Signs of ECB Activity and Damage to Scout for in Bt Corn Fields

ECB lay eggs on the underside of the corn leaves, close to the mid-rib (Fig. 1). Fresh ECB egg masses (Fig. 1-top) are white but turn dark closer to hatching (Fig. 1-bottom) and are layered on top of each other like fish scales. Return to fields with egg masses later in the season to look for signs of feeding. ECB larvae are pale tan to pinkish-grey in colour with a dark head and small round brown dots along their body. Note: The presence of ECB egg masses is not an indication of resistance but fields with eggs should be scouted again in a few weeks to look for signs of feeding damage. If feeding damage is present in Bt corn as shown in the images below, contact your seed provider and provincial extension specialist.

Figure 1. ECB egg masses. J. Gavloski, Manitoba Agriculture

Figure 2. ECB larva found in corn stalk. A. Tenuta, OMAFRA

Signs of ECB Feeding – Report if found on Bt Plants

ECB feeding found on Bt plants is a potential sign of resistance. Young larvae feed on the leaf surface and mine through the whorl of the younger plants. Early season signs of feeding may include window-paning, pinholes and shotholes (Figs. 3-5). These early signs of feeding are not unexpected damage as young larvae need to feed on the plant tissue to be exposed to the Bt protein and die.

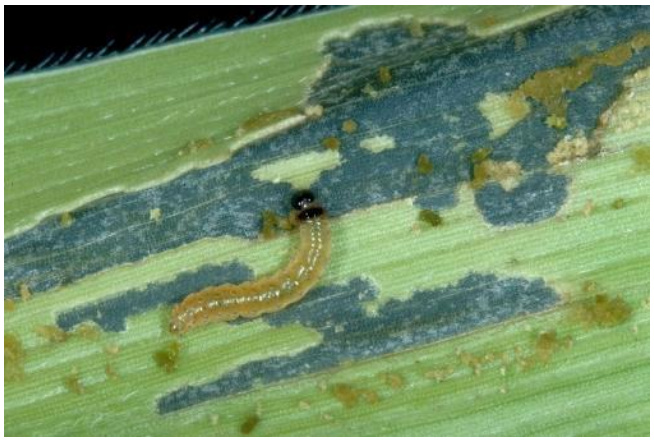

Figure 3. Young ECB larva and window-paning on leaf. M.E. Rice

Figure 4. Feeding on the whorl by ECB larvae. T. Baute, OMAFRA

Older larvae are able to mine into the mid-rib of the leaf, tassel or stalk of the plant and ear shank. Frass present at the leaf axils, bent leaves at the midribs, broken tassels, lodged plants and dropped ears are signs of ECB feeding (Figs 6-9). If damage continues to progress beyond pinholes and window-paning, this would be considered unexpected damage.

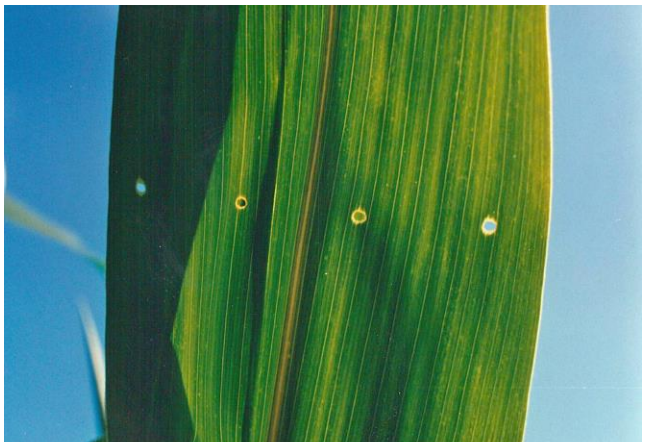

Figure 5. Pin-hole or shot-hole feeding pattern as the leaf unrolls from the whorl. T. Baute, OMAFRA

Figure 6. Bent or broken tassels are signs of ECB feeding. David Handley, U of Maine

Figure 7. ECB larvae may tunnel from the mid-rib of the leaf down to the stalk. T. Baute, OMAFRA

Figure 8. Entry hole and frass at leaf axil as ECB enters the stalk. J. Obermeyer, Purdue

Figure 9. Bent or broken corn stalks due to ECB tunneling. Damage to ear shank due to ECB tunneling. E. Bohnenblust, Penn State University