

Adult Corn Rootworm Scouting

- There are two reasons to control CRW beetles: to protect pollination by preventing silk clipping and to reduce the number of egg laying females to help suppress the number of larvae the next growing season.
- Adult CRW beetle counts are a key component in assessing whether or not insecticide applications are warranted.
- Scouting is a labor-intensive task and requires that the investigator be able to accurately count beetles, identify males and females, and discern whether a female is ripe with eggs (gravid).

WHOLE PLANT SCOUTING PROCEDURES

Beginning at the onset of adult rootworm beetle emergence (usually early to mid-July), fields should be examined weekly through early September to verify if there is a presence of adult CRW beetles. If there are more than 1 or 2 per plant, follow the scouting procedures outlined below. It is best to sample in the morning or late afternoon when beetles are most active.

- Randomly select 20 to 25 locations within the field and count the total number of beetles on at least two plants within each location to estimate the average number of beetles per plant.
 - The distance between the two plants sampled should be great enough so as to not disturb beetles on the second plant to be sampled while examining the first.
 - Ensure samples are included from each quadrant of the field.
 - Larger fields sampled when beetles are actively moving may require more counts for representative field averages.
 - Beetles can be captured by hand, with a small sweep net, or by use of a motorized hand held vacuum.
- Capture 10 random females and determine the percentage of gravid females by selecting females with swollen abdomens and gently squeezing to express abdomen contents.
 - Expression of an opaque or milky substance, that when rubbed between the fingers reveals the presence of individual eggs, indicates that the female is gravid and is actively laying eggs or will be within the next few days (Figures 3 & 4).



Figure 1. Male western CRW beetle.



Figure 2. Female western CRW beetle.



◀ Figure 3. Gravid eggs can be distinguished by abdomen contents. A finger rub through the contents will separate out eggs. Photo courtesy of Kevin Black, GROWMARK, Inc.

Figure 4. The contents of non-gravid females appear gelatinous or 'slimy'. Photo courtesy of Kevin Black, GROWMARK, Inc. ▶



DETERMINING NEED FOR POLLINATION RESCUE

- Examine the ear of each plant sampled.
- Measure the length of silk on each ear and then gently husk the ear and determine whether or not the ear has completed pollination.
 - The silks of pollinated kernels will easily detach when holding the ear parallel to the ground and gently shaking. Silks from unfertilized ovules will fail to fall away from the ear (Figure 5.)



Figure 5. Silks from unfertilized corn remains attached when performing the shake test.

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Figure 6. Silks are still protruding from the ear husk more than 1/2 inch. However the large number of CRW beetles in the photograph would suggest that control measures should be taken to help prevent eggs from being laid.



Figure 7. Silks are being clipped to less than 1/2 inch protrusion from the husk. Pollination is likely in jeopardy.

THRESHOLDS FOR EAR PROTECTION

In general, treatment with foliar insecticides to control beetles during pollination is warranted when beetle counts of 5 or more per plant are found (regardless of being male or female), fewer than 75% of the plants have emerged silks, and/or silks are being clipped to less than 1/2 inch.¹

THRESHOLDS FOR POPULATION SUPPRESSION

Thresholds vary by state and planting density. In general, if adult beetle populations exceed 0.75 beetle per plant, potential for significant yield loss the next season may exist if no control tactics are instituted.² The key to success is timing the insecticide application prior to significant egg laying activity of the females. Insecticide applications should occur when the ratio of gravid females reaches 10% of females collected.²

Sources:

¹Gray, M.E., et al. 2010. Field crop scouting manual. X880b. University of Illinois.

²Wright, B. 2009. Use of corn rootworm scouting numbers as basis for 2010 production decisions. Crop Watch. University of Nebraska-Lincoln.

Additional sources used to create this Spotlight:

Steffey, K.L. 1999. Handbook of corn insects. Entomological Society of America.

Ratcliffe, S.T., et al. 2004. Corn Rootworm *Diabrotica* spp. University of Illinois Extension. Integrated Pest Management. <http://ipm.illinois.edu> (verified 1/28/2014).

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