

**REPORT – MICHIGAN STATE UNIVERSITY**  
**2009 FIELD SEASON**  
*Western bean cutworm in dry bean - egg mass trial*

Trial Location: Michigan / Montcalm County / Thorlund Brothers

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Funding: Project GREEN

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: 0, 0.5, 1, 2, or 3 egg masses per 5 foot of row  
Dry bean plots were infested with varying numbers of WBC egg masses (average of 50 eggs per mass) collected from corn fields in west Michigan. Egg masses were pinned to the underside of the dry bean leaves (below). Alleys were rototilled around each plot to reduce plot-to-plot larval movement.



Plot layout: 4 reps, RCBD, plots 10 feet (4 rows) x 20 feet

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) + Intro (2.0 qts) - all were 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

- ◆ 28 July: Infested d with WBC egg masses collected from Oceana County, MI
- ◆ 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.



*Sampling (left) and harvesting dry bean plots (right)*

Weather Data: Station located at the MAWN Entrican site ~15 miles distant

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

### Damage and yield, WBC egg-mass trial 2009

# egg masses per 5 row ft	% pods damaged	% beans damaged by weight		Yield lbs/acre
		hand-harvested sample	Machine-harvested sub-sample	
0	4 a	0.5 a	0.2 a	2341 a
0.5	12 a	1.1 ab	1.3 ab	2294 a
1	22 c	1.9 bc	1.6 ab	2370 a
2	26 cd	2.7 c	2.7 b	2287 a
3	30 d	1.4 ab	2.6 b	2351 a

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

#### Results and Discussion:

A small amount of damage was found in the '0' plots which were not infested with egg masses. This could be the result of interplot movement (despite the rototilled borders) or natural background infestation. At one egg mass per 5 feet of row, there were significantly more damaged pods (22%) and beans (1.9%) than the '0' treatment. This damage increased to nearly 3 % bean damage with over 2 egg masses per 5 row feet. Although there were no significant differences in lbs of yield, there was a difference in quality that was economic, because damaged beans must be screened out of commercial loads.