

Apple insect management by insecticides in Ohio, 2014

Preliminary report, 10/29/2014

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Methods:

The trial was conducted in a 2-acre block of 12-year old apple trees at Ohio State University's Waterman Agricultural and Natural Resources Laboratory in Columbus, Franklin County. There were five treatments, each with four replicates in a randomized complete block design. There were five adjacent Scarlet Spur Red Delicious trees per plot. There was a guard row of Golden Delicious, Gala, and Fuji between adjacent treatment rows.

Table 1. Sequence and rates of products applied in apple insecticide trial, Columbus, Ohio, 2014.

Trtmt #	Tight cluster (4/17)	Pink bud (4/23)	Petal-fall (5/13)	1C (5/27; 250 DD after biofix) & 2C (6/10) & 3C (6/24)	4C (7/8)	5C (7/24) & 6C (8/6) & 7C (8/26)
1 FMC 1	-	Mustang Max: 4 fl oz/A	Gladiator 0.33EW: 18 fl oz/A + oil 0.5%	Altacor 35WG: 3 oz/A (+ Beleaf 50 SG 2.8 oz/A in 2C)	Imidan 70WP: 3 lb/A	Hero 10.3 oz/A
2 FMC2	-	Mustang Max: 4 fl oz/A + Beleaf 50 SG 2.8 oz	Gladiator 0.33EW: 18 fl oz/A + NIS 0.25% v/v	Altacor 35WG: 3 oz/A (+ Beleaf 50 SG 2.8 oz/A in 2C)	Imidan 70WP: 3 lb/A	Hero 10.3 oz/A
3 Dow	-	Closer SC: 3 fl oz/A	Imidan 70WP: 3 lb/A	Delegate 25WG: 5.2 oz/A (+ Closer 1.5 fl oz/A in 2C)	Imidan 70WP: 3 lb/A	Delegate 25WG: 5.2 oz/A
4 standard	Lorsban 50W: 3 lb/A + oil 1%	-	Avaunt 30WDG: 6 oz/A	Altacor 35WG: 3 oz/A	Imidan 70WP: 3 lb/A	Assail 30SG: 6 oz/A + oil 0.5%
5 UTC	-	-	-	-	-	-

Results and Discussion:

Table 2. Insect injury to apple fruit after treatment by five management programs, evaluated non-destructively on 7 July 2014; mean of four blocked replicates at OSU's Waterman Lab, Columbus, Ohio.

Treatment (prebloom/ petalfall/ codling moth 1 st generation)	% Internal Lepidoptera			% San Jose Scale ^a	% Plum curculio ^a	% Tarnished plant bug	% Stink bug	% Clean ^a
	Entry ^a	Sting	Total ^a					
Closer/Imidan/Delegate	0.0 C	0.0	0.0 C	1.2 B	0.5 BC	0.5	0.8	97.2 A
Mustang/GladOil/AltacorBeleaf	0.8 BC	0.0	0.8 BC	0.0 B	0.0 C	0.2	0.2	98.8 A
Mustang/GladNIS/AltacorBeleaf	0.8 B	0.2	1.0 B	1.2 B	0.2 BC	0.5	0.2	96.8 A
Lorsban/Avaunt/Altacor	1.2 B	0.0	1.2 B	1.8 B	1.0 AB	0.8	0.5	95.0 A
untreated	23.8 A	0.0	23.8 A	22.2 A	2.2 A	0.0	0.5	57.8 B
<i>Probability (treatment effect)</i>	<i><0.0001</i>	<i>0.44</i>	<i><0.0001</i>	<i>0.0190</i>	<i>0.0134</i>	<i>0.57</i>	<i>0.99</i>	<i><0.0001</i>

^a Within each column, means followed by same letter are not significantly different ($P>0.05$); mean separations by LSD. Values shown are actual percentages but ANOVA based on transformed values.

Table 3. Insect injury to apple fruit after treatment by five insecticide programs, evaluated destructively at harvest on 17-25 September 2014; mean of four blocked replicates at OSU's Waterman Lab, Columbus, Ohio.

Treatment (codling moth 1 st generation/ 2 nd generation)	% Internal Lepidoptera			% San Jose scale ^a	% Plum curculio		% woolly apple aphid ^a	% Leaf- roller	% Stink bug	% Tarn- ished plant bug	% Rosy apple aphid	% Clean of insect damage ^a
	Entry ^a	Sting ^a	Total ^a		Ovi- posi- tion	Late feed- ing ^a						
GladNIS/Altacor/ Hero	0.0 C	0.0 B	0.0 C	3.0 B	0.2	0.0 B	3.5 AB	0.0	0.0	1.0	0.0	92.8 A
GladOil/Altacor/H ero	0.0 C	0.2 B	0.2 C	0.5 B	0.0	0.0 B	1.0 B	0.0	0.0	1.0	0.2	97.0 A
Altacor/Assail	0.2 BC	0.5 B	0.8 BC	2.8 B	0.8	1.2 B	1.2 B	0.0	3.2	2.0	0.0	88.8 A
Delegate/ Delegate	1.0 B	2.7 B	3.8 B	4.9 B	0.0	0.0 B	4.4 A	0.0	0.5	0.3	0.2	86.2 A
untreated	31.0 A	10.8 A	41.8 A	46.8 A	1.2	13.0 A	0.8 B	3.5	1.2	0.8	0.0	22.0 B
<i>Probability (treatment effect)</i>	<i><0.0001</i>	<i>0.0015</i>	<i><0.0001</i>	<i>0.0088</i>	<i>0.13</i>	<i>0.0125</i>	<i>0.0236</i>	<i>0.19</i>	<i>0.32</i>	<i>0.40</i>	<i>0.61</i>	<i><0.0001</i>

^a Within each column, means followed by same letter are not significantly different ($P>0.05$); mean separations by LSD. Values shown are actual percentages but ANOVA based on transformed values.