

The cotton aphid, *Aphis gossypii* Glover, is the primary aphid species occurring in cotton, but several other species may be encountered during sampling. Only the cotton aphid, however, within the aphid complex is generally of economical importance. Correct identification of aphids and knowledge of aphid habits are necessary so that insecticide controls will be directed at the proper species at the proper time.

Natural Control

Several biological control agents help to control aphids in cotton. Primary among these is the pathogenic fungus *Neozygites fresenii* (Nowakowski), which rapidly decreases aphid populations during mid-season. Aphids may show some resurgence during late season after this disease has occurred. Spores of this fungus overwinter in the soil, which may cause disease the next year. Disease symptoms can be recognized by the presence of brownish, fuzzy dead aphids on the undersides of leaves.

A tiny parasitic hymenopterous wasp, *Lysiphlebus testaceipes* (Cresson), may also help to suppress aphid populations. Parasitism is evidenced by the appearance of mummified aphid bodies on leaf undersides, particularly in late season. As the parasite develops within the aphid body, it causes the aphid to swell and eventually turn a papery light brown when the parasite is ready to emerge. Parasites emerge by chewing through the mummy cuticle (skin), leaving a large hole that is easily visible. Predators such as lady beetles, lacewings and syrphid fly larvae also can help control aphids. Their beneficial actions are important in early-season cotton to help prevent rapid aphid buildup.

Chemical Control

Louisiana cotton aphids have developed resistance to all major insecticide classes, including the

carbamate, organochlorine, organophosphate and pyrethroid classes. The neo-nicotinile class provides excellent control of cotton aphids. With its increasing use, however, resistance to this class will likely occur.

To delay the onset of resistance, avoid unnecessary insecticide applications during early season, because this will reduce beneficial insects as well as selecting for further resistance. The use of an in-furrow systemic insecticide at planting is recommended; these materials usually provide several weeks of aphid control. Aphids rarely require further treatments during early season.

Scouting and Damage

Although aphids are found on young cotton, many may be non-pest species. Heavy infestations usually do not develop until June, and these are primarily the cotton aphid. The trigger for these sudden population peaks is not known, but it may be related to previous insecticide use, environmental conditions or perhaps some change in the cotton plant that makes it a more desirable host. In any case, heavy infestations can develop quite rapidly because of the pest's prolific reproductive capacity.

Aphids are normally found on the undersides of leaves, but they can be present on branches, stems and fruit bracts. Heavy infestations cause smaller leaves to crinkle and cup downward. Older, larger leaves gradually turn yellow and wilt. In extreme cases, aphids can cause cotton to shed foliage and fruit. Aphids will sometimes infest the tender young foliage in the mainstem terminal, causing it to appear warped or twisted. These terminal infestations can be observed easily while walking across the field. Aphids on the undersides of large leaves, however, are not noticeable unless the plant is bent over.

Another symptom of a high aphid population is honeydew, a clear sticky substance secreted by aphids. Although the aphids are underneath the

leaves, the honeydew will drip down onto the upper surface of lower leaves, giving them a varnished, shiny appearance which is easily observed.

Aphids are not always evenly distributed. Sometimes they are concentrated in certain areas such as field margins or hot spots within the field. If the infested area is large enough, it may require spot treatment before aphids are uniformly spread across the field. Conversely, these isolated hot spots may be as small as one or two heavily infested plants.

There is no well-defined economic threshold for aphids. The decision to treat is based on several considerations, including the stage of crop development, weather and the presence or absence of natural control factors such as beneficial insects and the fungus disease. The LSU AgCenter Extension Service insect control recommendations suggest that treatment is necessary when honeydew and stress symptoms appear uniformly.

Cotton Aphid

The cotton aphid occurs in low numbers on several different weed species throughout the year in Lower Delta states, but populations in cotton can be very high. Outbreaks of the cotton aphid may be severe, and, when populations expand, insecticide control treatments may be necessary to maintain the pest below damaging levels.

This species attacks plants by piercing leaves and stems and then sucking out plant juices. Only females are found in cotton before defoliation. Reproduction occurs without mating, and only live offspring are produced. A new generation can develop approximately every five days at temperatures around 80 degrees F, resulting in rapid buildup. The cotton aphid will be larger and darker during cooler weather and will be small and yellow in summer. A single female can produce up to 60 offspring during her three- to four-week life span.

Excessive nitrogen fertilizer rates may cause heavy infestations, because there are indications that aphids develop and reproduce better on plants with high nitrogen levels. Adult females can be wingless, or winged forms can develop in response to crowding or poor food quality. Heavy rainfall may reduce aphid numbers by washing them off plants.

Green Peach Aphid

Small colonies of the green peach aphid, *Myzus persicae* (Sulzer), can be found in cotton. It mostly infests cotton during early season, but seldom reaches damaging levels. The reproductive biology of this aphid is generally similar to the cotton aphid, although it may prefer lower temperatures and does not reproduce on cotton to the extent of the cotton aphid.

This species is subject to the same biological control agents discussed above. Because numbers are low and infestations are spotty, and because biological control may be effective, the need for insecticidal control is unlikely. Insecticide resistance in the green peach aphid is common in other regions of the world where it is exposed to heavy insecticide applications.

Cow Pea Aphid

The cow pea aphid, *Aphis craccivora* Koch, also occurs in cotton but, like the green peach aphid, its numbers are very low. Most samples containing this aphid will probably be from those taken during early season. The cow pea aphid is also subject to biological control, and the need for insecticide applications is unlikely.

Potato Aphid

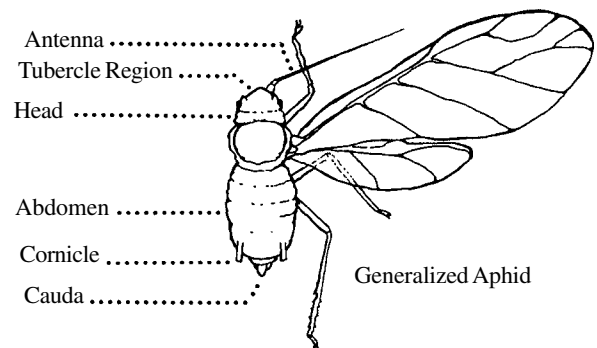
The potato aphid, *Macrosiphum euphorbiae* (Thomas), may be most commonly found on very small cotton in low numbers, probably moving from weeds. Damage is unlikely because infestations will normally remain low. The potato aphid appears to decline with further crop development.

Other Aphids

Small numbers of other miscellaneous winged aphid species may appear sporadically in cotton. A key feature in distinguishing these species from the cotton aphid is the color of the cauda and cornicles. On the cotton aphid, the cornicles are black from base to tip and the cauda is lighter colored than the cornicles. Other non-pest species will not fit this description.

Descriptions and Identification of Common Aphids

Characteristics pertain to adults only. Adult aphids can be distinguished in the field by a generally larger size or by the presence of wings.



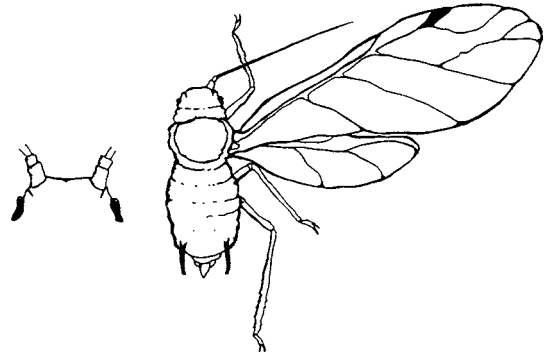
Aphids with cornicles black from base to tip, with small tubercles on head between antennae.

Large dark patch on top of abdomen.
Individual aphids generally one color: dark brown or blackish.



Cow pea aphid
Aphis craccivora Koch
Cauda same color as cornicles.

No patch on top of abdomen.
Individual aphids may be green, yellow, orangish-green, light brown or a mixture of these colors.



Cotton aphid
Aphis gossypii Glover
Cauda lighter than cornicle

Aphids with cornicles light colored from base to tip, cauda same color as cornicles.

Large pear-shaped body, very long legs.
Body usually completely green. Cornicles and cauda very long and thin. Shiny.



Potato Aphid
Macrosiphum euphorbiae (Thomas)
Tubercles on top of head large, but not inwardly directed between antennae.

Medium-oval body, color may be light green, tan or yellow. Cornicles medium length and thin, cauda more blunt. Not shiny.



Green Peach Aphid
Myzus persicae (Sulzer)
Distinct inwardly directed tubercles on top of head between antennae.



Aphid leaf curl.

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