Trapping & managing western bean cutworm in dry beans

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Western bean cutworm (WBC) is pest of both dry beans and corn. In the early 2000s, WBC expanded its range east into the Midwest. Larval feeding was first reported in commercial dry bean fields in mid-Michigan in 2008. WBC caterpillars chew into pods and damage beans. Feeding can directly reduce yield, but more importantly, damaged beans may be difficult to separate from whole beans. Thus WBC causes additional economic loss through the extra handling time required to separate the extra pick from marketable yield.

Trap near bean field

Pheromone Trapping: Male WBC moths fly at night and key in on a pheromone released by the female to find a mate. This pheromone is commercially available to monitor WBC populations using a homemade milk jug trap or a commercial bucket trap. Use two traps per dry bean field (ideally). Check traps at least once a week (count & remove the moths). When trap catch peaks (generally ***late-July to early August***), begin scouting corn near dry bean fields for egg masses and checking beans for pod feeding.

Scouting corn to determine dry bean risk: Scouting for egg masses in dry beans is difficult. It is nearly impossible to find egg masses in a dry bean canopy. Instead, scout ***whorl stage to pre-tassel corn fields*** near dry bean fields to determine egg-laying pressure in your area. Females prefer to lay eggs in pre-tassel corn <u>first</u>, then switch to dry beans after pollen shed.

Check 20 plants in 5 areas of the field for egg masses to determine % plants infested. Egg masses are laid on the upper surface of the top 3-4 leaves, often the flag leaf or the leaf immediately below the tassel. Note that placing the sun behind a row assists in finding egg masses by creating shadows on leaves (right).

Thresholds developed in the western states based spray decisions on the number of larvae per foot of row (difficult to determine, especially since larvae tend to feed at night) or counts of >700 moths per trap. But dry bean fields in Michigan have had unacceptable levels of pick when local trap catch was as few as ***150-200 moths total***. Instead, use these guidelines to make a decision:

Consider spraying a dry bean field if:

Scout neighboring whorl to pre-tassel stage corn fields

Neighboring corn fields are near or over threshold of 5% plants with egg masses

Use pheromone traps to determine timing and level of local WBC flight

Trap catch >150-200 moths per trap during peak flight (late July-early August)

As flight peaks in traps, examine dry bean fields for pod feeding.

Pod feeding is found

Treatment: Once a decision is made, a single well-timed spray can eliminate or reduce pick in commercial fields to acceptable levels.

MSU research conducted in Montcalm County bean fields found that a single application of a long-lasting pyrethroid, made after an infestation to simulate peak egg laying, was as effective at reducing bean damage as multiple, weekly applications. A single spray made up to 18 days after infestation (DAI) still reduced bean damage to acceptable levels. A pyrethroid directly kills larvae present in the field, plus gives a 7 to 14 day residual window to control larvae hatching from egg masses laid after the peak. Based on the timing of peak trap catch in Michigan, the residue window protects the crop into late August, when fields would already be within the preharvest interval for pyrethroids registered for dry beans (21 days).

A note about seed treatments: Cruiser seed treatment is effective for 30-40 days after planting, which is helpful for early season insects such as potato leafhopper. But it does not last long enough to control insects that colonize later in the season. Thus, seed treatments provide no reduction in WBC damage.

Results from MSU spray timing study in Montcalm County

Treatment - Days After Infestation	% of Beans Damaged
Weekly spray (n = 4 times)	**0**
4 DAI	**0**
11 DAI	**0.1**
18 DAI	**0.1**
25 DAI	0.6
Not sprayed	0.8

Pheromone lures & bucket traps can be purchased locally from
Great Lakes IPM
Vestaburg, MI
http://www.greatlakesipm.com