ENTOMOLOGY

RESEARCH & EXTENSION

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3. TITLE: Blueberry Flea Beetle Control

OBJECTIVE & INTRODUCTION

The objective of this study was to evaluate the efficacy of four insecticides against blueberry flea beetle larvae.
LOCATION: Jonesboro, ME
PROJECT TIMEFRAME: June 2019

METHODS

Materials were applied to 20 x 20-ft plots in a vegetative-year blueberry field in Jonesboro, Maine. There were three treated plots for each material plus untreated check plots. Treatments were blocked according to pre-spray population levels. Insecticides were applied in 25 gal. water-mixture per acre using a CO_2-propelled, 76 in. boom sprayer (80 in. swath) equipped with four, flat spray 8002VS TeeJet nozzles operating at 35 psi. Speed was regulated using a metronome. Blueberry plants were 1-1.5 in. tall and scattered. Flea beetle larvae were at mid to late instar growth stage. On sample dates (Table 1), 10 sweeps with a standard 12 in. diameter sweep net were taken systematically through the center area of each plot avoiding plot boundaries. After the larvae were counted, they were distributed back into the same plot. Analysis of Variance (RCBD) and LSD ($P < 0.05$) were used to compare numbers of flea beetle larvae captured in sweep-net samples. Data were transformed by log10(X + 1) to stabilize variance prior to analysis.

RESULTS

Pre-spray populations were not significantly different among the treatments. Cyonara (lambda cyhalothrin) and Entrust (spinosad) significantly reduced the seasonal density of blueberry flea beetle larvae in comparison with the untreated checks. AzaSol (azadirachtin) and Grandevo (Chromobacterium subtsugae) strain PRAA4-1T were not effective (Table 1 and Figure 1).

Table 1. Field control of blueberry flea beetle larvae with insecticides, summary.

		Larvae/10 sweeps			
Treatment/ formulation	Rate/acre	7 Jun	9 Jun	10 Jun	11 Jun
Untreated check	---	9.3a	20.3a	17.3a	11.7b
Cyonara 9.7	20[b]	9.0a	0.3c	0.3b	1.0c
Entrust SC	48[b]	10.0a	3.0b	2.0b	2.3c
AzaSol	6[a]	9.7a	27.3a	34.7a	27.7a

Treatment/ formulation	Rate/acre	Larvae/10 sweeps 7 Jun	9 Jun	10 Jun	11 Jun
Grandevo CG	6[a]	9.3a	27.7a	40.3a	28.7a
P value		0.9995	0.0008	0.0009	<0.0001

Means within columns followed by the same letter are not significantly different; $P > 0.05$, LSD.
[a]oz (wt) product per acre, [b]oz product per acre.

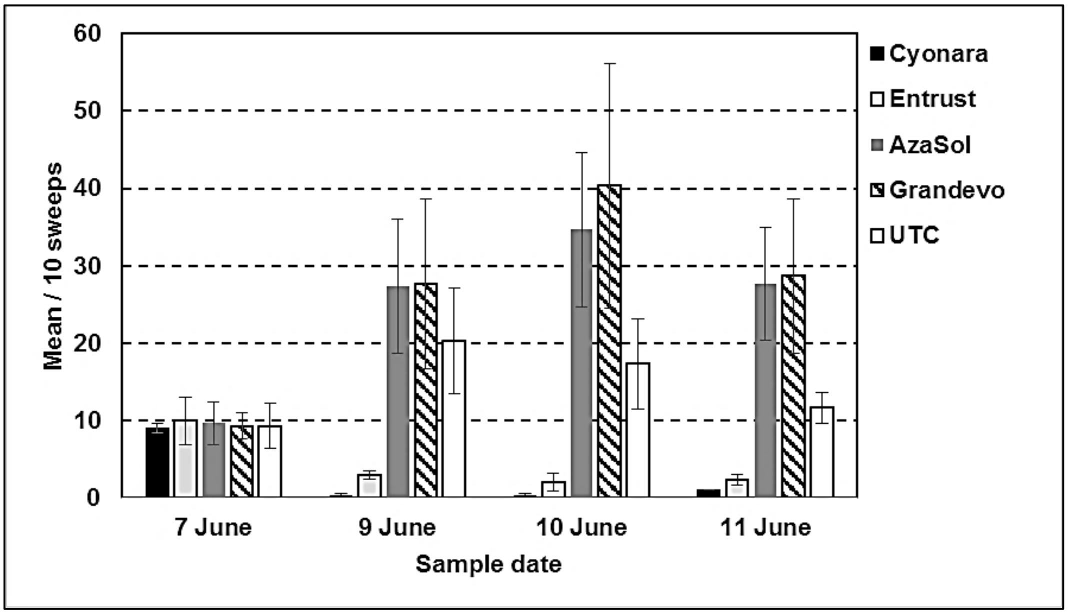

Figure 1. Field control of blueberry flea beetle larvae.

DISCUSSION

The search for the least toxic alternative insecticides for control of the blueberry flea beetle continues. Wild blueberry is not without alternatives currently. *Beauveria bassiana*, the entomopathogenic fungus, provides both organic and conventional growers with a moderately effective biological control that has low mammalian and bee toxicity. Entrust also fills this niche and is so effective on flea beetle that it has become a standard for alternative insecticides; although, it can be detrimental to bees and natural enemies if not used carefully. This latest trial focused on AzaSol (azadirachtin), a natural plant compound, and Grandevo (*Chromobacterium subtsugae*), a biological control that has been shown to have some activity in Michigan against the spotted wing drosophila. Unfortunately, these two candidates were not effective against the blueberry flea beetle. Entrust, as has been shown before, provides excellent control. Cyonara also showed excellent control.

CURRENT RECOMMENDATIONS

Cyonara has a broad efficacy on many insects including bees (highly toxic) and it has fairly long residual activity. It also has moderate toxicity to humans, high toxicity to fish, and low toxicity to birds. Therefore, because of its profile we do not recommend that

Cyonara be pursued for use in wild blueberry, despite its effectiveness against blueberry flea beetle.

NEXT STEPS

- Continue efficacy trials as new products become available.