



Agronomic Alert

Soybean Aphid

- Aphids can begin colonizing soybeans as early as May but outbreaks usually occur from flowering through early pod set.
- Heavy aphid infestations can result in severe yield losses; controlling aphids is most critical during the early reproductive stages (R1 through R4).
- Routine scouting is necessary to estimate aphid populations and to determine if insecticide applications are necessary.



Figure 1. Heavy infestation of aphids on the underside of soybean leaves.

Aphid Biology and Life Cycle

The soybean aphid is small, pale yellow to green in color, with distinct black cornicles near the end of the abdomen. There are both winged and wingless forms. Aphids remove plant sap with piercing-sucking mouthparts and are often

found feeding on the underside of new growth (Figure 1).

The soybean aphid life cycle is complex. Soybean aphids overwinter on a small woody shrub called buckthorn. They lay eggs on buckthorn in the fall from which wingless aphids hatch in spring. The aphids will complete 2 to 3 generations on buckthorn. In early June, winged females will develop and move into soybeans where many generations of wingless aphids will occur. During this time, aphid populations can grow exponentially; populations can double in 2 to 3 days when conditions are favorable.¹ Towards late summer or early fall, winged aphids will develop and return to buckthorn where they mate and lay eggs to overwinter. The presence of winged aphids can also indicate migration to other fields.

Damage to Soybean

Damage occurs to soybean when large numbers of aphids remove water and nutrients from leaves and stems during feeding. This can cause leaf puckering, stunting, reduced pod and/or seed counts, and smaller seeds. Under heavy infestations, leaf edges may turn yellow, which may appear similar to potassium deficiency. Aphids initially colonize young leaves and branches and as the season progresses, they move down to the middle of the plant and feed on stems and pods. The aphids excrete a substance called honeydew on which sooty mold can grow. This can give soybean leaves a black appearance and interferes with photosynthesis. Aphids can also transmit viruses such as soybean mosaic virus. Moisture stress during an aphid infestation can increase the risk for yield loss.

Scouting and Thresholds

Effective management of soybean aphid requires consistent field scouting from seedling stage through pod-fill to track aphid populations. Begin scouting more intensively during the late vegetative stages and continue regularly at least once a week from flowering through seed fill (R6.5). Determine the average number of aphids per plant on 20 to 30 plants throughout the field. Field edges can be hotspots for aphid infestations and can result in overestimation of populations, so make sure to scout all areas of the field. Through stage R5, treatment is justified when an average of 250 aphids per plant is found on over 80% of the plants in the field and populations appear to be increasing.^{1,2,3}

Management

Many foliar insecticides are labeled for control of soybean aphids. The early reproductive growth stages (R1-R4) are the most sensitive to stress from aphid feeding and subsequent yield loss. Therefore, protecting plants during the flowering through pod development stages will have the greatest impact on soybean yield potential. Applications made prior to flowering may not provide an economic benefit and generally reduces beneficial insect populations, which may result in a resurgence of aphids. Applications made at or beyond the full seed stage of growth (R6) have not been found to improve yield potential unless plants are under additional stress such as from drought.^{1,2} Good insecticide coverage at high water volumes and pressures is important for reaching aphids within the soybean canopy.

Sources:

¹ Pedersen, P. 2007. Soybean Aphid. Iowa State University Soybean Extension and Research Program. <http://extension.agron.iastate.edu>. ² Soybean Aphid. 2009. Purdue University. <http://extension.entm.purdue.edu>. ³ Koch, R. and Potter, B. 2014. Scouting for soybean aphid. University of Minnesota Extension. www.extension.umn.edu. Web sources verified 5/26/15.

For additional agronomic information, please contact your local seed representative. Developed in partnership with Technology, Development & Agronomy by Monsanto.

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