COWPEA APHIDS: WHERE DID THEY COME FROM,
WILL THEY BE BACK?

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Clearly, something was unusual back in March when large numbers of very dark aphids were found covering stems and tips in Logan, Marion, and Barren counties. They were the cowpea aphid or black legume aphid (*Aphis craccivora*), a sap-feeding insect known to occur in at least 28 states scattered over the US and into Canada. The cowpea aphid is the only black aphid found infesting alfalfa. Winged or wingless adults are usually shiny black, while the smaller nymphs are dull gray to black. Usually, they are lined along stems or clustered in the expanding leaf tips.

The cowpea aphid injects a powerful toxin as it feeds. If enough aphids are present, plants can be stunted or killed. In addition, the aphid produces a lot of liquid waste (“honeydew”) that makes plants shiny and sticky, and can cause harvest problems. Honeydew also supports the growth of sooty mold. A heavy layer of this black fungus can reduce photosynthesis and may make leaves unpalatable to livestock.

There are no treatment guidelines or economic threshold levels specifically for the cowpea aphid in alfalfa but several states use the table below that was developed for an aphid that causes similar damage. If cowpea aphid infestations are light to moderate, natural enemies will begin to appear and aid in natural control of the insect.

<table>
<thead>
<tr>
<th>Plant height (in)</th>
<th>Aphids per stem</th>
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</thead>
<tbody>
<tr>
<td>&lt; 10</td>
<td>10 to 12</td>
</tr>
<tr>
<td>10 to 20</td>
<td>40 to 50</td>
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<tr>
<td>&gt; 20 inches</td>
<td>40 to 50</td>
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The cowpea aphid lives throughout the year and may not be able to survive normal winters in Kentucky. However, if winter temperatures are mild enough, the aphids survive on one of their many host plants and can be ready to multiply quickly in the spring. The cowpea aphid has an extensive host range with a marked preference for legumes. It infests many other crops and weeds including apple, carrot, cotton, cowpea, dandelion, dock, goldenrod, kidney bean, lambsquarters, lettuce, lima bean, pinto bean, peanut, pepperweed, pigweed, red clover, shepherds purse, vetch, wheat, white sweet clover, and yellow sweet clover. This seems to what happened last winter. The mild conditions for 2006 – 2007 would favor some infestations again this spring.
Watch fields closely to catch signs of infestations. Check alfalfa tips in scattered areas along south facing slopes. This is where surviving aphids are most likely to be found. If alfalfa has broken dormancy, is not growing properly – yellowing and stunting apparent –, and cowpea aphids are present, then control measures probably are needed. Consider the weather forecast in making management decisions. Some sources show 46°F as the development threshold, so at temperatures below that aphid growth should stop. Development is slow when it is cool; it takes about 22 days for a nymph to develop to the adult stage at 53°F. This drops to about 5 days when temperatures are in the low 80’s.

Several insecticides labeled for alfalfa provide good control. Field trials in other states have shown the pyrethroids (Warrior, Ambush, Baythroid, etc) and the carbamate insecticide Furadan to provide excellent control with good residual activity. Since these insects are sap feeders, control will come from direct contact with spray droplets, or as the aphids crawl over treated foliage. Consider temperature when planning insecticide applications. In general, pyrethroid insecticides perform better at cooler temperatures than organophosphate or carbamate insecticides.

The arrival of the cowpea aphid appears to be the result of several factors 1) the development of a strain that prefers alfalfa, 2) a steady eastward spread from the west, and 3) mild winters that allow its survival. While infestations in Kentucky have been limited, this is definitely an insect to watch. Report suspected infestations to your County Extension Agent for Agriculture and Natural Resources.

**Species to watch**

Blue alfalfa aphid (*Acyrthosiphon kondoi*) – discovered in California in 1975. Established throughout the southwest, extending as far east as Kansas and Oklahoma. Can cause severe stunting.

Spotted alfalfa aphid (*Therioaphis trifolii*) – small yellow-green to straw-colored aphid with rows of dark spots on its back. It lives in the desert regions of the southwest and prefers warm, dry conditions. It injects a toxin that causes stunting of the plant and striping of the leaves. Introduced into central New Mexico in 1954 and has spread throughout the US. This species was captured in an aphid trap in at the UKREC in June 2006.

**Common sap feeders**

Pea aphids are common in alfalfa fields in early spring and again in the fall. Adults and nymphs use their piercing sucking mouthparts to feed on the sap of a variety of forage legumes including alfalfa, several clover varieties, trefoil, and vetch. They prefer young, tender growth at stem tips. This aphid does not have a potent toxin but large numbers on every stem can cause plants to turn yellow and may stunt growth or
reduce plant vigor. Populations in the range of 50 aphids per 10" stem and plants under obvious stress would be needed to justify control. Fortunately, it is unusual to see infestations in Kentucky that are this serious.

Pea aphids are light green insects that are about 3/16 inch long when full grown. Adults may or may not have two pairs of clear delicate wings. The winged forms are weak fliers but can move long distances by winds. The nymphs, immature stages, are smaller versions of the adults. Pea aphids are cool season insects. They are most numerous during late spring and again in the fall. The life cycle takes about 12 days. Females can produce 50 to 100 live offspring and there are several generations each year. Pea aphids may survive mild winters in the field or spend the winter as eggs glued to the stems of various legumes.

Aphid populations are greatly affected by weather. Large numbers can develop if temperatures remain in the 50’s and 60’s and it is generally dry. Reproduction and development are reduced by very hot or very cold weather and heavy rainfall may knock many off of plants. A fungus disease can devastate aphid populations when humidity is high and nights are warm. In addition, a number of beneficial insects including lady beetles and a tiny wasp can provide natural control and often may keep numbers from reaching damaging levels. Pea aphids actually may be useful in providing an early season food source for many predators.

Meadow spittlebug masses can be seen on alfalfa from late March through June. The immature or nymphal stages of the insect exude the frothy spittle as they feed on plant sap. While spittlebugs could stunt alfalfa plants under some conditions, an average of 1 or more spittle masses per stem is needed to consider application of an insecticide. Chances of successful control are probably poor due to the protection from spray contact that the spittle would provide.

The spittlebug has one generation each year. The winter is spent as an egg deposited between the leaf stem and axil. Eggs hatch in the spring and the immature spittlebugs feed for 5 to 8 weeks before becoming adults. Initially, the nymphs feed at the crown of the plant, then between folded leaves and then anywhere on the plant. These nymphs do not move much after settling to feed. The brown wedge-shaped adults are active until fall but are good fliers and move extensively so they rarely cause any injury.