

Thresholds, Monitoring and Sampling

Leafroller Control with Success in Spring and Summer: 1997

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Spring

Spinosad (Success 2F, DowElanco) and chlorpyrifos (Lorsban 4E and Lorsban 50WP, DowElanco) were evaluated for their ability to control OBLR larvae of the overwintering generation (Table 1). The test was conducted in an apple orchard at Milton-Freewater, OR. The trees were 2-yr-old Delicious on dwarfing rootstock. Treatments were applied to 6-row by 9-tree plots (approximately 1/8 acre), replicated three times in a randomized complete block. All treatments were applied with a Rears Pack-Blast PTO air-blast sprayer. A Tree-Row Volume formula $[(30) (\text{tree height in feet}) (\text{tree spacing in feet}) / (\text{row spacing in feet})]$ was used to calculate the volume of water needed for a dilute spray at 100 gal per acre. Application dates were 25 Mar (half-inch green-HIG), 7 Apr (pink), and 1 May (petal fall). A pretreatment evaluation was made on 25 Mar. One hundred fruiting buds/replicate were collected and returned to the laboratory for inspection under a microscope. The number of live OBLR larvae was recorded. Post-treatment evaluations were made on 1 May and 16 May. The 1 May and 16 May post-treatment evaluations were visual inspections of 10 entire trees per replicate, and the number of live OBLR larvae/tree was recorded. Weather conditions on the application days were as follows: 25 Mar, 71°F, wind 1.5-2 mph; 7 Apr, 61°F, gusty winds 2-7 mph; 1 May, 60°F, wind 0-1 mph.

The OBLR population was high and uniformly distributed as measured by the pretreatment evaluation. All HIG and pink treatments reduced OBLR larval densities relative to the untreated control at the 1 May (sampled before the petal fall treatments were applied) evaluation. Both pink treatments of Success 2F controlled OBLR larvae significantly better than the pink Lorsban 50WP or the HIG Lorsban 4E plus oil. There was no rate effect noted with the Success 2F treatments and no timing effect noted with the Lorsban treatments. All treatments significantly reduced OBLR larval densities relative to the untreated control at the 16 May evaluation. The treatment with the lowest mean OBLR larvae/tree was the 42.6 g AI/100 gal rate of Success 2F applied at petal fall. This application was not significantly different than the 42.6 g AI/100 gal rate of Success 2F at pink or the 28.4 g AI/100 gal rate of Success 2F at petal fall.

Summer

Spinosad (Success 2F, DowElanco), chlorpyrifos (Lorsban 50WP, DowElanco), and encapsulated methyl parathion (Penncap-M 2F, Elf-Atochem North America, Inc., Agrichemicals Div.) were evaluated for their ability to control OBLR larvae of the summer generation (Table 2). The test was conducted in an apple orchard at Milton-Freewater, OR. The trees were 2-yr-old Delicious on dwarfing rootstock. Treatments were applied to 54-tree plots (approximately 1/8 acre), replicated three times in a randomized complete block. All treatments

were applied with a Rears Pack-Blast PTO air-blast sprayer as a concentrate (4X). The sprayer was calibrated using 5 nozzles/side at 100 gpa. Due to small tree size, only 3 nozzles were left open, approximating a 60 gpa calibration. Application dates were 23 Jun (20% egg hatch) and 8 Jul (20% egg hatch + 21 d). The 16 Jul post-treatment evaluation was a visual inspection of 10 growing shoots/tree x 6 trees/rep and the number of live OBLR larvae was recorded. Weather conditions on the application days were as follows: 23 Jun, 72°F, gusty winds 5-8 mph; 8 Jul, 75°F, gusty winds 2-8 mph.

All treatments provided significant suppression of OBLR larvae relative to the untreated control. All Success 2F treatments reduced OBLR larval numbers equivalent to or better than an industry standard, Penncap-M 2F, and only the 118.4 ml/100 gal rate of Success 2F was statistically inferior to Lorsban 50WP. Two applications of Success 2F at both rates provided significantly better control of OBLR larvae than the Penncap-M 2F treatment. Two applications of Success 2F provided significantly better control of the OBLR larvae than a single treatment of Success 2F. There was no significant rate effect noted in the Success 2F treatments.

Table 1.

Treatment	Rate (AI/100 gal)	Timing	Avg. no. live OBLR larvae per		
			100 buds	entire tree	
			25 Mar	01 May	16 May
Success 2F	28.4 g	Pink	35.0a	3.0a	3.8ab
Success 2F	42.6 g	Pink	48.7a	3.1a	5.1b
Success 2F	28.4 g	Petal fall	54.7a	17.5c	3.3ab
Success 2F	42.6 g	Petal fall	50.3a	14.3c	1.2a
Lorsban 50WP	170 g	Pink	39.3a	7.7b	6.2b
Lorsban 50WP	680 g	Petal fall	45.3a	13.9c	5.9b
Lorsban 4E	227 g	HIG	36.7a	7.3b	4.8b
+ Orhex 796	+ 1% v:v				
Untreated	none	none	48.3a	16.1c	11.6c

Means in the same column followed by the same letter not significantly different ($P=0.05$, Fisher's Protected LSD).

Table 2.

Treatment	Rate (AI/100 gal)	Timing	Post-treatment
			16 Jul OBLR/10 shoots
Success 2F	28.4 g	20% egg hatch	10.9d
Success 2F	42.6 g	20% egg hatch	8.2b-d
Success 2F	28.4 g	20% EH, 20% +14d	5.1ab
Success 2F	42.6 g	20% EH, 20% +14d	3.5a
Penncap-M 2F	907 g	20% egg hatch	9.7cd
Lorsban 50WP	680 g	20% EH, 20% +14d	6.4a-c
Untreated	none	none	22.9e

Means in the same column followed by the same letter not significantly different ($P=0.05$, Fisher's Protected LSD).