EFFICACY OF INSECTICIDE MIXTURES TO CONTROL LYGUS BUG IN ALFALFA SEED

Ben Simko and Dani Jo Kriegh
Malheur County Extension Office
Oregon State University
Ontario, OR, 1998

Introduction

The objective of this trial was to evaluate and compare the performance of single treatments against tank mixes of currently registered insecticides for the suppression of lygus bug (*Lygus hesperus*) in alfalfa seed. Evaluations included treatment mixtures of organophospate and synthetic pyrethroid materials. The rates and tank mixes are common industry recommendations for lygus bug control treatments during the critical bloom or pollination period of crop development.

Material and Methods

Small 0.01 acre plots were established using a randomized complete block design in a commercial alfalfa seed field. Treatments evaluated in the trial (Table 1) were applied using a CO_2 backpack sprayer calibrated to deliver 20 GPA at ~30 psi. The nozzle tips utilized were model Tee Jet 8002 VS. Three replications of each treatment were incorporated in the plots. Lygus bug control was evaluated using a standard insect sweep net, collecting insect samples at three and fourteen days post treatment. Sweep samples were preserved in small canning jars containing 70 percent ethanol, and collected insects were counted in the lab. Population levels of all stages of lygus bug, pea aphids, and beneficial insects were counted and recorded. The planned seven day, post sample date was rained out. Sprays were applied on May 15, 1998, timed to coincide with the first spring hatch of insects and when most of the population was in the small nymph stage of development (instars 1 & 2) (Figure 1). The trial was established, targeting the first May hatch, to avoid conflict with the grower's lygus bug spray schedule. The plots simulate the insecticide rates and tank mixes typically used against the second, late June or July pollination period, lygus bug hatches.

Results and Discussion

At three days post treatment, all treatments provided significant suppression compared to pretreatment counts. There was no treatment separation. Control ranged from 97 to 100 percent. At fourteen days post treatment, sweep samples indicated continued good suppression of lygus bug when compared to the untreated check plots. Control for the treatments ranged from 94 to 100 percent (Tables 2 and 3). There was no

significant difference in the efficacy of the single treatments compared to the active ingredient tank mixes for lygus bug control. All treatments provided a high level of control of pea aphid at three days post treatment. At fourteen days post treatment, Dibrom, at 1 pt/acre formulated material, was significantly inferior to the other treatments in the control of pea aphid. Beneficial populations were at only trace levels in the pretreatment counts so impact of the treatments on predators and parasites could not be effectively evaluated. Under the conditions of this trial, it appeared that all the treatments were effective when applied to populations of small lygus bug nymphs in a timely manner. These observations support the conclusion that successful control of lygus bug hatches depended on frequent sweeping schedules and timely insecticide sprays in addition to judicious selection of active ingredients. No data were collected on residual toxicity of the treatments, particularly of the active ingredient tank mixes toward pollinators.

Table 1. Lygus bug insecticides, tank mixes, and treatment costs, Sutton Farm, Ontario, OR, 1998.

Treatment	Rate ai/acre	Rate formulated/acre	Cost $/acre
Dibrom	1.0	1 pt	9.13
MSR	0.5	2 pt	16.25
Capture	0.03	2 oz	7.83
Warrior	0.016	2 oz	5.05
Dibrom + MSR	0.5 + 0.375	½ pt + 1 ½ pt	16.75
Dibrom + Warrior	0.5 + 0.16	½ pt + 2 oz	9.61
MSR + Warrior	0.375 + 0.016	1 ½ pt + 2 oz	17.25
Untreated Control			

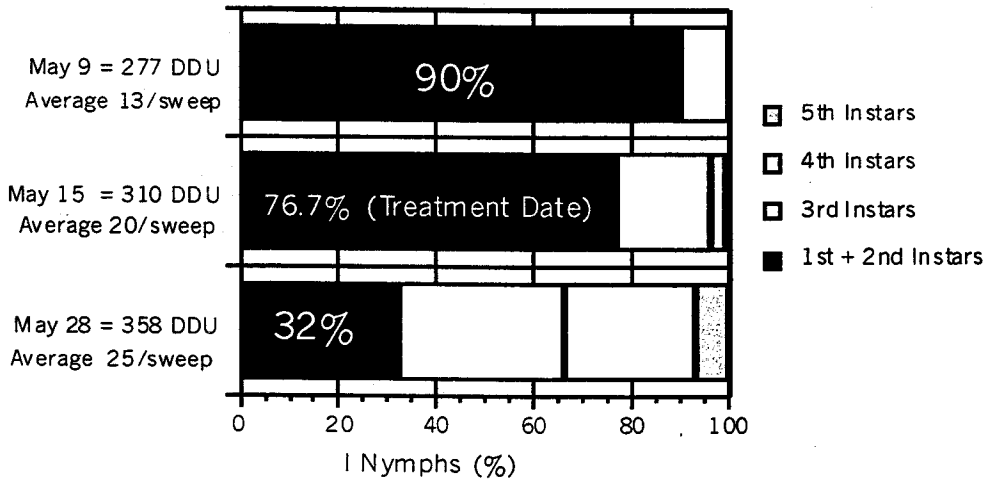

Figure 1. Lygus bug instar profiles at treatment date and two subsequent dates, Sutton Farm, Ontario, OR, 1998

Table 2. Efficacy of commercial insecticides on lygus bug in alfalfa seed, 3 days post treatment, Sutton Farm, Ontario, OR, 1998.

Treatment	Rate	Average lygus per 5 sweep sample	Control compared to pretreatment population†
	volume/acre		
Dibrom	1 pt	3.3	96.7
MSR	2 pts	0.7	99.3
Capture	2 oz	1.3	98.7
Warrior	2 oz	1.3	98.7
Dibrom + MSR	½ pt + 1 ½ pt	3.3	96.7
Dibrom + Warrior	½ pt + 2 oz	1.7	98.3
MSR + Warrior	1 ½ pt + 2 oz	0.3	99.7

†Pretreated lygus bug population, 101 per 5 sweep sample.

Table 3. Efficacy of commercial insecticides on lygus bug in alfalfa seed, 14 days post treatment, Sutton Farm, Ontario, OR, 1998.

Treatment	Rate	Average lygus per 5 sweep sample	Percent lygus control compared to untreated check
	volume/acre		
Dibrom	1 pt	7.0	94.5
MSR	2 pts	5.0	96.1
Capture	2 oz	2.0	98.4
Warrior	2 oz	0.0	100.0
Dibrom + MSR	½ pt + 1 ½ pt	2.7	97.9
Dibrom + Warrior	½ pt + 2 oz	1.3	99.0
MSR + Warrior	1 ½ pt + 2 oz	1.0	99.2
Untreated Check		127	