield crop. An amount of 19 species has been registered, but *Cerotoma tingomariana* is the most important, due to its high frequency and distribution. This insect is controlled with insecticides (I - II category) and some of them are forbid in USA or Europe. The aim of this work was to select an efficient entomopathogenic fungus on *C. tingomariana*. Seven isolates of *Beauveria bassiana* (Bv) and six isolates of *Metarhizium anisopliae* (Mt) were biological testing on laboratory. In addition, this isolates were tested on different temperatures (5°C, 15°C, 25°C, 30°C and 35°C), pH values (3, 5, 7, 9) and tolerance to UVB radiation (302 nm) by measuring germination (%), radial growth and Colony Formate Unit (CFU). Mt isolates showed efficiency under 50%. Isolates Bv060 and Bv003 showed an efficiency of 100%. In the UVB radiation test, Bv060 reduced the conidia viability between 75% and 80%, and Bv003 reduced the viability between 65% and 66%. At 5 and 9 pH value, the two isolates (Bv003 and Bv060) showed germination higher than 90% and the faster rate of radial growth. Bv003 showed the best growth at 15°C and 25°C and Bv060 at 25°C and 30°C. These results suggested that Bv060 and Bv003 could be use as an active principle for a biopesticide on *C. tingomariana* control in soybean.

Biological control of pollen beetles with the entomopathogenic fungus *Beauveria bassiana*

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Pollen beetles are a main pest in oilseed rape (OSR) throughout Europe, able to cause substantial yield loss. The main damage is caused by adult beetles feeding on pollen in spring during bud stage of inflorescences. There is currently no possibility to control pollen beetles in organic OSR cultivation. In addition, increasing resistance of pollen beetles to commonly used insecticides hampers conventional OSR production and further emphasizes the need for alternative control possibilities.

The application of entomopathogenic fungi (EPF) is a promising tool in biological control of pollen beetles (Hokkanen 2008). Several Swiss isolates of the EPF *Beauveria bassiana* showed promising effects in laboratory experiments, causing up to 80% mortality seven days after application (Kuske 2011). Field treatments showed similar results regarding beetle mortality, but did not result in significantly increased yield so far. To improve their efficacy, synergies of EPF and

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