

Western Bean Cutworm in Michigan: 2012 Management Recommendations for dry beans

New
Jan 2012

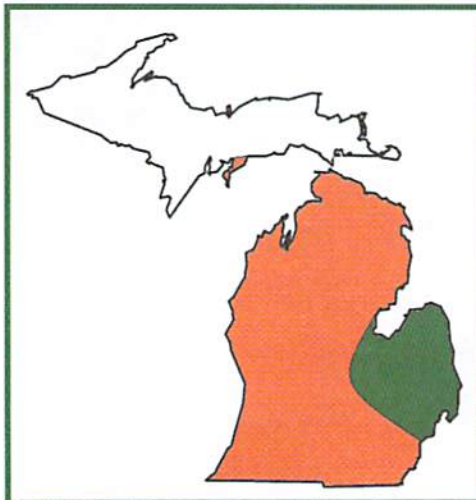
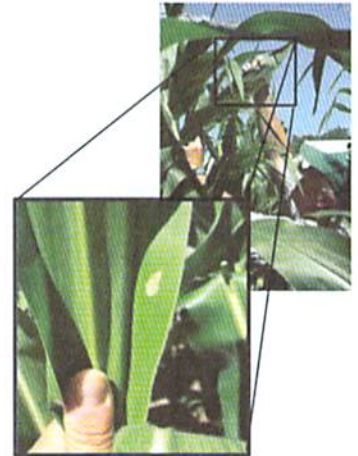
Megan Chludzinski, Fred Springborn, & Chris DiFonzo
Michigan State University, East Lansing, MI

Assessing Western Bean Cutworm Pressure:

WBC egg masses and larvae are **hard to find** in dry beans, thus scouting for larvae is not recommended. Use pheromone traps to monitor adult flight. As few as 150 total moths indicates a large local population. Scout nearby pre-tassel and pollinating corn fields for egg masses. Scouting corn is easy and can indicate pest pressure in the local area. Seven to ten days after egg masses are found in corn, scout dry beans for feeding injury = flowers with pinholes, small pods cut off at pedicel and larger pods with chewed spots or holes (see page two). Damage is difficult to see without careful and patient examination.

Western Bean Cutworm Control Recommendations:

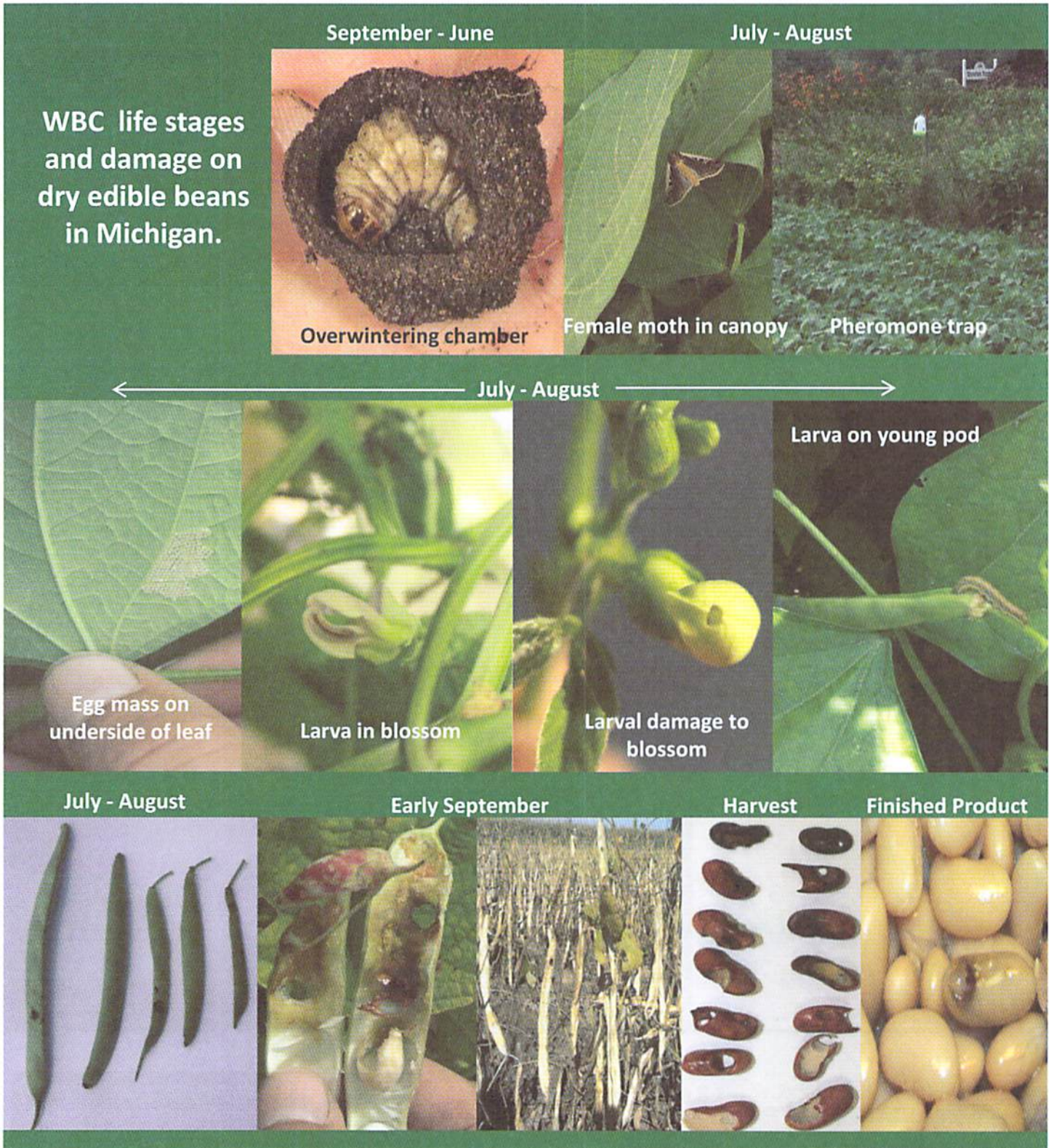
- For Michigan, an insecticide application may be necessary if:
 - ❖ average pheromone trap catch > 150
 - ❖ nearby pre-tassel corn fields have egg masses
 - ❖ pod damage is present
- Spray with a long-lasting pyrethroid 7 to 14 days after peak flight. It is preferable to be on the later side of this interval than to spray before peak flight.
- One well-timed spray is just as effective as multiple sprays.
- Be aware of pre-harvest intervals, which may be as long as 21 days.



Dry bean acres throughout Michigan, with the exception of the Thumb and Saginaw Valley, were treated in 2009 to 2011 for WBC injury. This difference in population level could be related to soil type and better overwintering success of WBC in the central part of the state. However, there is the possibility for localized populations in the Thumb and Saginaw Valley, especially in areas with sandy soils.

Western Bean Cutworm Lifecycle:

- One generation per year
- Adult moths emerge in late spring to early summer from the soil
- Moths lay eggs in mid-July through early August (in the early morning)
- Larvae feed first on leaf tissue and blossoms, then on developing pods and beans
- Damage to dry beans results in reduced yield and quality of the crop
- Sixth instar larvae burrow into the soil from late August to early September





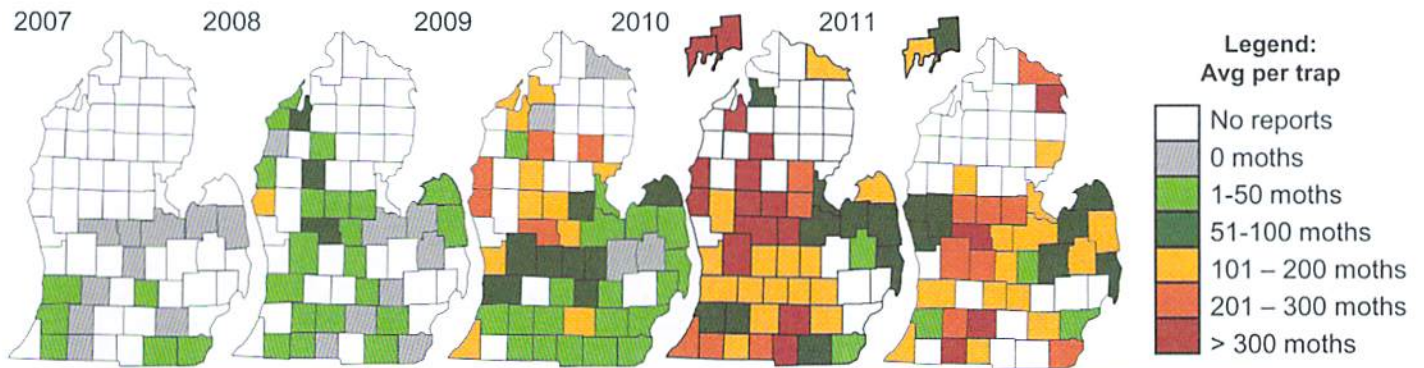
Western Bean Cutworm in Michigan: Update on dry bean research from 2011

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Thanks to cooperators throughout the state, and funding from the Michigan Bean Commission, Western Bean Cutworm (WBC) numbers and flight were monitored in 2011 at 208 locations.

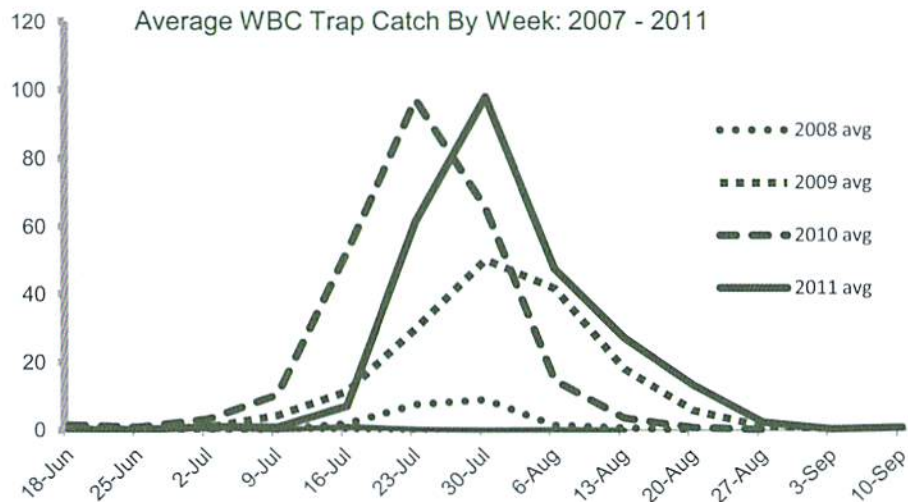
Average WBC Trap Catch by County 2007 – 2011 (# moths)



Summary of WBC Trapping in Michigan					
Year	2007	2008	2009	2010	2011
Total # Traps	23	84	279	346	208
Total # Moths Caught	54	1,730	28,344	38,009	42,783
# Moths / Trap	2	21	102	110	206

Between 2007 and 2011, WBC catch was highest in west and central Michigan. The total number of moths caught increased from year to year. More important, the number of moths per trap continues to increase, doubling from 2010 to 2011.

Peak flight in 2008, 2009, and 2011 was the last week of July. In 2010, the peak was a week earlier, but this was the hottest summer on record.



To order WBC pheromone and bucket traps, contact
Great Lakes IPM
 Vestaburg, MI:
 1-800-235-0285
www.greatlakesipm.com



Western Bean Cutworm in Dry Beans

A biology study was done to determine where larvae feed and how far they move, depending on their age.

Dry bean plants were infested with WBC egg masses. Based on days after hatch (DAH), plants were dissected to look at where the larvae were on the plant.



WBC larvae in dry bean blossom

Percent Larvae Recovered

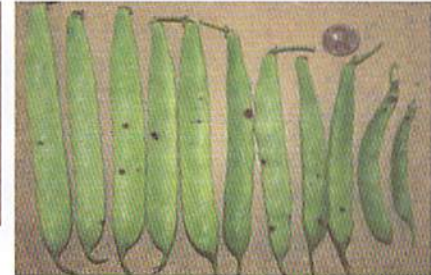
Location	1 DAH	5 DAH	10 DAH	14 DAH	21 & 28 DAH
Leaves	71	80	33	75	Not Found
Blossoms	29	20	67	25	Not Found
Pods	-	-	-	-	Not Found
Ground	-	-	-	-	Not Found
# Damaged Pods / Foot of Row	0	0	0	39	30, 36

Results:

From 1 DAH to 5 DAH larvae were found **on the leaves or in the blossoms**. From 10 to 14 DAH, larvae were very difficult to recover. After 14 DAH, no larvae were recovered, although pod feeding increased, indicating larvae were still present on the ground. **This demonstrated the difficulty of scouting for WBC larvae in dry beans.**



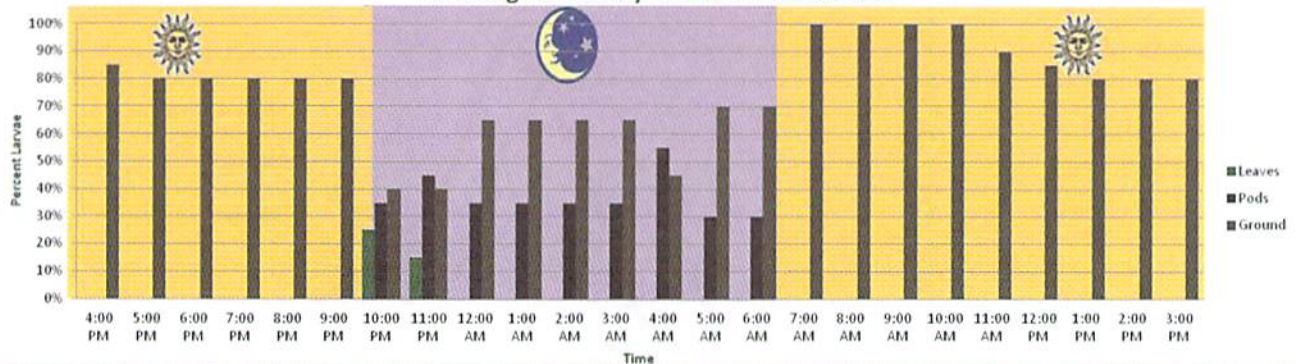
Early WBC damage to blossoms, developing pods, and mature pods.



Overnight observations were done to determine timing of WBC larval feeding in dry beans.

At two locations, 20 WBC larvae were placed on 4 dry bean plants. Their individual position (leaves, pods, or ground) was recorded every hour for 24 hours. An attempt was made to find each larva during each hourly observation. A barrier was sunk around the plants to eliminate larval escape. At both locations the larvae were found on the pods overnight and most were found on the ground during the day. This helped to explain why it is so difficult to scout for larvae in dry beans during the day.

MSU Saginaw Valley Research Center 2011



Research Implications:

- Monitoring WBC traps gave usable guidelines for timing spray applications and pest control.
- Observing WBC larval movement showed where larvae tend to congregate throughout their lifespan. This can be used for pest scouting in dry beans and applied to IPM practices.
- Determining timing of WBC larval feeding gave blocks of time that larvae are more visible and vulnerable. This can also aid in scouting and IPM practices.