Spotted Wing Drosophila
(*Drosophila suzukii*): A new pest of blueberries in New Jersey
On-going projects

• Test the efficacy of different classes of insecticides.
• Test new attractants and trapping systems.
• Study the spatial distribution of SWD in blueberry farms.
• Sanitation as a cultural method to reduce SWD.
Importance of Sanitation

- Fruit on ground can be a source of SWD.

- Sanitation can be an important cultural control for SWD management.

- Used in other crops to control grape flea beetle, plum curculio, tobacco hornworm, etc.

- Disking recommended for mummy berry and gall midge control in blueberries.
Importance of Sanitation

• **When** blueberry fruit on ground become infested by SWD is unknown.

• **What to do** once blueberries on the ground are infested is also unknown.
Research objectives

• Determine seasonal preference of SWD for berries on the bushes or berries on the ground.

• Determine differences in preference between blueberry cultivars.

• Investigate whether burying the berries prevents SWD adult emergence.
Does SWD prefer berries on the bushes or berries on the ground?
Methods
Oviposition preference on Bluecrop

Mean ± SE D. suzukii emergence

Weeks of sample collection

On bush
On ground

Week 1 (Jul 10)
Week 2 (Jul 17)
Week 3 (Jul 24)
Week 4 (Jul 31)
Week 5 (Aug 7)
Week 6 (Aug 14)
Week 7 (Aug 21)
Week 8 (Aug 28)
Oviposition preference on Elliott

Weeks of sample collection

Mean ± SE D. suzukii emergence

- On bush
- On ground
Conclusions

• There is a clear preference for berries on the bushes over berries on the ground.

• However, in Bluecrop the preference disappears later in the season.
Does SWD prefer berries on the bushes or fallen berries?

Do flies prefer to oviposit on Bluecrop or Elliott blueberries?
Methods

• 20 female and 10 male (5-6 day old) *D. suzukii* were exposed to the berries for 48 h.

• Complete ramdomized block design.

• 20 blocks (cages)
Emergence of adults: by cultivar and site

F = 2.04; df = 3, P > 0.1

Mean ± SE D. suzukii (Ln)

Bluecrop on bush  Bluecrop on ground  Elliott on bush  Elliott on ground

2.00  2.50  3.00  3.50  4.00
How can growers reduce SWD populations on ground?
Methods

• Exposure of berries to *D. suzukii* for 72 h.

• Buried under 5 cm, 10 cm, 20 cm and 30 cm of soil.

• Controls had no soil.
Emergence of *D. suzukii* from buried infested berries

- Mean ± SE *D. suzukii* emergence
  - After 7 days
  - After 10 days
  - After 14 days

- Depth of soil (inches):
  - 0
  - 2
  - 4
  - 8
  - 12

- Letters denote significant differences.
Repeated experiment

**After 7 days**  
**After 10 days**  
**After 14 days**

**Mean ± SE D. suzukii emergence**

**Depth of soil (inches)**

- After 7 days: a
- After 10 days: b
- After 14 days: c
Summary

• SWD clearly prefers berries on the bushes than on the ground.

• There is no clear preference between Bluecrop and Elliott blueberries.

• Burying fallen berries could reduce the population of SWD in blueberry farms.
Importance of Sanitation

- **When**
  In Bluecrop, between August 7-14.

- **What to do**
  Disking to bury berry 2-4 inches below ground will reduce SWD emergence by 70-100%.
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SWD at RAREC

• Peaches (Harrow Beauty)
  • Aug 8, 2012
  • 10 fruit/tree, 9 unsprayed trees
  • 4.33 ± 2.75 larvae (salt float)

• Grapes
  • Vinegar traps
  • Exclusion bags
  • Weekly collections of clusters
    • Larvae
    • Adult emergence
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