

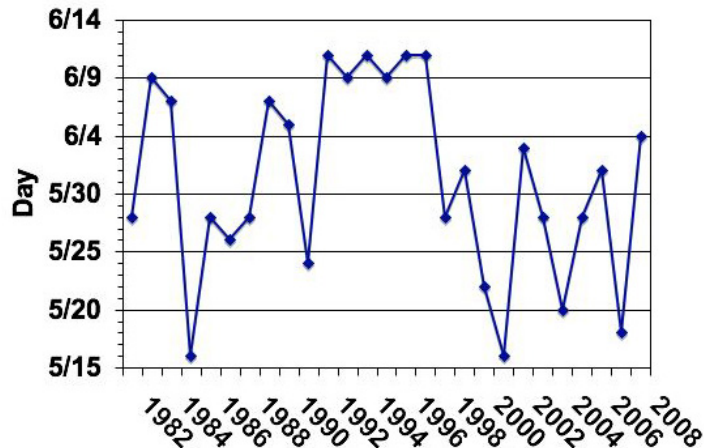
Review of the Season: Field Crop Insects

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2008 was the perfect example of how environmental extremes can have detrimental effects on insects. Simply stated: insects do drown! Overall, this past season was a bust for many field crop insects, especially those utilizing the soil for a portion of their biology, e.g., western corn rootworm. Certainly this year's wild swings in moisture and temperature weren't unique to Indiana alone, but most Midwestern states saw dramatically lower insect pressure.

How is western corn rootworm (WCR) larval survival impacted by saturated soils? WCR adults have a tendency to lay eggs during late summer where soil is a little more moist and cooler than surrounding soil. These areas are typically found in soil types and field depressions that tend to collect and hold moisture in late summer. This is why the distribution of WCR injury in the following year tends to be clumped. These same areas that are attractive to WCR adults for egg laying are where soils tend to become saturated first and remain wet longest when rain is extensive. Therefore, the impact of drenching rains on rootworm can be significant if the timing is correct. Over-wintering rootworm eggs are very resistant to flooding and fields would have to be submerged many days before adverse impact would occur. Newly hatched larvae, are particularly susceptible to saturated soil and will die after being denied air for a less than a day. As seen in the following graph, larvae throughout most of the state were hatching in late May to early June, just as rains were saturating much of the state's soil. Second instars that are still embedded in roots will generally not survive in submersed or heavily saturated soil after a day or two. The warmer the soil, the more rapidly stressed larvae die. Reported root larval damage and silk-feeding beetles were very low this past season, suggesting that rootworm pressure will be lower for 2009.

**First Observation of Rootworm Larvae
in Corn Roots, Tippecanoe County,
Indiana, 1982-2008**

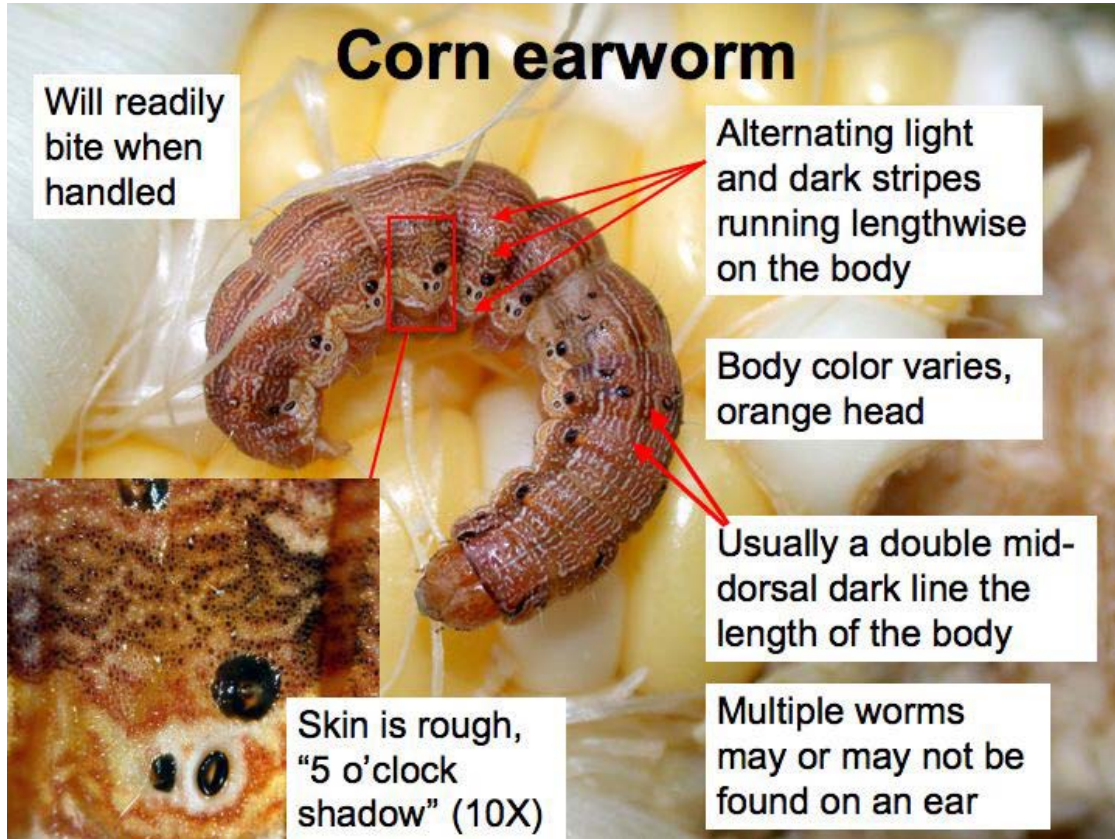


Interestingly, the soybean aphid bucked the trend of the "odd-year" phenomena. Since 2000, soybean aphid has been a threat in only uneven years. Up through the first week of August, it looked as though they would cooperate and be a LOW-show in Indiana soybean fields. By the third week in August, pest managers were reporting a sudden surge of aphid numbers in northern Indiana fields.

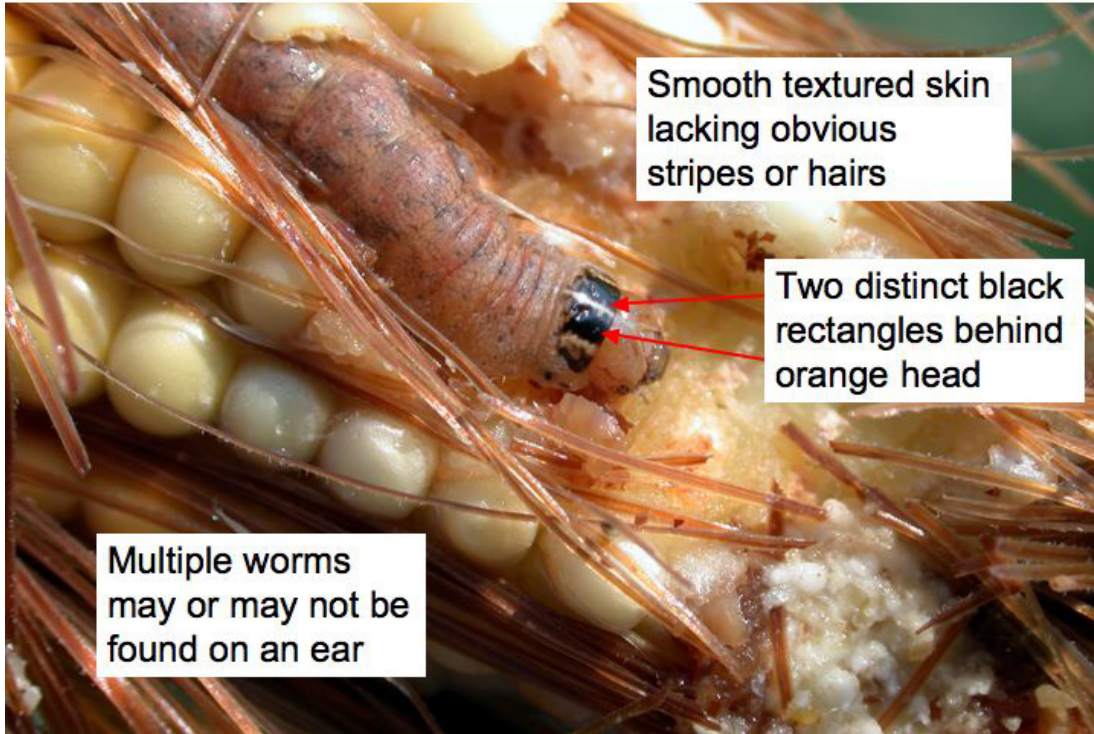
To complicate issues, spider mites too were flourishing where dry conditions persisted throughout the later portion of the summer. Scouting paid dividends, because of the tremendous variability in aphid and mite numbers from field to field. Although it is unknown how extensive the aphid/mite infestations were, certainly higher commodity prices made treatment decisions easier even though soybean were mostly in the R5/R6 (full seed) growth stages, on the late side of an economic return. Also, I am hinting at the possibility of fields being treated with insecticides far below threshold levels.

Worms feeding in corn ears were probably the most interesting story for the year, admittedly from my perspective. With many late-planted fields this year, later developing corn was in abundance. This set the stage for ear-feeding insects, i.e., corn earworm, fall armyworm, and western bean cutworm. The arrival of the western bean cutworm into the state, first moths captured in 2006, has encouraged pest managers to inspect corn ears while visiting fields later in the season. This is especially true because Herculex (HX1 and XTRA) is more efficacious against western bean cutworm than YieldGard, thus a marketing advantage. The reality is that statewide, corn earworm has, and still is, the greater threat to cause ear damage (which by the way, all above-ground *Bt* events are only marginal in earworm control). However, in northwestern counties, western bean cutworm has shown in a few fields how severe damage can be. Although there is much to be learned about this new species of cutworm in Indiana, there seems to be a higher correlation of damage to fields in continuous corn and lighter textured soils. Larvae, and their damage, have been found as far east as Marshall County. Moth captures in northeastern Indiana and northwestern Ohio indicate that this damage will likely continue eastward. How far, and how fast, is anybody's guess.

Identifying Characteristics of Ear Feeding Larvae



Western bean cutworm



Fall armyworm

