Chemical Control/New Products

Efficacy of Spinosad and Confirm for Control of Filbertworm on Hazelnuts

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The hazelnut industry in Oregon encompasses nearly 30,000 acres of trees. Over 150 species of insects have been found on hazelnut trees, most are harmless, over half are beneficial, only two dozen or so species are injurious, and of those only six or so are considered important pests. Currently there are approximately four insect pests which are controlled with insecticides. Filbertworm (*Cydia latiferreana)* is the primary pest of hazelnuts with near1y 90% of the growers applying an average of 1.5 applications annually to 90% of the bearing acreage. The primary insecticides used for filbertworm control are synthetic pyrethroids. The search for measures to control the pests associated with hazelnuts is an ongoing process. Spinosad and Confirm (tebufenozide) were evaluated for filbertworm control in two blocks of trees in 1999.

Methods

Three blocks of trials were set up to evaluate the efficacy of the insecticides Confirm (with Latron added as a spreader/sticker) and Spinosad as treatments for the control of filbertworm in western Oregon. One of the blocks (HW) was an abandoned orchard (approx. 100 Barcelona trees) along the McKenzie River, 30 miles east of Eugene, Oregon. This orchard has not been managed for over 20 years, other than an annual mowing of the understory brush (primarily blackberry) and grasses, and had high rates of filbertworm infestation. The other block (approx. 500 Ennis trees) was at the University Horticulture Farm.

Experimental Design (HW)

The HW orchard consisted of a patchy arrangement of trees that, in addition to the nature of the commercial spray equipment used to apply the treatments, deterred randomization and interspersion of treatments and replicates. Therefore, treatments were applied to sections or patches of trees within the orchard. Treatments were applied with a 500 gal. Rears Powerblast sprayer. Pressure was 120 psi, at a rate of 80 gal./acre. The sprayer was towed by a John Deere 6500 tractor at 5 mph. Treatments were applied as indicated in Table 1. Samples of >100 nuts were collected from twelve trees in each treatment in late September prior to nut fall. Each nut was examined for sign of external feeding, cracked and checked for the presence of filbertworm. Percent infestation was determined by dividing the number of infested nuts by the total number of nuts minus blank nuts. One-way ANOVA was used to evaluate the treatments.

Table 1. Treatments and application dates of sprays applied to the Helen Ewing block. There were 12 trees sampled from each treatment application.

Treatment	Spray 1	Spray 2	Spray 3
Untreated	no spray	no spray	no spray
Spinosad (10 oz/ac	July 19	August 3	August 20
Confirm 1 (24 oz/ac)	July 19	--	--
Confirm 2 (24 oz/ac)	--	August 3	--
Asana XL (12 oz/ac)	July 19	August 3	--

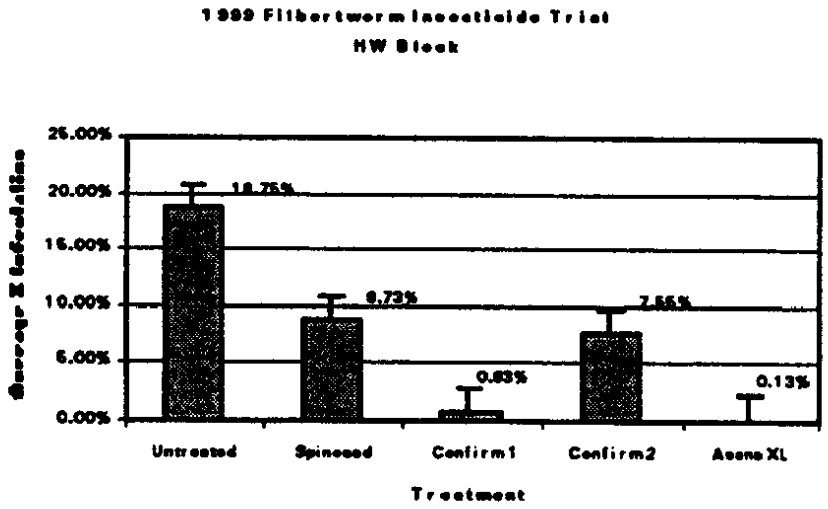
Experimental Design (University Farm)

Treatments were randomized and inter-dispersed at the OSU Farm. There were eight replicates of a 4x3 group of trees for each treatment from which the center 2 trees were sampled. Treatments were applied by a 200 gal. Rears Miniblast Sprayer at a rate of 129 gal./acre at a pressure of 200 psi. The sprayer was towed by a John Deere 5500N at 3 mph. Treatments were applied as indicated in Table 2. Ambush was used as the chemical standard. Approx. 100 nuts were picked from each tree in mid-September prior to nut fall and returned to the lab and dried. Each nut was examined for signs of external feeding, cracked and checked for the presence of filbertworm. Percent infestation was determined by dividing the number of infested nuts by the total number of nuts minus blank nuts. One-way ANOVA was used to evaluate the treatments.

Table 2. Treatments and application dates of sprays applied to the University Farm blocks. There were 4 replicates of each treatment with 2 trees sampled from each treatment application.

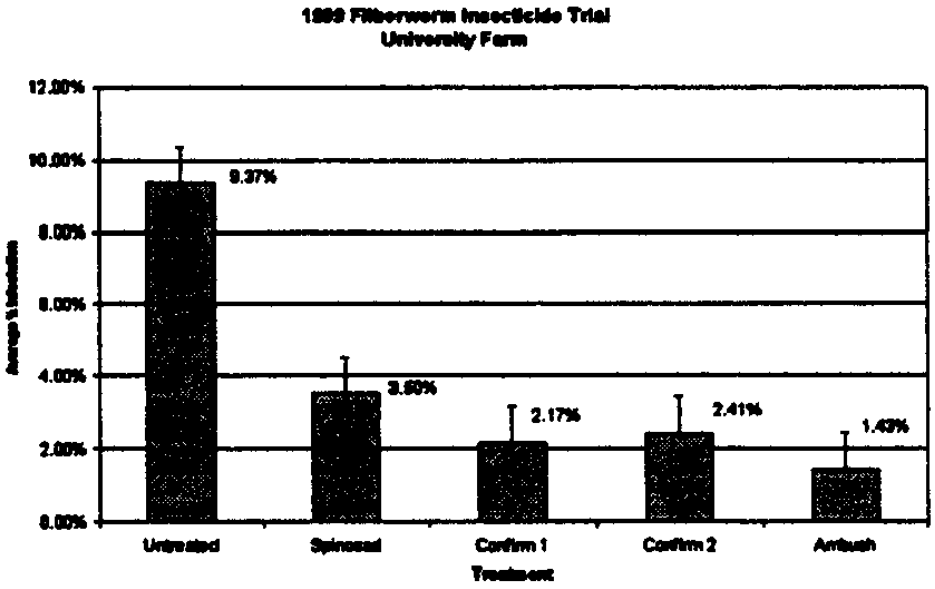
Treatment	Spray 1	Spray 2	Spray 3
Untreated	no spray	no spray	no spray
Spinosad (10 oz/ac)	July 15	July 29	August 19
Confirm 1 (24 oz/ac)	July 15	--	--
Confirm 2 (24 oz/ac)	--	July 29	
Ambush (20 oz/ac)	July 15	July 29	--

Results



HW Block means comparison (Tukey-Kramer HSD). Means (% infestation) over the same line are not significantly different.

Control	Spinosad	Confirm 2	Confirm 1	Asana XL
18.75%	8.75%	7.55%	0.83%	0.13%



Univ. Block means comparison (Tukey-Kramer HSD). Means (% infestation) over the same line indicate treatments which are not significantly different.

Control	Spinosad	Confirm 2	Confirm 1	Asana XL
9.36%	3.50%	2.41%	2.17%	2.05%

Discussion/Conclusions

These data indicate that Spinosad and Confirm significantly reduce infestation of filbertworm in hazelnut orchards. A single, early season (targeting egg lay) application of Confirm (Tebufenozide) with Latron added as a spreader/sticker reduced infestation levels to those of two applications of the chemical standard. Three applications of Spinosad (Naturalyte) significantly reduced filbertworm infestation. Although infestation levels were not reduced to those of the chemical insecticides, they were not significantly different than levels in two of the replicated blocks and Spinosad performed well under high filbertworm pressure.

These products show strong promise as additions to the insecticides currently used to control the filbertworm as the primary pest of hazelnuts.