

# The Combinations of Entomopathogenic Nematodes and Entomopathogenic Fungus for Control Melon Fruit Fly Zeugodacus cucurbitae (Coquillett) (Diptera: Tephritidae) in Thailand

Jureeporn Sukhatiphum<sup>1,2</sup>, Prakaijan Nimkingrat<sup>2</sup> and Narit Thaochan<sup>1\*</sup>

<sup>1</sup>Agricultural and Management (Pest Management) Divisioin, Faculty of Natural Resources, Prince of Songkla University, Thailand <sup>2</sup>Department of Entomology and Plant Pathology, Faculty of Agriculture, Khon Kaen University, Thailand

### Introduction

The melon fruit fly, Zeugodacus cucurbitae, is a major pest of cucurbitaceous vegetables i.e. cucumber, pumpkin, muskmelon

# Results



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and snake gourd.

- Insecticides cannot reach and kill the last instar larvae and pupae of this pest that live underground.
- Entomopathogenic nematodes and entomopathogenic fungus are natural enemies that can kill this pest in nature.
- The combined use of these microorganisms shows the high potential for controlling this pest.

## **Materials & Methods**



Distilled water (control) 1,000 DJs/host 5,000 DJs/host 10,000 DJs/host 15,000 DJs/host 20,000 DJs/host 25,000 DJs/host

**Entomopathogenic nematodes (EPNs) 4 species:** 

1. Steinernema carpocapsae

**Fig. 2.** Percentage mortality of pupae of *Z. cucurbitae* infected with different species and concentrations of entomopathogenic nematodes (EPNs).



#### Fig. 3. Percentage mortality of last instar larvae and pupae of



Entomopathogenic fungus (EPF) Metarhizium anisopliae isolate PSUM02

## Results



*Z. cucurbitae* infected with different concentrations of entomopathogenic fungus, *Metarhizium anisopliae* PSUM04 (EPF)



**Fig. 4.** Percentage mortality of last instar larvae and pupae of *Z. cucurbitae* infected with single and combinations of EPNs and EPF.

# Conclusions



**Fig. 1.** Percentage mortality of last instar larvae of *Z. cucurbitae* infected with different species and concentrations of entomopathogenic nematodes (EPNs).

## Acknowledgements

- S. carpocapsae at 25,000 DJs/host presented the highest mortality of last instar larvae and pupae at 97.50% and 95.00%.
  M. anisopliae PSUM02 at 1×10<sup>8</sup> spores/ml produced mortality in both the last instar larvae and pupae at rates of 61.25% and 59.38%.
- The combined efforts of EPNs and EPF terminated both the last instar larvae and pupae up to 100.00 and 85.00% faster than single use.



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