

## ABSTRACT

Microbial Control of the Southern Yellow Thrips, *Thrips palmi* Karny, and the Sweet Potato Whitefly, *Bemisia tabaci* Gennadius, with entomopathogenic fungi

Dorothy Dianne Peterkin

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The Sweet Potato whitefly *Bemisia tabaci* Gennadius, (Homoptera: Aleyrodidae) and the Southern Yellow thrips *Thrips palmi* Karny (Thysanoptera: Thripidae), cause severe damage to a wide variety of important commercial crops in the Caribbean. The potential of entomopathogenic fungi to control these pests was explored. Laboratory rearing systems and novel caging systems were developed for screening entomopathogenic fungi against *T. palmi* and *B. tabaci*.

Over 95% of spores of *Verticillium lecanii*, *Paecilomyces fumosoroseus*, *Beauveria bassiana* and *Aschersonia aleyrodis* germinated after 12-16 hours incubation. Germination was accelerated in young conidia of *V. lecanii* and *P. fumosoroseus* but not those of *B. bassiana*. Older conidia of *P. fumosoroseus* had a more complex arrangement of microrodlets and were more hydrophobic than young spores. When produced on rice conidia of *P. fumosoroseus* germinated faster than those produced on Saboraud Dextrose Agar. Accelerated conidial germination was demonstrated, revealing new perspectives of how to artificially increase the efficiency of pathogens.

*A. aleyrodes*, *B. bassiana*, *Hirsutella* sp. nov., *P. fumosoroseus* and *V. lecanii* were evaluated under laboratory conditions. Adults of *T. palmi* and 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> instar *B. tabaci* were susceptible to disease. 1<sup>st</sup> instar nymphs of both species were resistant. An isolate of *P. fumosoroseus* (11-91P) showed the best potential for the control of both species, over a wider temperature range and was easily mass produced in the laboratory.

Oil and water based formulations of *P. fumosoroseus* suppressed populations of *T. palmi* and *B. tabaci* more effectively than a chemical pesticide (Danitol) in melongene fields and allowed the multiplication of predators. An integrated management strategy offers the best potential for environmentally feasible, economic control of these pests.

**Keywords:** Dorothy Peterkin; *Thrips palmi*; *Bemisia tabaci*; entomopathogenic fungi; *Paecilomyces fumosoroseus*; microbial control.