COMMON STINK BUGS IN CORN

Reports of stink bug injury in corn have been increasing over the past several years in the Midwest. While usually only a small number of fields exhibit economic injury, the injury is widespread and can be devasting in areas within infested fields. Stink bugs or shield bugs have piercing-sucking mouthparts. Upon piercing the plant tissue, saliva is pumped into the plant to begin the digestive process. While the stylet itself can cause mechanical injury, the material pumped into the plant in combination with the mechanical injury is thought to result in the damage symptoms observed in the field.

Species and Biology[1]

There are several species of stink bugs that can injure corn; however, the brown stink bug (Figure 1), southern green stink bug, and one-spotted stink bug are the most common in the southeastern United States, while in the Central Plains, in addition to the previously mentioned species, the green stink bug (Figure 2) and red shouldered stink bug (Figure 3) have also been reported to damage corn and soybean. [For more information on early season stinkbug management in soybeans, please read this article. Recently, a new invasive species, brown marmorated stink bug (Figure 4), is also becoming a concern in the eastern U.S. and the Midwest.

Figure 1. Brown stink bug, Herb Pilcher, USDA Agricultural Research Service, Bugwood.org.

Figure 2. Green stink bug, Clemson University - USDA Cooperative Extension Slide Series, Bugwood.org.

Figure 3. Red shouldered stink bug, Russ Ottens, University of Georgia, Bugwood.org.

Figure 4. Brown marmorated stink bug adult. Photo by Susan Ellis, Buwood.org

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While there are several species, the biology and injury they cause is similar. Adults overwinter in protected locations; in the case of the brown marmorated stink bug, it is usually a home. Females deposit barrel-shaped eggs in a mass of 15 to 20 on host plant leaves (Figure 5). The eggs hatch in mass and in some cases, the female guards both the egg mass and developing nymphs. In some cases, the nymphs do not look anything like the adult in coloration (Figure 6). Feeding by both the adults and nymphs can result in injury.

Figure 5. Green stink bug egg mass, Herb Pilcher, USDA Agricultural Research Service, Bugwood.org.

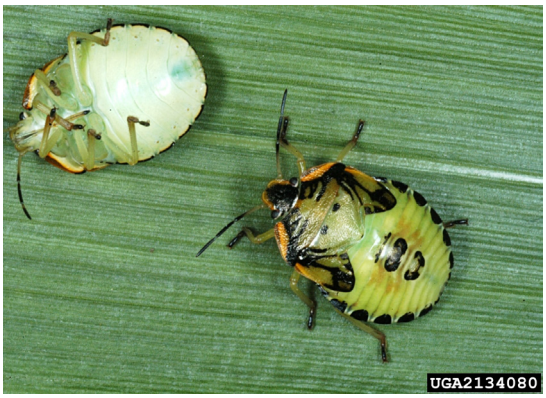

Figure 6. Green stink bug nymph, Herb Pilcher, USDA Agricultural Research Service, Bugwood.org.

Stink Bug Injury and Plant Damage[2,3]

Corn produced in no-till systems appears to be at higher risk of injury by stink bugs, particularly those fields bordered by woods. While conventional-tilled fields can also be injured, the injury is usually less severe and limited to the border rows. In the southeastern United States, surveys found that a soybean-wheat-corn rotation is conducive to an increased risk of stink bug injury in corn.

Stink bugs may injure corn at three main stages: seedling, early and late vegetative, and after grain fill. Feeding injury to seedlings is usually at the soil line and can result in death. Injury to later vegetative stages results in a row of irregular oblong-shaped holes in the leaves with the fringe being yellow. This can sometimes be confused with billbug injury; however, the injury caused by billbugs will not have the yellow fringe around the margin of the holes. An additional symptom of injury in the vegetative stage is excessive tilling. Feeding during the early reproductive stages on the developing ear can result in "banana ears" (Figure 7), while less severe injury can result in missing or deformed kernels. Feeding injury can extend into the late milk or early dent stage as well. The damage includes deformed kernels, some with obvious holes as a result of feeding injury.

Figure 7. Injury to corn ear resulting in "banana ear".

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Scouting Strategies and Treatment Guidelines[2]

Scouting is the most effective way to prevent stink bug damage. For seedling corn, focus efforts in the first two weeks following emergence. Look at the base of the plant as adults usually feed about one inch above the soil line. Focus on field margins, particularly in those fields which have a history of stink bug injury. Pick at least 5 places, at random, in the field and look for adults or injury on 20 consecutive plants at each location, for a total of 100 plants. For injury to later growth stages, focus on field margins and pay particular attention to the ear nodes as the stink bugs will tend to concentrate in the ear zone area. As with scouting seedling plants, choose 5 random locations and count the number of stink bugs on 20 consecutive plants. If stink bugs are found on the edge of the field, walk into the field at least 100 feet and ensure that the infestation is not limited to the field margin.

Treatment Guidelines[2,4]

Treatment guidelines can vary by state, so consult with your local extension service for local recommendations. A working treatment guideline for the Midwest is 1 stink bug per 4 plants (25% infested plants) prior to pollination, and 1 stink bug per 2 plants (50% infested plants) after pollination up to early dough stage3. In the southeastern United States, the thresholds are based on a 100-plant sample; if a treatment decision cannot be made, continue to sample until a confident decision can be made. See Table 1.

Table 1. Stink bug treatment guidelines for corn in the southeastern US.[5]

Corn growth stage	Plant area to sample	Do not treat if the total number of stink bugs are:	Take more samples if the total number of stink bugs are:	Apply an insecticide if the total number of stink bugs are:
V1 to V6	Base of plant below lowest green leaf	≤ 6	7 to 12	≥ 13
V14 to VT	Stalk from first leaf above and below the primary ear	≤ 9	10 to 17	≥ 18
R1 to R4	Stalk from one leaf above to two leaves below primary ear	≤ 35	36 to 51	≥ 52

Sources

1 Koch, R., Pezzini, D., Michel, A., and Hunt, T. 2017. Identification, biology, impacts, and management of stink bugs (Hemiptera: Heteroptera: Pentatomidae) of soybean and corn in the Midwestern United States. Journal of Integrated Pest Management Volume 8:1–14. https://academic.oup.com/jipm/article/8/1/11/3745633

2Townsend, L. and Bessin, R. Stink bug damage to corn. University of Kentucky Extension. https://entomology.ca.uky.edu/ef305

3Hunt, T., Wright, B., and Jarvi, K. Stink bugs reported in corn and soybean. University of Nebraska, Institute of Agriculture and Natural Resources. https://cropwatch.unl.edu/stink-bugs-reported-corn-and-soybeans

4Reisig, D. 2019. Scout before spraying stink bugs in corn. North Carolina State University Extension. https://corn.ces.ncsu.edu/2019/06/scout-before-spraying-stink-bugs-in-corn/

5Reisig, D. 2019. Stink bug thresholds. North Carolina State University Extension https://entomology.ces.ncsu.edu/stink-bug-threshold/

6Reisig, D. 2017. Stink bug economic threshold calculator. North Carolina State University Extension. https://soybeans.ces.ncsu.edu/stink-bug-economic-threshold-calculator/

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