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Controlling Bean Leaf Beetle on Snap Beans

Thomas P. Kuhar and John Speese, III Department of Entomology Virginia Tech Eastern Shore AREC Painter, VA

Fig. 1. Bean leaf beetles.

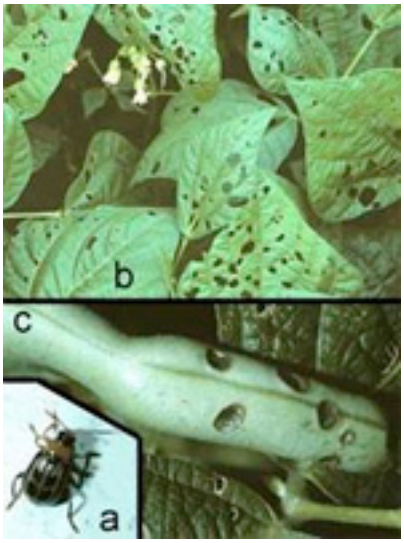

Fig. 2. Bean leaf beetle injury to pods, leaves

In eastern Virginia, the bean leaf beetle (BLB), Ceratoma trifucata (Forster), has caused serious damage to snap beans (Phaseolus vulgaris L.) in recent years. The adult is a relatively small beetle black underneath and it has a black triangular spot on the upper abdomen where the wing covers meet. These characteristics help distinguish it from the somewhat similar Southern corn rootworm beetle (spotted cucumber beetle), which is a minor foliar pest of legumes. BLB can be yellow, or green or red, spotted or without spots (Fig. 1).

This insect feeds on a wide variety of legume hosts, including the foliage and pods of snap beans and soybeans. Larvae feed on roots in the soil and are generally of relatively minor concern to the crop. Adult (beetles) cause the majority of damage. Beetles can severely defoliate early seedling beans and even kill plants if infestations are high enough. In addition, BLB feeding scars on the bean pods can render the crop unmarketable (Fig. 2). Defoliation by BLB is quite evident and easy to assess. Beetles usually chew round holes in the leaves, which may increase in size as the leaf grows. The economic threshold is 20% defoliation during prebloom stage or 10% defoliation during podding.

In fall 2003, we tested some newer chemicals (Avaunt 30WG, Mustang Max, SpinTor 2SC, and Entrust 80WP) along with some of the standards from the past (Orthene 97, Lannate, Asana XL, Capture 2, Warrior) for efficacy against bean leaf beetle in snap beans. The experiment included 9 treatments plus an untreated control arranged in a randomized complete block replicated 4 times. Each plot consisted of a single 25-ft-long row spaced 3 ft apart. Plots were flanked by one untreated row. Snap beans ('Bronco') were planted on 21 Aug at the Eastern Shore Agricultural Research and Extension Center near Painter, VA. Insecticide applications were made on 23 Sept and 2 and 8 Oct using a propane-pressurized backpack sprayer that had a boom equipped with a single hollow cone nozzle calibrated to deliver 29 gal of spray/acre at 40 psi. First application was made at early bloom stage following a relatively heavy colonization of bean leaf beetles in the beans a few days prior to spraying. The remaining two applications corresponded with pin to pod stage beans. On 24 Sept (~24 h after first application), the number of live BLB/plot was sampled using a beat cloth that sampled a 3 ft section of row. On 16 Oct, a random sample of 50 pods was harvested from each plot and examined for damage. Data were analyzed using ANOVA and treatment means were separated using LSD at $P < 0.05$. Proportion damaged pods were transformed before analysis [arcsin(sqrt(x+0.0001))], but actual percentage values are presented in the table.

The infestation level of BLB was relatively high. On 24 Sept, all treatments resulted in significantly fewer live BLB than the untreated check (Table 1). The pyrethroids, Capture, Mustang Max, Warrior, and Asana XL had fewer live BLB than Avaunt. At harvest, all treatments had a significantly lower percentage of BLB damaged pods than the untreated check, and Capture had a lower percentage damaged pods than Asana XL.

Table 1. Results of fall 2003 snap bean insecticide efficacy trial conducted at ESAREC, Painter, VA.

Treatment/formulation	Rate/acre	No. BLB/3 ft of row 24 Sept	% BLB damaged pods 16 Oct
Avaunt 30WG	3.5 oz	8.50 b	6.00 bc
Asana XL	9.6 fl oz	2.00 c	7.50 b
Lannate LV	3.0 pt	3.00 bc	5.00 bc
Capture 2EC	3.2 fl oz	0.00 c	0.50 c
Mustang Max	4.0 fl oz	0.25 c	2.50 bc
Entrust 80WP	2.0 oz	2.75 bc	6.00 bc
SpinTor 2SC	6.0 fl oz	2.75 bc	4.00 bc
Orthene 97	1 lb	4.75 bc	2.00 bc
Warrior 1CS	3.0 fl oz	0.50 c	2.50 bc
Untreated Check		15.00 a	21.50 a
Pr > F		0.0007	0.0047
LSD		6.1104	8.5584
Means in a column with a letter in common are not significantly different (P > 0.05, LSD). Percentages were transformed [arcsin(sqrt(x+0.0001))] before analysis, but actual values are presented.			

Originally printed in Virginia Vegetable, Small Fruit and Specialty Crops – November-December 2003.