



Managing western bean cutworm in dry beans

CDD#023
New
Feb 2010

Chris DiFonzo
Entomology Department
Michigan State University
East Lansing, MI 48824

Photo credits:
Chris DiFonzo, MSU
Mike Jewett, MSU
Bruce Mackellar, MSUE

Western bean cutworm (WBC) is pest of both dry beans and corn in the western U.S. In the early 2000s, WBC expanded its range east across the Midwest. It was first detected in corn in Michigan in 2006. Larval feeding was detected in commercial dry bean fields in mid-Michigan in 2008. WBC reduces yield and quality, as caterpillars chew into pods and increase the number of damaged beans (pick) at harvest.

Pheromone Trapping: Male WBC moths fly at night and use smell, rather than sight, to find mates. Female WBC release a pheromone that attracts male WBC. This pheromone was artificially synthesized and is commercially available to monitor WBC populations using a simple milk jug trap. The pheromone lure hangs under the cap. Males fly into the jug and get trapped in the liquid at the bottom.



Trap near bean field



Use two traps per field (one at either end). Check traps at least several times a week, removing and counting the WBC moths. When trap catch peaks (generally **late-July to early August**), begin scouting corn near dry bean fields for eggs, and checking dry 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 heavy dry bean canopy. Instead, scout **pre-tassel corn fields** near dry bean fields to determine egg-laying pressure in your local area. Females prefer to lay eggs in pre-tassel corn **first**, 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).



Threshold: A threshold developed in the western U.S. uses counts from the milk jug traps to make a spray decision. A total 700 or more moths is needed before spraying is considered. In 2008 and 2009, dry bean fields in Michigan had an unacceptable amount of pick when local trap catch was **as few as 150-200 moths total**. The western threshold thus appears to be too high for use in the region. Another western threshold is based on the number the of larvae per foot of row, but it is extremely difficult to scout for caterpillars in a dense dry bean canopy. Also, caterpillars tend to feed at night and spend the day at the base of the plant, making larval scouting even ore difficult. Long term, it may be possible to modify the milk jug threshold, or to develop a threshold based on pod feeding (which is easier to see in the canopy).

For now, use the following guidelines to make a spray decision:



Scout pretassel corn fields near dry beans for egg masses [threshold in corn: 5% plants w/ egg masses]

Consider spraying a dry bean field if:

The neighboring corn fields are near or over threshold



Use milk jug traps (2 per field) to determine timing and level of local WBC flight

Trap catch is more than 150-200 moths by peak flight (late July-early August)



As flight peaks in the milk jug traps, scout dry bean fields for pod feeding

Pod feeding is found

Insecticides

Foliar sprays: Use a long-lasting pyrethroid with a 7-10 day residual. This will kill larvae already present in the crop, as well as larvae hatching over the next week. A single well-timed spray eliminated bean pick in commercial fields in 2009.

Seed treatments: Cruiser seed treatment is effective for 30-40 days after planting, and does not last long enough to control WBC later in the season.

Soil insecticides: Research in 2009 showed that Thimet and Temik, applied at planting to control potato leafhopper, provided absolutely no control of WBC later in the season.



Where to buy pheromone:
Great Lakes IPM
Vestaburg, MI
<http://www.greatlakesipm.com/>