

**REPORT – MICHIGAN STATE UNIVERSITY
2009 FIELD SEASON**

Western bean cutworm in dry bean - insecticide trial

Trial Location: Michigan / Montcalm County / Thorlund Brother's farm

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Crop/Pest: Dry bean / Western Bean Cutworm
Variety: California early light red kidney (CAL-ELRK)
Planting Date/Rate: 15 June 2009 / 59,285 seeds per acre

Treatments (rate / acre) - unless noted otherwise

1. Untreated check
2. Cruiser 5 fs (1.28 oz / cwt)
3. Temik 15G (5lbs. in-furrow)
4. Thimet 20G (10.2 lbs. t-band)
5. Warrior CS (3.2 oz)

[Treatment 5 was applied 4 days after egg mass infestation, as if egg masses were discovered in the field]

Plot layout: 4 reps, RCBD, plots 10 feet (4 rows) x 20 feet
Alleys were rototilled around each plot to reduce plot-to-plot larval movement.



Fertilizer Application: 200 lbs 12-12-12 at planting

Pesticide Applications (Rate / acre):

- ◆ 15 June, Eptam 7E (1.25 qt) + Sonalan HFP (1.0 pt) + Intrro (2.0 qts) - all incorporated
- ◆ 7 July, Basagran (12 oz.) + Reflex (1pt) + Crop oil (1pt)
- ◆ 7 July, Dimethoate (16 oz) for potato leaf hopper control

Trial infestation and harvest

- ◆ 31 July: Infested dry beans with WBC egg masses at a rate of 1 per 4 feet of row. Egg masses collected from an infested corn field in Oceana County on the same day.
- ◆ 24 Sept: Harvested center two rows of each plot. Details below.

At the end of the season, two center rows of each plot were harvested. Plants in one row were pulled, run through an Almaco stationary thresher, and weights and moistures taken. A 250 g sub-sample subsample was collected to determine % damaged beans. The percentage was multiplied by the total plot weight, and the resulting number subtracted from the total plot weigh to provide an estimate of marketable yield in lbs. This is similar to what an elevator would do to estimate the percentage of damaged beans (pick) in a commercial shipment.

The second row was hand harvested and taken back to the laboratory to determine % damaged plants. Damaged and undamaged pods were counted. The damaged pods were removed from stems by hand, and run through a small table-top roller thresher [Taylor Manufacturing Co.] to determine the number and weight of damaged versus undamaged beans. The undamaged beans (still on the stems) were run through the Almaco thresher to get total weight. Data was analyzed using SAS version 9.1.

Weather Data: Station located at the MAWN, Montcalm research station ~15 mile distant

Month	Total Precipitation Inches
April	3.9
May	2.2
June	2.4
July	2.1
August	4.7
September	1.5

Early and last season WBC feeding on pods



Damage and Yield, WBC insecticide trial, 2009

Treatment	Rate	Method	% pods damaged	% beans damaged by weight		Yield lbs/acre
				hand-harvested sample	Machine-harvested sub-sample	
Warrior CS	3.2 oz/acre	foliar	1.6 a	0.0 a	0.0 a	2463 a
Untreated	-	-	15.5 b	1.5 b	1.8 b	2181 a
Thimet 20G	10.2 lbs/acre	t-band	16.5 b	2.0 bc	2.3 b	1985 a
Cruiser 5 fs	1.28 oz/cwt	Seed treat	19.5 bc	2.5 c	2.3 b	2313 a
Temik 15G	5 lbs/acre	in-furrow	25.0 c	3.5 d	2.6 b	2243 a

In columns, numbers followed by different letters are significantly different at $p < 0.05$, LSD.

Results and Discussion:

Cruiser seed treatment is used on dry beans to control early-season insect pests. Temik and Thimet are used by some growers in central Michigan to control potato leafhopper early in the season, although this practice is not used by growers in the Thumb region or recommended by MSU. None of these insecticides used at planting were expected to last long enough in the season to control WBC larvae in August, and indeed, damage was not different in plots treated with these products compared to the untreated control.

However, a single foliar application of Warrior, timed as if egg masses were found in the field (4 days after intentional infestation) significantly reduced pod feeding, and eliminated bean damage. Unfortunately it is difficult to scout dry beans for egg masses and larvae. The current recommendation in Michigan for 2010 is to apply a pyrethroid as soon as WBC pod-feeding is found, or if nearby corn fields are over threshold for egg masses.

A final point of interest is that plots treated with Temik appeared to have significantly more damage than plots treated with Cruiser or Thimet. Temik-treated plants often are noticeably taller and bushier in many systems (such as soybean and potato), and this denser growth may have increased survival of hatching larvae by, for example, having increased humidity under the canopy. This effect will be investigated further in 2010.