Western Bean Cutworm: A New Corn Ear Pest in New England

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History. Western bean cutworm (WBC, *Striacosta albicosta*) was historically found in the western Corn Belt, where it was a common pest of dry beans and corn. Starting in the year 2000, economic damage from this pest was found on corn in Iowa and Minnesota. Since then, this pest has continued to rapidly spread eastward, reaching Ohio in 2006 and the New England region from 2009 to present. Extensive damage to corn and dry beans in this region of expansion appears to be limited to more northern areas such as Michigan and Ontario, Canada. For example, most of Ohio and Pennsylvania have not yet encountered economic damage from this pest despite its presence in these areas for the past 6 years.

Life Cycle and Damage. The adults emerge in late June–early July after fully grown larvae overwinter inside soil chambers in the soil 3–8 inches deep. The adults are mostly dark brown and black, with three characteristic markings that distinguish them from other moths: (1) a white stripe on the top edge of the forewing, (2) a light brown/tan colored dot, and (3) a comma or crescent-shaped mark behind the dot. Peak flight of the adults usually occurs in mid-July, with adult flight ending by mid to late August. There is one generation per year. During the summer flights, adults mate, and females lay eggs on the uppermost portion of the flag leaf. Eggs are laid in unevenly distributed clusters of 5–200, but averaging about 50 per cluster, and hatch within 5–7 days, depending on temperature. Eggs first appear white, then tan and then a dark purple. Once eggs turn purple, hatching should occur within 24 hours. Larvae are tan in color, and can be identified by two broad stripes immediately behind the head. In pre-tassel corn, larvae will move to the whorl to feed on the flag leaf and un-emerged tassel. Once the tassel emerges, larvae then move to the ear, all the while feeding on corn pollen, leaf tissue, and silks. By the 4th instar, larvae will enter the ear through the tip, or by chewing through the side of the husk and feeding directly on the kernels. The presence of these burrows also makes the ear more prone to fungal and mycotoxin infection. Unlike corn earworm, WBCW are not cannibalistic, and multiple larvae may be found on corn ears. By the 6th or 7th instar, larvae emerge from the ear and fall to the ground to overwinter in soil chambers. Pupation occurs in May, immediately before adult emergence.

Monitoring. The easiest way to monitor the presence of this pest is by trapping the adult moths. Traps can be constructed out of empty milk jugs or by the use of bucket traps. For milk jug traps, four windows from an empty gallon milk jug are cut, and the jug is tied to a post at least 4 feet high. A bent paper clip is used to attach the lure to the inside lid of the milk jug and the cap is replaced to keep the lure in place. The bottom of the jug is filled with an 4:1; water:antifreeze solution, with a drop of dish soap added to break water surface tension. The bucket trap can be

purchased at several IPM supply stores with instructions included. Pheromome lures usually last about 4 weeks, and the insecticidal strips for bucket traps need to be replaced after 6 weeks. Traps (either the milk jug or green bucket trap) are placed on the edge of a cornfield; one trap per field is sufficient. Traps should be inspected at least weekly from June 1 until mid-September. When the first adult is collected or when adults are collected on consecutive nights, scouting for eggs or larvae should begin.

To scout for eggs or larvae, choose at least 20 consecutive plants in 5 random locations and inspect the uppermost 3 leaves for eggs, as well as the silks for larvae if tassel has emerged. Be sure to inspect different areas of the field that may be in different growth stages, and especially in corn that has not tasselled. For field corn, if 5-8% or more of the plants inspected have eggs or larvae, consider treatment. For sweet corn, consider treatment if eggs or larvae are found on >4% of plants for the processing market or on >1% of plants for fresh-market.

Treatment Considerations. If infestations exceed threshold, many insecticides are available to adequately control WBC. However, as with any ear-burrowing Lepidopteran pest, timing is critical. Insecticide applications must occur after egg hatch, but before larvae enter the ear. If eggs have hatched, applications should be made after 95% of the field has tassel. If eggs have not hatched, monitor for the color change. Hatch will occur within 24–48 hours once eggs turn purple. To search for larval injury after it has occurred, growers can inspect corn for ears having feeding holes on the outside of the husks. WBC can be controlled with transgenic hybrids. However, only transgenic hybrids with the Cry1F or Vip3A gene will offer adequate to near-complete control of WBC. With any of these transgenics that offer WBC control, remember that the refuge (if not integrated) will require watching because those hybrids will not offer management of the insect. Some transgenic sweet corn varieties should provide control of WBC, as long as they contain either Cry1F or Vip3A. For example, Attribute II trait stack from Syngenta will control WBC because it includes Vip3A. Corn growers should check information provided in their seed guide for the presence of these two traits if controlling WBC is necessary.

Information is adapted from: Michel AP, Welty C, Hammond RB, Eisley JB. 2009. Western Bean Cutworm. Ohio State University Extension Fact Sheet: FC-ENT-40-09. Available at: http://ohioline.osu.edu/ent-fact/pdf/0040.pdf.