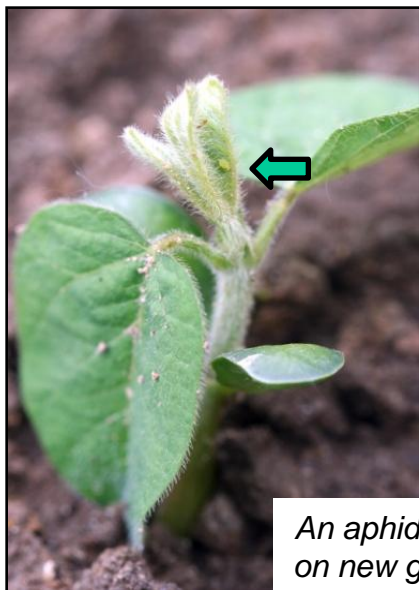


Heavy soybean aphid infestations on early-season soybeans

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Picture credits:
Bruce Mackellar (trifoliolate, scouting)
Chris DiFonzo (all others)



An aphid mom on new growth

Soybean aphids leave their overwintering host, buckthorn, in May and move across the landscape to find their summer host, soybean. Although it is typical to first find aphids in late May on early-planted beans, it can be very difficult when the percentage of infested plants is low. However, heavy early-season infestations have occurred in certain areas in 2001, 2003, 2005, and 2007. The '01, '03, and '05 field seasons ended as outbreak years for soybean aphid in Michigan. The 2007 season was an outbreak year in much of the Midwest, although hot weather in June stopped the outbreak in Michigan. Thus, heavy, early infestations appear to coincide with the potential for an aphid outbreak

SBA colony on an emerging trifoliolate



Heavy infestations in previous years were found on beans as small as the V1 stage. Neighboring fields may have numerous soybean aphids or none, depending on the timing of crop emergence relative to aphid flights. Even a few days difference in crop emergence can have tremendous consequences, with earlier-planted (first-emerging) beans at greater risk for early infestations.

Aphid colonize the newest growth, which is higher in nitrogen. They particularly like hairy leaves which are not fully open. The hairs may protect the new colony from predation by beneficial insects.

Heavily infested fields have a high % of infested plants and dozens or hundreds of SBA per plant. These fields then produce winged aphids that fly off to start new infestations.

In 2007, a V3 field near Frankenmuth, MI (left) had an average of 255 SBA per plant on June 11. Fields in the area were sprayed when populations were between 100-250 SBA per plant. These field were not reinfested later in the field season, and numerous beneficial insects cleaned up remaining aphids. There was no difference in plant height in sprayed and unsprayed areas by mid-July.



Scouting

In years with heavy early-season colonization, scouting is important because such infestations are rare. Target the earliest-emerging fields that do not have a seed treatment. Concentrate on the new growth.

Aphids are typically present in most fields at low levels. If you are finding just a few infested plants in a field or a hot spot here and there, that is NOT a sprayable aphid population - yet. There is no cause for concern unless fields are 50-80% infested (in other words, the majority of plants have aphids). Once aphids spread out across plants, then numbers per plant begin to climb towards the threshold of 250 per plant.



Beneficial insects may help you locate an early-season infestation. Ladybird beetles are very good at finding small numbers of aphids. They eat the aphids, and lay eggs nearby. If enough predators are present, early aphid infestations may be wiped out.

Ants on plants may also signal an aphid colony. In contrast to ladybugs, ants actually protect small aphid colonies from being attacked. They essentially 'farm' or tend SBA for the sweet honeydew excreted from the back end of the aphid.



Ants tending aphids

The decision to spray early

When should small beans be sprayed? Heavy early-season infestations are rare, so research is lacking in this area. The 250 threshold was developed and tested in late V-stage and R stage beans, so there is no good data to set a threshold for small beans. If infested plants have adequate moisture to replace the aphid feeding and aren't putting on flowers or other critical structures, they appear to be able to tolerate 100 SBA per plant, and maybe even 250, before spraying is needed.

Be aware there are risks to spraying early. Aphid populations are likely to rebound or 'flare'. Predators will be killed, and any surviving aphids will reproduce fast in the absence of the predators. Because of this problem with flaring, early-sprayed fields may end up needing to be sprayed three times instead of once or twice to achieve the same yield.

* Early-season insecticide applications can be mixed with glyphosate. However, it is critical to get excellent coverage to achieve excellent kill – i.e. optimize the application for the insecticide.

Otherwise, surviving aphids will reproduce quickly in the absence of predators.

* Avoid the temptation to use a half-rates of insecticide because the plants are small. The goal is excellent aphid kill to reset the field to zero and to avoid flaring.