

Early and Midseason Management of Bean Leaf Beetles in Northeast Iowa Soybeans

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Introduction

The beetle leaf beetle can be a serious pest of soybeans. There are three populations of beetles that feed on soybean plants throughout the growing season – the overwintered population at plant emergence, the first generation during late June and July, and the second generation during August and September. The overwintered population can be a serious threat to soybean production because the beetles can transmit bean pod mottle virus – a plant disease that reduces both yield quality and quantity.

The objective of this experiment was to measure the performance of several seed treatments and a standard liquid insecticide for control of early season and midseason bean leaf beetles.

Materials and Methods

A natural population of bean leaf beetles infested soybeans (NK S24-K4 RR) at the Northeast Iowa Research and Demonstration Farm, Nashua, Iowa. The field was planted May 4, 2002, in 30-inch rows at a rate of 196,433 seeds/acre.

Experimental treatments included: Cruiser (30 g/100 kg seed), Cruiser (50 g/100 kg seed), Gaucho (62.5 g/100 kg seed), clothianidin (16 fl oz/100 lb seed), Warrior T (3.2 oz/acre on May 28), Warrior T (3.2 oz/acre on July 2), and an untreated check. Cruiser (thiamethoxam), Gaucho (imidacloprid), and clothianidin are systemic insecticides applied to the seed prior to planting. The Warrior treatments were applied with a tractor sprayer at a rate of 20 gallons of

water/acre and broadcast over the rows. Plots were 12 rows (30 ft) wide and 80 ft long. Each treatment was replicated four times in a randomized complete block design.

Beetle counts were taken on three dates (May 22, June 6, and June 20). Beetles were counted by examining all plants within a 3-foot section of row. Yields were machine-harvested from the middle 5 rows in each plot on October 14 and adjusted to 13% moisture. Data were analyzed by analysis of variance using Fisher's protected LSD at $P=0.05$. Results are shown in Table 1.

Results and Discussion

The early-season overwintered beetle population was relatively small, never averaging more than 5.8 beetles per 3 feet or row. All systemic seed treatments significantly reduced the beetle population on May 22; however, by June 6 the chemical effects appeared to be diminishing in Gaucho and the low rate of Cruiser. There were no treatment differences on June 20 when beetle populations were very low. No yield differences were detected.

The data suggest that seed treatments might be a viable option for managing early-season populations. However, experiments conducted against larger beetle populations would be needed to provide more conclusive results. None of the seed treatments are presently labeled for use in soybeans.

Acknowledgments

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Table 1. Bean leaf beetle counts and grain yields from soybeans treated with systemic seed treatments or a liquid insecticide, Nashua.

Treatment	Rate per acre	Beetles per 3 ft of row			Yield bu/acre
		5/22	6/6	6/20	
Cruiser	30g	0	4.0	1.0	60.3
Cruiser	50g	0	1.0	1.3	59.3
Gaucho	62.5g	0	5.8	0.5	60.3
Clothianidin	16 oz	0	3.0	1.5	61.5
Warrior (May 28)	3.2 oz	0.5	0.3	1.3	61.2
Warrior (July 2)	3.2 oz	3.3	1.5	1.5	61.4
Check	---	1.3	3.3	1.5	62.5
<i>LSD 0.05</i>		<i>1.9</i>	<i>3.3</i>	<i>n.s.</i>	<i>n.s.</i>