

# Evaluation of Combination Insecticides for Apple Maggot Control



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# Orchard History

Commercial block of Jonagold in Wayne Co, NY

Traditionally has AM damage at harvest

Adjacent to abandoned orchard and woods

Grower agreed to cooperate with experiments  
in 2010, 2011, 2013







2D 3D

Road Aerial

50 feet

20 m

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## 2013 Field Trial

Treatments of insecticides were applied shortly after first fly caught in area (19 Jul)

Blocks of 12 trees (4x3) were arranged in a RCB design and replicated 3X

Applications were made at 14d intervals, 4 sprays applied in total

Harvest evals were conducted 12 Sep by picking and inspecting fruit

# Methods

Damage assessments were rated as a 'sting' if puncture did not exceed 1/8" and 'tunnel' if breakdown from larval tunneling was present

Applications were made at 150gpa with air-blast equipment

Applications were made on 19 Jul, 30 Jul, 12 Aug and 27 Aug

What appeared to be stinkbug damage in 2010 was not present in 2013

All insecticides used were commercially available combination materials, registered in NYS



# Insecticide Combo's

Voliam Xpress (Lambda cyhalothrin 4.6%, Rynaxapyr 9.2%)

Voliam Flexi (Thiamethoxam 20.0%, Rynaxapyr 20.0 %)

Agri-Flex (Abamectin 3.0%, Thiamethoxam 13.9%)

Endigo ZC (Lambda cyhalothrin 9.5%, Thiamethoxam 12.6%)

Leverage 360 (Cyfluthrin 10.5%, Imadicloprid 21.0%)

Calypso 4F – used as growers standard



# AM Stings

<u>Treatment</u>	<u>Rate/A</u>	<u>% AM Stings</u>
Voliam Xpress	12.0 oz	3.3 bc
Voliam Flexi	7.0 oz	4.0 bc
Agri-Flex	8.5 oz	8.3 ab
Endigo ZC	6.0 oz	3.0 c
Leverage 360	2.8 oz	4.0 bc
Calypso 4F	8.0 oz	11.3 a
<u>Untreated Check</u>		<u>4.3 bc</u>

Means within a column followed by the same letter are not significantly different (Student's t Test,  $P \leq 0.05$ ).

Data was transformed arcsine ( $\sqrt{x}$ ) prior to analysis

# AM Tunnels

<u>Treatment</u>	<u>Rate/A</u>	<u>% AM Tunnels</u>
Voliam Xpress	12.0 oz	0.7 c
Voliam Flexi	7.0 oz	2.3 bc
Agri-Flex	8.5 oz	3.7 ab
Endigo ZC	6.0 oz	0.7 c
Leverage 360	2.8 oz	0.3 c
Calypso 4F	8.0 oz	2.0 bc
<u>Untreated Check</u>		<u>7.7 a</u>

Means within a column followed by the same letter are not significantly different (Student's t Test,  $P \leq 0.05$ ).

Data was transformed arcsine ( $\text{Sqrt } x$ ) prior to analysis



# Total AM Damage

<u>Treatment</u>	<u>Rate/A</u>	<u>% AM Stings</u>	<u>% AM Tunnel</u>
Voliam Xpress	12.0 oz	3.3 bc	0.7 c
Voliam Flexi	7.0 oz	4.0 bc	2.3 bc
Agri-Flex	8.5 oz	8.3 ab	3.7 ab
Endigo ZC	6.0 oz	3.0 c	0.7 c
Leverage 360	2.8 oz	4.0 bc	0.3 c
Calypso 4F	8.0 oz	11.3 a	2.0 bc
<u>Untreated Check</u>		4.3 bc	7.7 a

Means within a column followed by the same letter are not significantly different (Student's t Test,  $P \leq 0.05$ ).

Data was transformed arcsine (Sqrt x) prior to analysis

## RESULTS

- \* Few significant differences in stings
- \* Calypso 4F seemed to increase stings, but did reduce tunnels compared to UTC
- \* Treatments containing a pyrethroid controlled tunnels better, but similar to UTC in % stings
- \* Unless other pests present, may be better using single ai materials
- \* Trees were noticeably bronzed for ERM damage at harvest

# Thanks

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