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CHINESE REDBUD: *Cercis chinensis* Bunge var. 'Avondale'

EVALUATION OF FOLIAR APPLICATIONS OF ACELEPRYN (CHLORANTRANILIPROLE) AND DPX-HGW86 (CYANTRANILIPROLE) FOR REDBUD LEAFFOLDER CONTROL, 2009

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Redbud leaffolder: *Fascista cercerisella* (Chambers)

This study was conducted in summer 2009 to compare curative, foliar applications of two ryanodine receptor insecticides with bifenthrin for control of RBLF feeding on ornamental redbud. Treatments were applied to Chinese redbud 'Avondale' shrubs growing at Deep Fork Tree Farm, Arcadia, OK. Shrubs selected for treatment were ≤ 8 ft tall with multiple stems, infested with RBLF caterpillars, and blocked by location within the nursery planting. Treatments consisted of the following insecticides and rates: (1) Acelepryn 1.67 SC (chlorantraniliprole) at 1.0 fl oz per 100 gal; (2) Acelepryn 1.67 SC at 2.0 fl oz per 100 gal; (3) DPX-HGW86 1.67 SC (cyantraniliprole) at 1.0 fl oz per 100 gal; (4) DPX-HGW86 1.67 SC at 2.0 fl oz per 100 gal; and (5) Talstar P 0.67 SC (bifenthrin) at 10.0 fl oz per 100 gal. All treatments were compared against a non-treated control group and replicated five times in a RCB. Treatments were applied mid-afternoon on 23 Jul with a backpack sprayer equipped with a cone nozzle (Teejet TX-8) and operated at 40 psi, delivering 0.13 gal/min of spray solution. Insecticides were applied to the foliage until runoff. The second of three generations of RBLF was present at the time of insecticide application. Populations of RBLF were sampled on 30 Jul (7 DAT) by removing and opening leaves webbed together to count live and dead caterpillars. A large number of RBLF webs contained no larvae. These empty webs may represent first-generation caterpillars that had already pupated and unknown mortality factors (e.g., spiders were found in a small number of empty RBLF webs). Empty webs were excluded from statistical analysis. Percent mortality was determined by dividing the number of dead caterpillars by the total number of caterpillars (live + dead) and multiplying by 100. A small number of shrubs yielded no live or dead larvae, so percent mortality could not be calculated for those reps (i.e., one rep from each of Acelepryn at 2.0 fl oz, DPX-HGW86 at 2.0 fl oz, Talstar P, and non-treated control). Mortality data were arcsine square root (x) transformed, but tests for normality indicated the data were not normally distributed. Thus, nonparametric analyses were used to test for treatment differences in percent mortality. Kruskal-Wallis c^2 tests (PROC NPAR1WAY, SAS 9.2) were used to determine differences among treatment means ($P \leq 0.05$). Wilcoxon signed rank tests were used for each combination of paired treatments to determine relative treatment differences ($P \leq 0.05$).

On average, percent mortality was greatest with Talstar P and significantly different from that of the non-treated control (Table 1). Mean percent mortality was 73.2% and 76.4%, respectively, for Acelepryn and DPX-HGW86 applied at 2.0 fl oz/100 gal and significantly different from the control (Table 1). Mortality averaged only 53.3% and 39.5% for Acelepryn and DPX-HGW86 applied at 1.0 fl oz/100 gal, respectively; only the former was significantly different from the control group. Phytotoxicity was not observed for any treatments at 7 DAT. Excellent control was achieved with Talstar P, resulting in approximately 98% reduction in RBLF caterpillars relative to the non-treated control. In contrast, the remaining treatments ranged from 61.5% to 82.7% reduction in RBLF larvae. A higher level of control was achieved with the 2.0 fl oz/100 gal rate of the ryanodine receptor insecticides compared to the lower rate of both compounds. However, results suggest foliar applications of Acelepryn and DPX-HGW86 are not good alternatives to pyrethroid insecticides for leaffolder control.

Table 1.

Treatment/ formulation	Rate (fl oz/100 gal)	Mean no. live RBLF (\pm SE)	Mean percent mortality (\pm SE) [†]	Percent reduction
Non-treated check	---	10.4 (3.9)	15.1 (5.3)c	---
DPX-HGW86 1.67 SC	1.0	4.0 (1.6)	39.5 (17.6)ac	61.5
Acelepryn 1.67 SC	1.0	3.0 (1.2)	53.3 (15.7)a	71.2
Acelepryn 1.67 SC	2.0	2.6 (2.4)	73.2 (15.5)a	75.0
DPX-HGW86 1.67 SC	2.0	1.8 (1.6)	76.4 (13.7)ab	82.7
Talstar P 0.67 SC	10.0	0.2 (0.2)	97.9 (2.1)ab	98.1

[†] Means followed by the same letter are not significantly different (Wilcoxon signed rank test, $\alpha = 0.05$); percentages were arcsine square root (x) transformed prior to statistical analysis