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RESEARCH OBJECTIVES AND PRELIMINARY FINDINGS

Cesar Rodriguez-Saona

Blueberry/Cranberry Entomologist

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Research Objectives

1. Identify improved attractants for SWD.
2. Develop behaviorally-based control approaches.
3. Evaluate new insecticides.

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2013 Priorities

Rank	SWD Research Priorities	Rating
1	Know what to do - recommendations for next season	89.84
2	Insecticide application technology	85.04
3	Dispersal and migration / population genetics	84.39
4	Behavioral control (repellants, attract & kill, mass trapping, push/pull, trap crops)	84.23
5	Optimize use of insecticides (# applications, etc.)	83.45
6	New chemicals	81.76
7	Life cycle and ecology	79.88
8	Insecticide residue degradation and modeling (weathering properties, rainfastness)	79.59
9	Identification of host-plant volatiles	78.79
10	Overwintering biology	78.63

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Bait Comparison

Methods

5 blueberry sites

6 treatments

- Kombucha
- Trécé lure
- Suzukii bait
- Cowles bait
- Kerr Raspberry Essence
- Apple Cider Vinegar

Traps check, lures changed weekly

Male and female SWD and non SWD Drosophilids counted

Coordinated by Richard Cowles

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Bait Comparison

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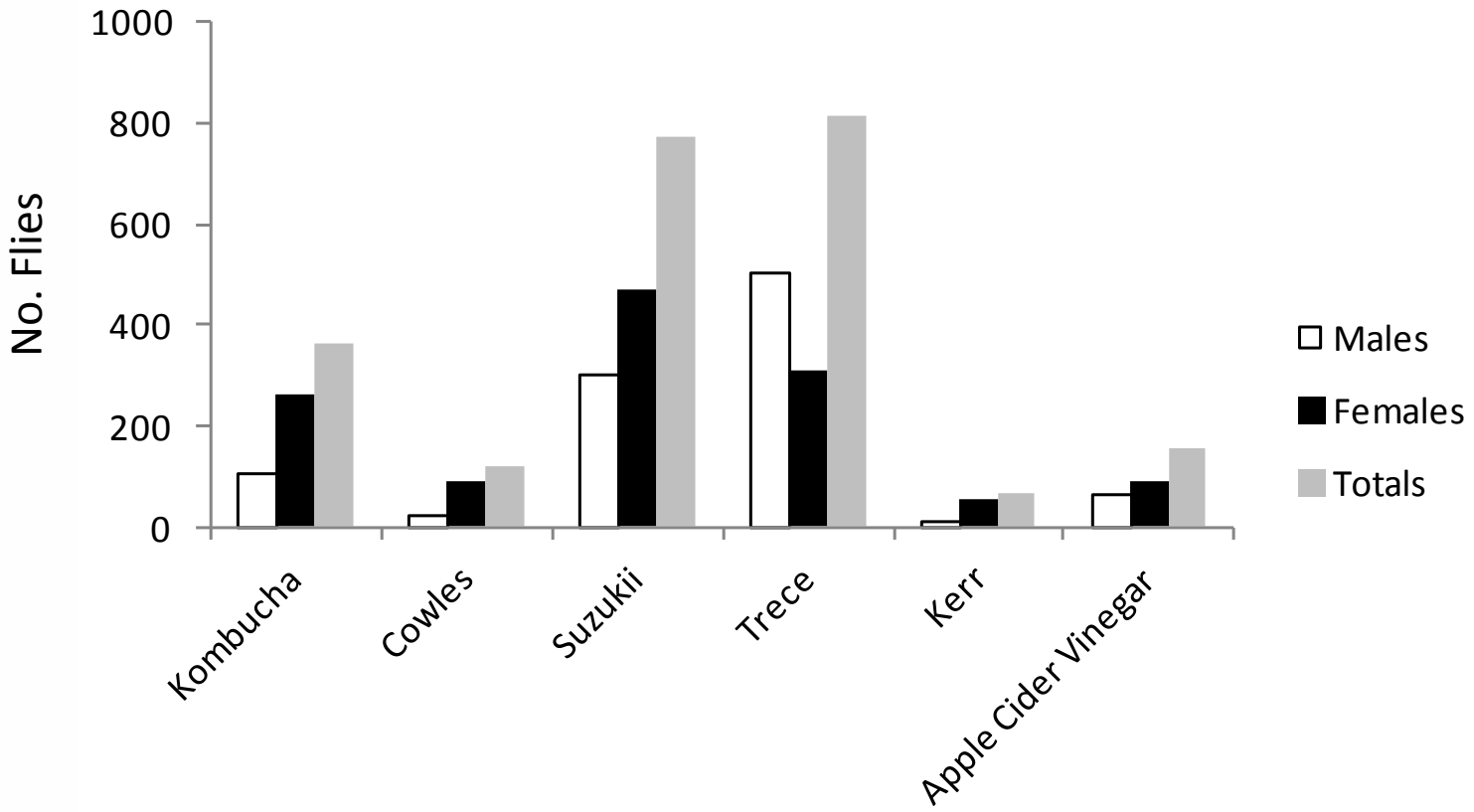
Bait Comparison



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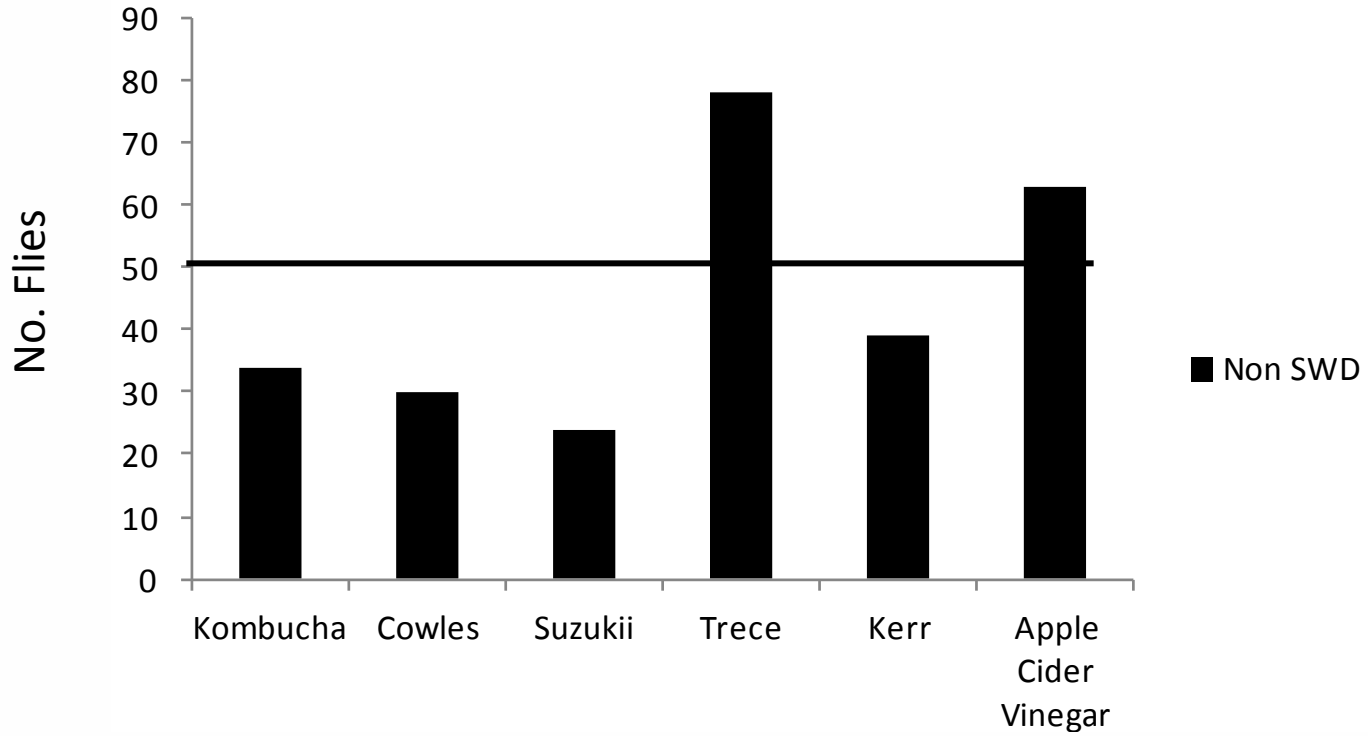
Bait Comparison



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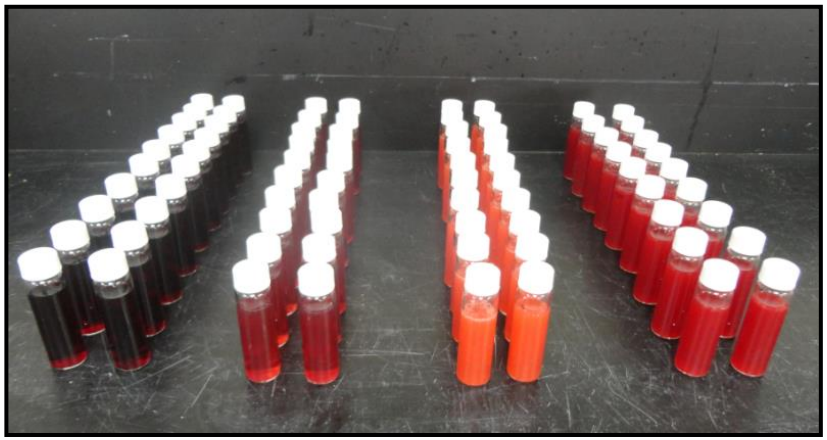
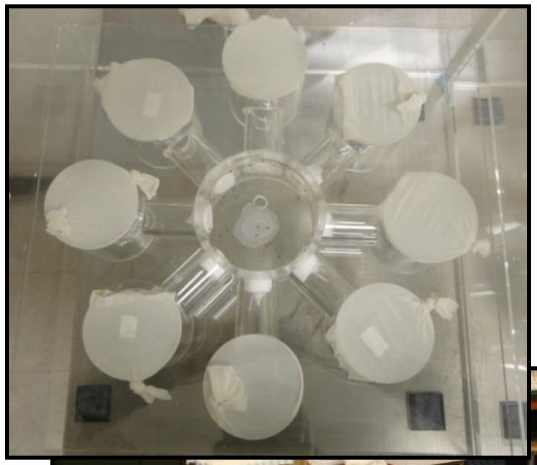
Fruit Volatiles



Extract Fruit Juices



Test Extract Attractiveness

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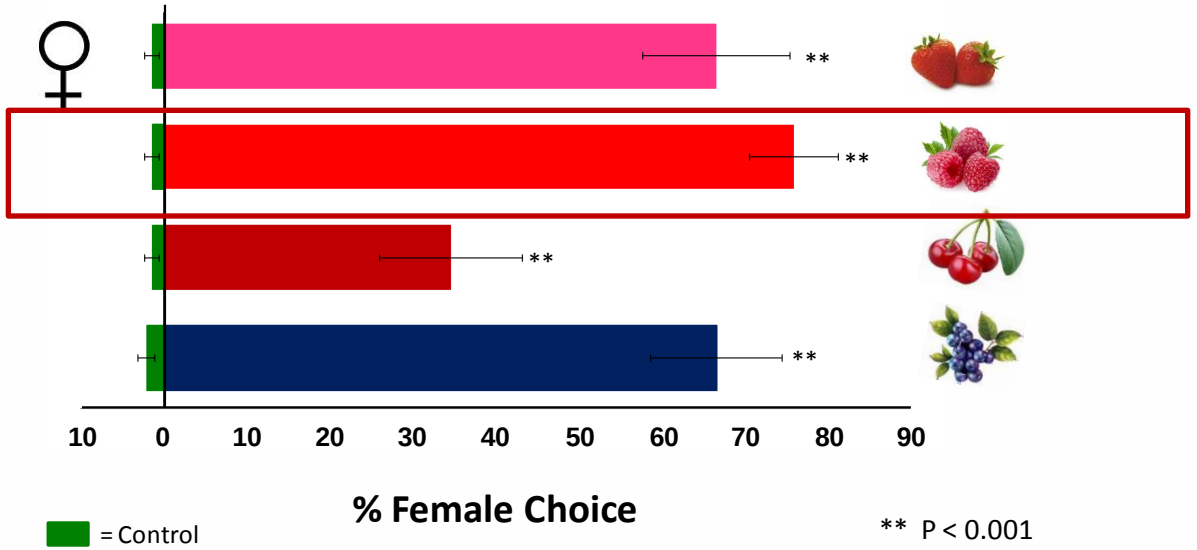
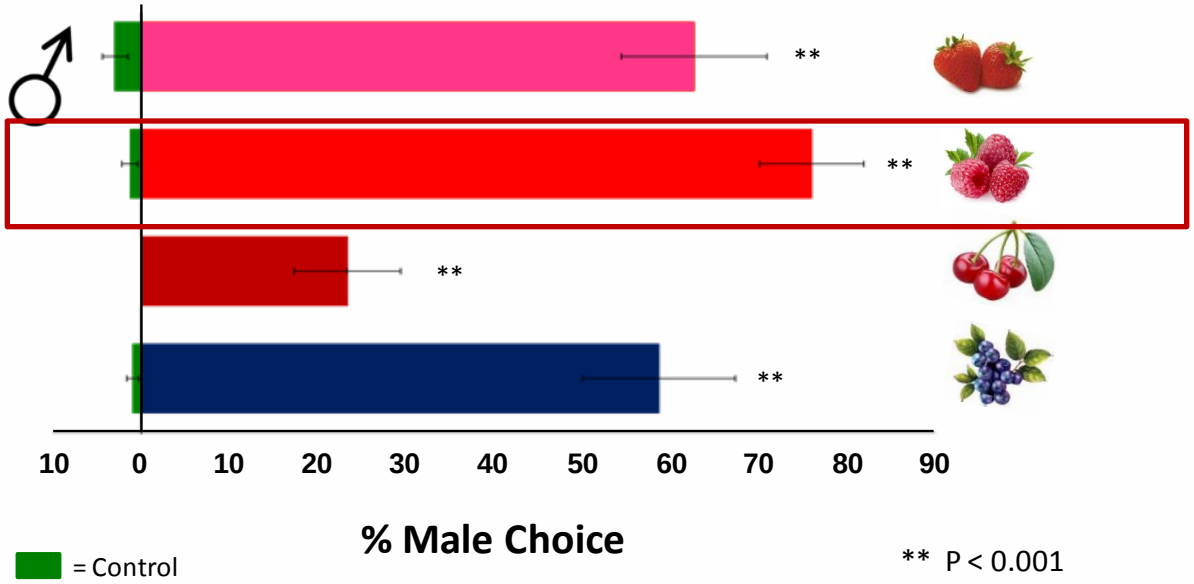
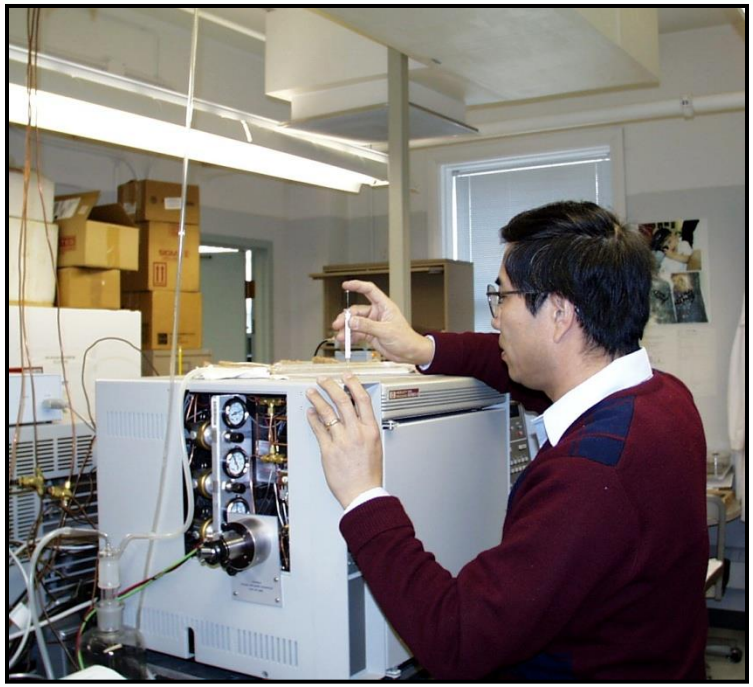
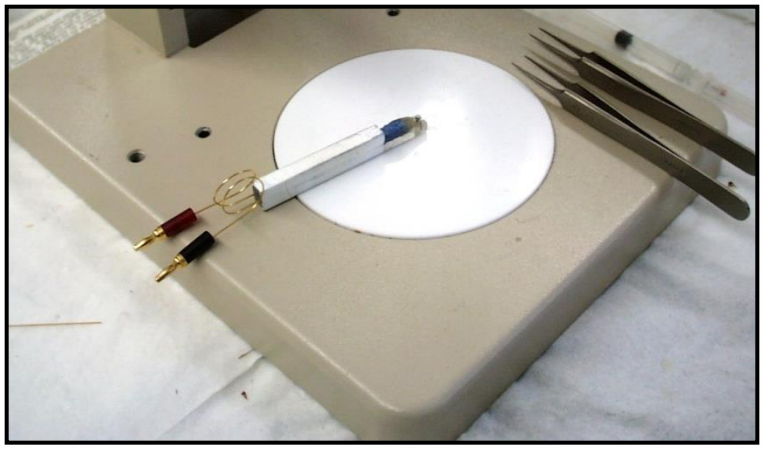
Fruit Extract vs Control



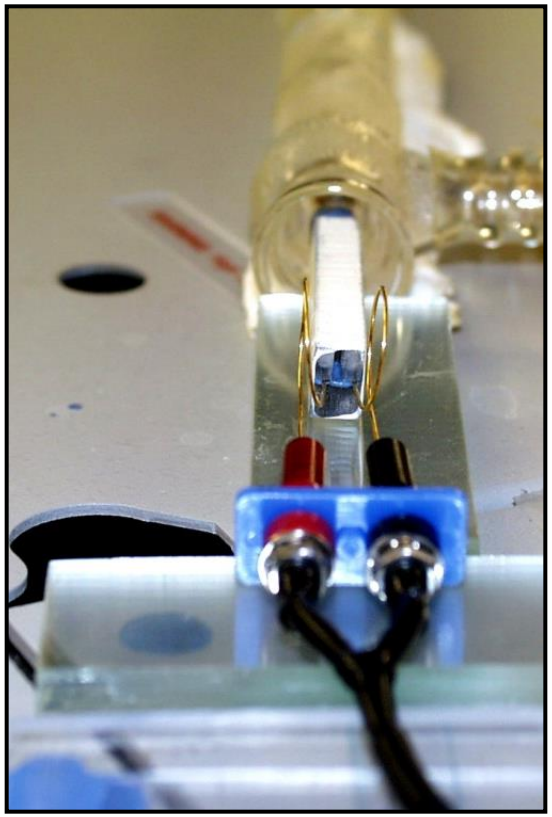


GC-EAD





- **GC-EAD responses to fruit Volatiles**



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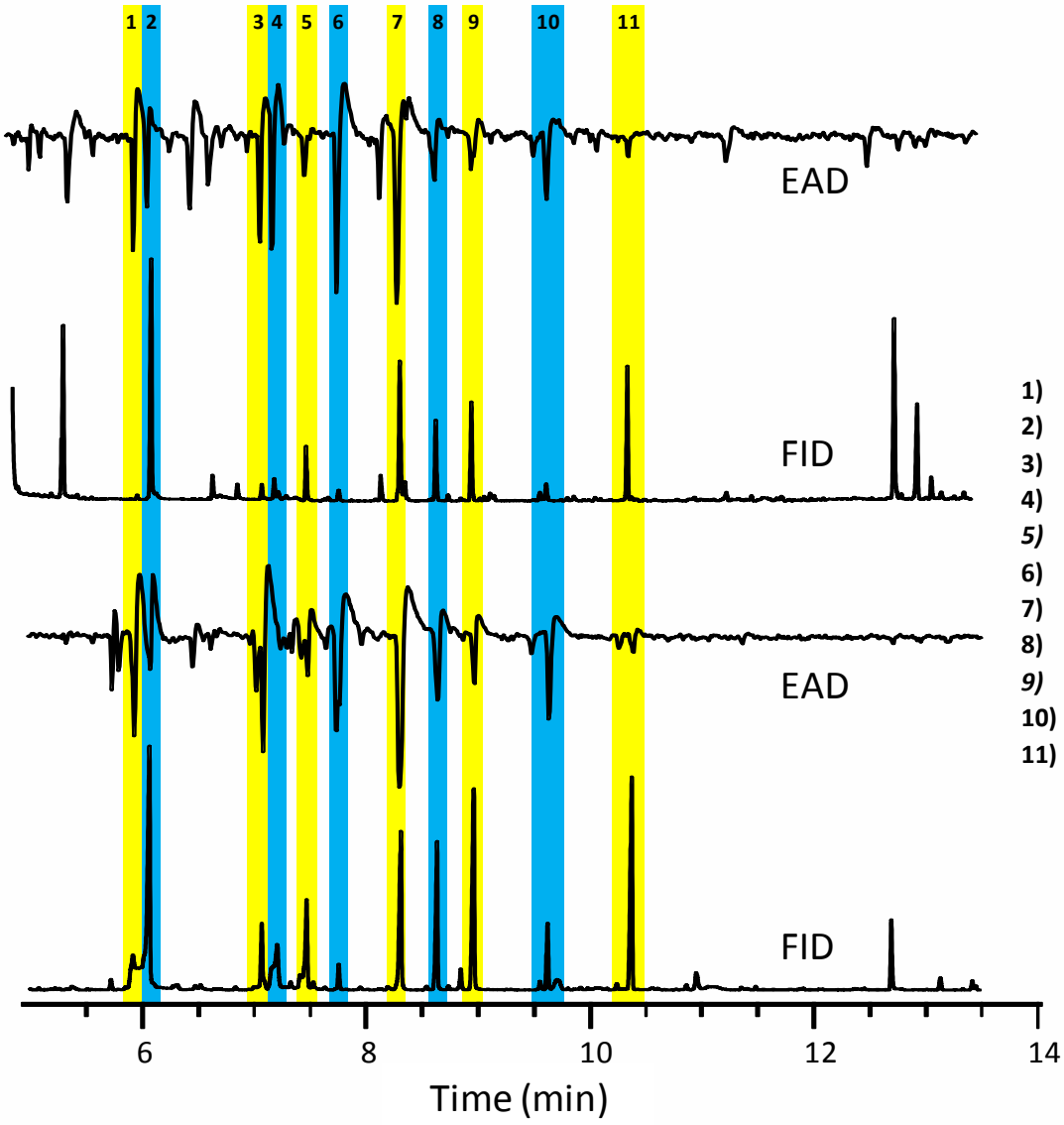
GC-EAD Results

Volatile extract of raspberry

Synthetic chemical blend



1) Butyl acetate
2) Hexanal
3) 2-heptanone
4) 3-methyl-1-butanol
5) *Trans*-2-hexenal
6) 3-methyl-2-butenyl acetate
7) 2-heptanol
8) Hexanol
9) *Cis*-3-hexenol
10) 6-methyl-5-hepten-2-ol
11) Linalool

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Future Directions

- Further behavioral studies with individual compounds and blends.
- Evaluate the blend(s) under field conditions.
- Evaluate fruit blends in combination with fermentation products.
- Develop attract&kill approaches.

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Attract-and-Kill Approach

Methods

2 treatments

- Attract-and-kill
- Control

3 replicates per treatment

0.5 acre plots

128 traps per acre

Red solo cups

Bait: ACV; Suzukii

Kill: Boric acid (+ sucrose)

Coordinated by Richard Cowles

Other Experiments

- Exirel + Sugar + Monterey bait.
- Exirel + Sugar + Suzukii bait.
- SPLAT attract-and-kill

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Semi-Field Experiment

- Insecticides applied to single bushes using an R&D backpack sprayer.

- 9 insecticides + control.

- Residue efficacy tested:
  1 & 3 days after treatment.

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Semi-Field Experiment

Insecticides Evaluated:
Dibrom - organophosphate
Malathion – OP
Imidan – OP
Ecozin – Botanical Insecticide
Danitol – pyrethroid
Exirel – Diamide
IKI-3106 – Diamide
Delegate – spinosyn
Apta - Mitochondrial Complex I Electron Transport Inhibitors

Semi-Field Experiment

- Branch with approx 20 berries in 32oz deli container.
- Checked adult mortality at 24 & 72 hrs.
- Checked larval numbers with salt extraction method after 10 d.

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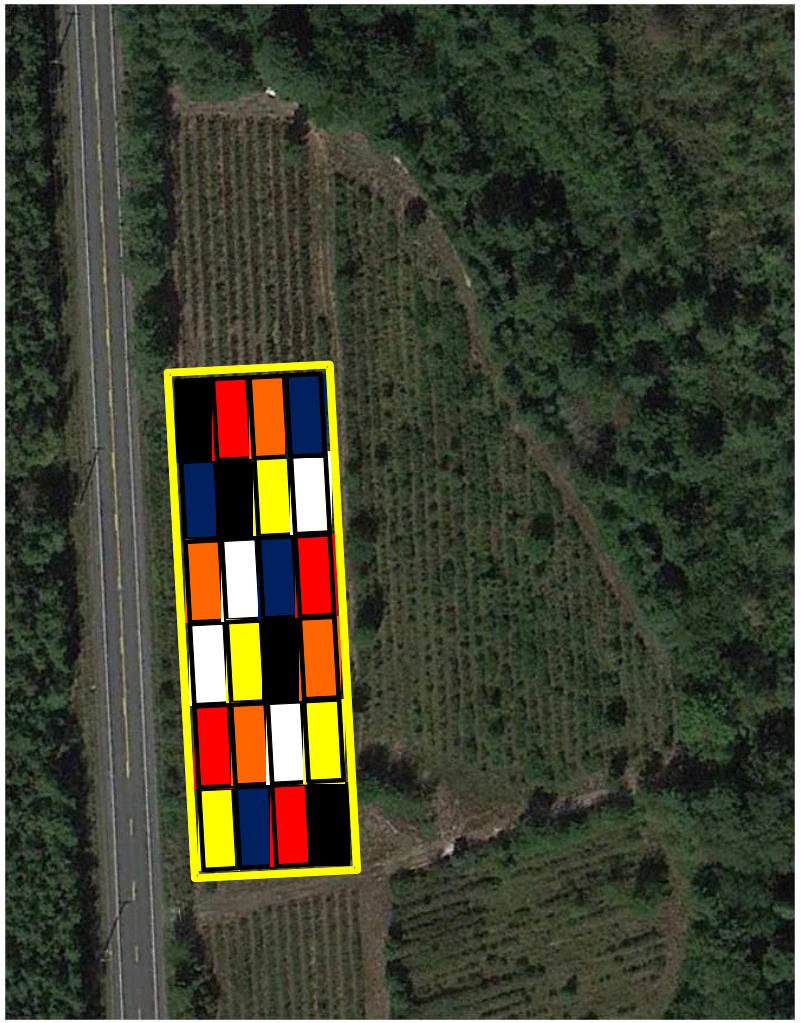
Field Experiment, 2012

- Unmanaged blueberries
  Plots: 2 rows by 50 feet

- 3 Treatments + Control

  Apta
  Danitol
  Imidan



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Acknowledgements

- USDA NE-IPM Grants
- Specialty Crop Block Grant
- New Jersey Blueberry Council
- Industry
- 2 technicians (Rob & Vera)
- Summer students