

Novaluron Evaluation for Lygus Bug Control in Seed Carrots

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Abstract

A trial was conducted in a commercial field of open-pollinated carrots grown for seed to evaluate novaluron (Rimon) for lygus bug control compared to a standard treatment, bifenthrin (Capture). Five acre plots were sprayed with each treatment on June 26. Lygus bug populations in each treatment were evaluated 18 days after application using a sweep net. Novaluron was not as effective as bifenthrin for lygus bug control, and novaluron resulted in lower carrot seed germination.

Introduction

Lygus bugs (*Lygus* spp.) that feed on carrots when they are flowering pose a risk to carrot seed viability. Bifenthrin (Capture[®], FMC Agricultural Products) is the standard insecticide used to control and repel lygus bugs on carrots for seed. However, bifenthrin is not selective for lygus bugs and therefore controls and repels many beneficial insects and must be used carefully in regard to pollinator bees. Novaluron is a chitin synthesis disruptor that is very effective for lygus bug control in alfalfa seed production and might be more selective for lygus bug control than bifenthrin. A trial was conducted to evaluate novaluron (Rimon[®], Chemtura Corp.) for lygus bug control in carrots grown for seed

Methods and Materials

A 10-acre commercial field of open-pollinated carrots was selected for this trial. On June 26, 2006 half of the field was treated with bifenthrin and half with novaluron. Treatments were aerially applied by a commercial applicator during carrot flowering, before pollinator bees were brought into the field. Quaternary ammonium salt (Hyper-Active) was added to the novaluron treatment. Due to the mobility of lygus bugs this trial had to be conducted on large plots, which resulted in a lack of replication. Because of the lack of replication, a technique called pseudoreplication was used to determine lygus bug populations in each treatment. The plots were evaluated 18 days after application using a sweep net and taking 2 samples of 10 sweeps in 1 treatment and then moving to the other treatment and taking another 2 samples of 10 sweeps. This method of sampling was repeated 5 times for each treatment. In each sample of 10 sweeps, adult and nymphal lygus bugs were counted separately. During commercial seed harvest, samples were collected from the combine from each plot and sent to a seed lab for germination testing.

Results and Discussion

Novaluron is a chitin synthesis disruptor; in order to achieve good control it has to be applied when lygus bugs are very immature. It is likely that the June 26 application was too late for optimal lygus bug control.

Lygus bug control with bifenthrin, the standard, was much better than with novaluron. The amount of lygus bug control with novaluron was unacceptable and later the plot had to be treated with bifenthrin. Also, carrot seed germination was 13 percent higher from the bifenthrin plot compared to novaluron. Novaluron might be a useful tool for lygus bug control, but more work will need to be done to determine an effective application timing.

Table 1. Lygus bug population and carrot seed germination from insecticide treatments near Madras, Oregon, 2006.

Treatment	Sample	Lygus bug	Lygus bug	Carrot seed
		adults	nymphs	germination
		Average count/10 sweeps		%
Novaluron 0.078 lb ai/acre	1	8.5	5.5	
	2	4.5	10.5	
	3	6.5	5.0	
	4	5.5	2.5	
	5	8.5	2.0	
	Mean		6.7	5.1
Bifenthrin 0.1 lb ai/acre	1	3.5	1.0	
	2	0.5	0.0	
	3	0.0	0.5	
	4	1.5	0.0	
	5	2.5	0.0	
	Mean		1.6	0.3
LSD (P=0.05)		2.4	3.5	NS