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Abstract

- Weeds- wild, unwanted plants-as insectary plants to support beneficial insects is a relatively unexplored topic of agricultural research
- Weeds use in tropical fruit production reliant on pollination could increase biodiversity of beneficial insects and fruit yield of mango trees in South Florida



Objective:

To determine effects of weeds as refuge resource plants to enhance the abundance and diversity of beneficial insect species, which will benefit **Mango** (*Mangifera indica*) crop production in South Florida

Research questions:

1. How do the number and diversity of insects differ on mango in the presence or absence of weeds?
2. What is the impact on mango **fruit yield** in the presence of weeds?

Hypotheses:

1. Insect abundance and diversity will be greater in the presence of weeds than when weeds are eliminated
2. Mango trees will produce more and better fruit in the presence of weeds

Preliminary Results

- More insects on weeds than mango
- High numbers of parasitic wasps and honey-bees feeding on *Bidens alba*, the most prevalent weed
- Most common insect on mango- *Dolichopodidae* (predatory flies), and *Tephritidae* (fruit fly)

Mango Inflorescence



Calliphoridae, Blow Fly



Bidens alba, "Spanish needle"



Copestylum sp. Flower Flies



Conclusion

- Weeds are **free**, no \$\$\$ required!
- Farmers save time, avoid chemical use
- **Weeds:**
 - Provide resources for good insects
 - Increase the diversity of mango pollinators
 - Attract/ support pollinators between mango blooms
 - Support parasitoids/ predators of mango pests



Fruit fly parasitic wasp, *Diachasma longicauda*



Tephritidae, fruit fly



Liohippelates, eye-gnat

Introduction

- Weeds provide alternative floral and prey resources to pollinators, predators, and parasitoids → sustain beneficial insects within a farm¹
- Weeds increase biodiversity across monocultures → increased diversity of natural enemy insects available to prey on crop pests/ native pollinators
- Lack of weeds- diminishes beneficial insects- loss of floral/ prey resources²
- Weeds sustain **pollinators**- ensure their presence when the crop blooms; important in crops that require pollination by insects- mango



Apis mellifera, Honey- Bee in mango flower



Dolichopodidae, predatory flies



Weed treatment front, no-weed back

Methods

- Study Site: Lyons mango farm Homestead, Florida
- All trees *M. indica*, var. "Keitt"
- Weed treatment: weeds between trees
- No-weed treatment: weeds removed around trees
- 2x weekly observations: record/collect insects on weeds and mangos
- Specimens collected if pollinating/feeding- insect aspirator, bag, or net; preserved for ID
- Examine pollen on insect bodies
- Weed specimens collected and pressed for ID
- Nymphs/ larval specimens collected and reared in individual containers → assess if parasitized
- One year, end of one production season to the next
- Fruit yield per tree quantified

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