



Cowpea Aphid

Cowpea aphid, *Aphis craccivora* Koch, commonly referred to as the black aphid, generally feeds near the tips of alfalfa stems and has been reported sporadically from several Kansas alfalfa fields since 1999. Infestation levels in these fields were found to be 50 to 125 aphids per stem, resulting in noticeable yellowing, stunting, photosynthesis inhibition, and yield reduction. If alfalfa is harvested when aphid populations are in this range, regrowth must be carefully monitored.

Description

Cowpea aphid has a broad host range with a preference for legume crops. It is known to occur in at least 28 states (Figure 1) and is easily distinguished from other alfalfa-infesting aphids by its velvety black appearance and distinct waxy cover.

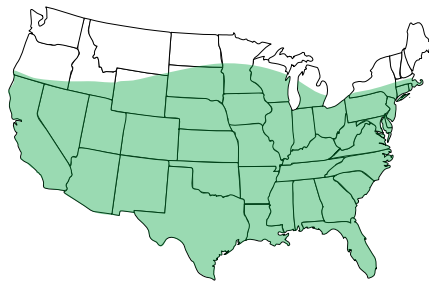


Figure 1. Cowpea aphid distribution in North America

Cowpea aphid is relatively small, ranging from 1.5 to 2.5 mm long. The adult may be winged (alate) or wingless (apterous) and is usually shiny black, while nymphs are smoky gray (Figures 2-4). When present, wings are large and transparent with few veins. Also, when viewed under magnification, the bottom half of the antennae and legs are light-colored or creamy white with blackish tips. Cowpea aphids tend to cluster on tips of alfalfa plants, which reduces risk of attack by natural enemies. The aphid prefers to feed on young, succulent developing shoots and newly expanding leaves. Infested plants often are isolated within a crop.



Figure 2



Figure 3

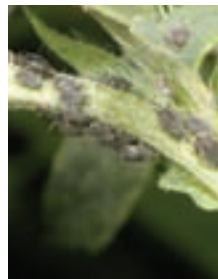


Figure 4

Life cycle

In Kansas, cowpea aphid infestations usually increase during late spring or summer and are more of a problem in later alfalfa cuttings. As far as is known, the aphid only reproduces asexually. Generally, apterae are more common. Alate are produced under stressful conditions such as overcrowding and a decline in food quality.

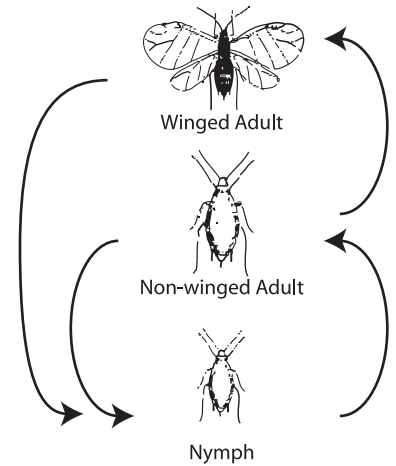


Figure 5

Apterae and alate forms are always females that reproduce asexually and give birth to live young. They molt, shedding their skin four times from first instar to reproductive adult. This rapid asexual reproduction is the key to the dramatic population growth achieved by the cowpea aphid in a short time (Figure 5). It is not known whether the aphid has the ability to overwinter or in what life stage, but adults have been found in Kansas as early as late February.

Damage

In alfalfa, cowpea aphids feed on young, succulent terminal growth by piercing plant tissue and penetrating the phloem with needlelike mouthparts. They tend to feed in clusters on newly expanding leaves, blooms, and stems. Infested plants become yellowish, stunted, and nonproductive because of direct feeding and the insects' toxic salivary secretions. Cowpea aphids are efficient vectors of several important virus diseases including alfalfa mosaic virus. They also secrete large quantities of honeydew, a sugary substance that may result in the formation of sooty mold, which further disrupts photosynthesis.

Management options

Because the cowpea aphid has seldom been a problem of economic consequence in Kansas, no treatment threshold or economic injury level has been established. It feeds much like the pea aphid, so damage potential and treatment options are similar. Fields with a significant number of aphids have been found to have a large number of lady

beetles and parasitized dead aphids or mummies. In fields with plants yellowed or stunted due to feeding, some stems had 50 or more aphids. Insecticides labeled for other aphids in alfalfa also have been effective in controlling cowpea aphid. For treatment options refer to the latest version of K-State Research and Extension publication, MF-809, *Alfalfa Insect Management*.

Experience with cowpea aphid in Kansas indicates that infestations are not uniform throughout the field. There may be small areas where stems are completely covered

by aphids and other areas with only a few aphids per plant. Infestations originate along the borders. Spot or border treatments with a selective insecticide are preferable to area-wide treatments because untreated areas may serve as refuges for natural enemies. Beneficial insects such as ladybeetles, lacewing larvae, syrphid fly larvae, big-eyed bugs, minute pirate bugs, and parasitic wasps often are sufficient to keep aphid populations below damage thresholds in alfalfa.

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