Aphids in the air: What is the risk for 2007?

The 2006 growing season has come to a close and with it another year's worth of experience with the soybean aphid. For many, it was a quiet, "low aphid" year with few reports of economic outbreaks within Iowa. Reflecting these low populations in the field, we observed fewer aphids within our suction traps (Figure 1) compared to the 2005 growing season when the traps collected nearly 100 times more aphids (Figure 2). For the last two years, the Iowa suction trap network (Figure 3) has been part of a larger network of suction traps located in nine states throughout the Midwest.

Although the soybeans have been harvested, the soybean aphid overwinters within the Midwest on buckthorn. Every fall, winged soybean aphids move from soybeans back to their primary host, buckthorn. Here they mate and lay eggs, which is the overwintering stage. High numbers during the fall flight suggest a high population for the following year, and the opposite is true of low numbers during the fall flight. Fall flights of soybean aphids are presented here to give an estimate of the potential for outbreaks next summer. To what extent the suction trap network reflects the risk of outbreaks in Iowa is not clear. This fall, moderate numbers of winged aphids were observed feeding and laying eggs on buckthorn in Ames. However, many of these aphids were being eaten by insidious flower bugs (Figure 4) and multicolored Asian lady beetles. To what extant these predators reduce overwintering populations of soybean aphids in Iowa, and how that translates into a smaller population to infest soybeans next spring remains unknown. As has been shown consistently across the North Central Region, insect predators have a significant impact on soybean aphid populations in soybeans. Initial attempts to predict their populations in the absence of this impact tends to overestimate soybean aphid population growth. Growers who have used the Minnesota aphid calculator for predicting soybean aphid outbreaks in soybeans are aware of this (visit www.soybeans.umn.edu/crop/insects/aphid/aphid_sagemodel.htm [1] for more information). Growers who are interested in learning more about how the natural enemies of soybean aphids contribute to population growth should consider participating in a March teleconference supported by the North Central Soybean Research Program through checkoff-based funding. The topic of this workshop ("Managing soybean aphids in 2007--How will biological control contribute?") will focus on management of soybean aphids and the impact predators, such as the insidious flower bug and lady bird beetles, have on aphid populations. The full announcement for this workshop, to be held March 6, 2007, will be promoted in the January edition of the ICM newsletter.

Finally, soybean aphids are not the only insect caught within the Iowa suction traps. A total of 18 pest species of aphids have been found in the suction traps. Of particular interest to us is the cowpea aphid (Aphis craccivora, Figure 5). Along with the soybean aphid, the cowpea aphid is a relatively new species to Iowa and was first reported in 2002. It has a broad host

range among legumes and can serve as a vector for more than 30 viruses. Outbreaks in alfalfa were reported in Iowa during the 2006 growing season. We found the cowpea aphid in every suction trap in Iowa, with the greatest numbers in Floyd and O'Brien counties. We do not yet know the factors that influence cowpea aphid outbreaks. However, our data suggest that they are found throughout Iowa with the peak in abundance occurring during July and August. Scouting and thresholds have been developed for the cowpea aphid in alfalfa and can be found in back issues [2] of the ICM newsletter.

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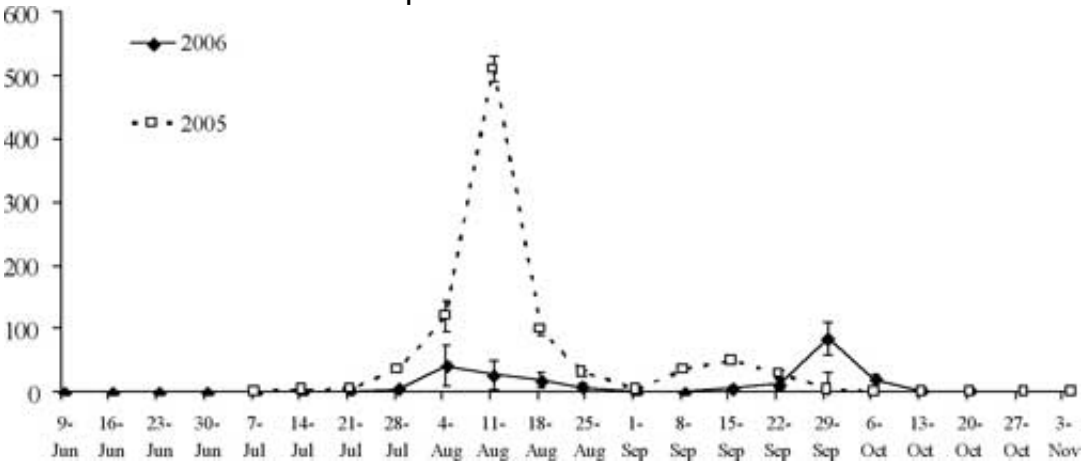
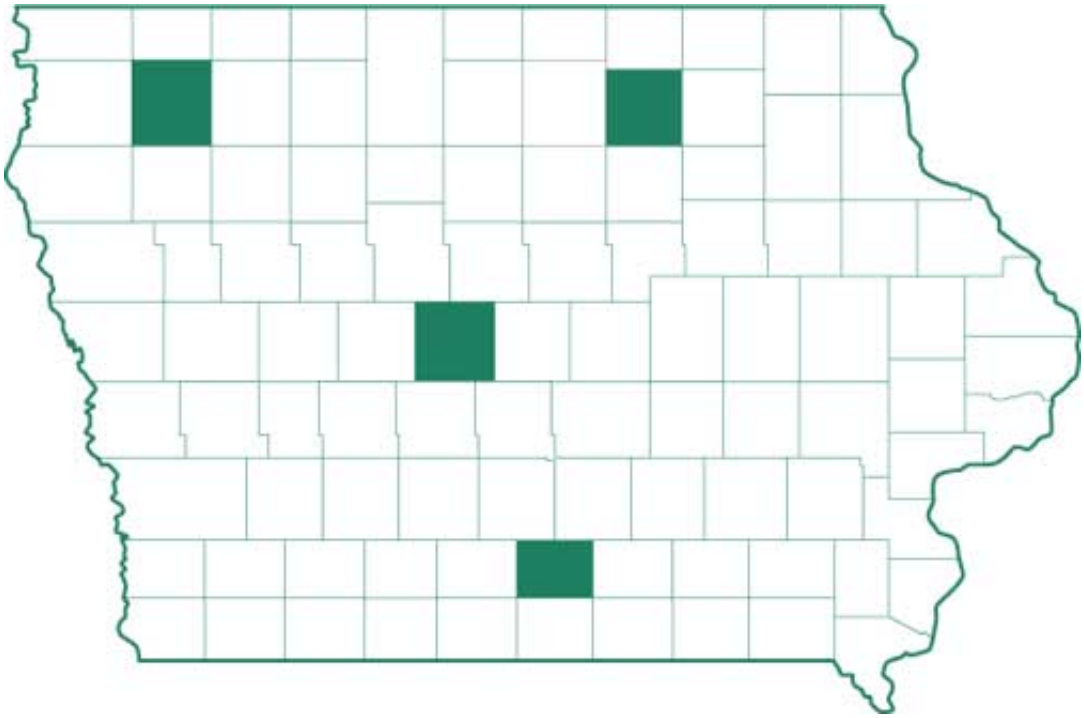
Figure 1. A suction trap deployed in Boone County. Each trap is a tower of PVC pipe sucking flying insects from the sky. Inside the suction trap is an electric fan that pulls air through it and down toward a funnel that directs the captured insects into a collectio



[4]

Figure 2. Seasonal abundance (mean per trap) of winged soybean aphids collected in suction traps deployed in Iowa during 2005 and 2006.

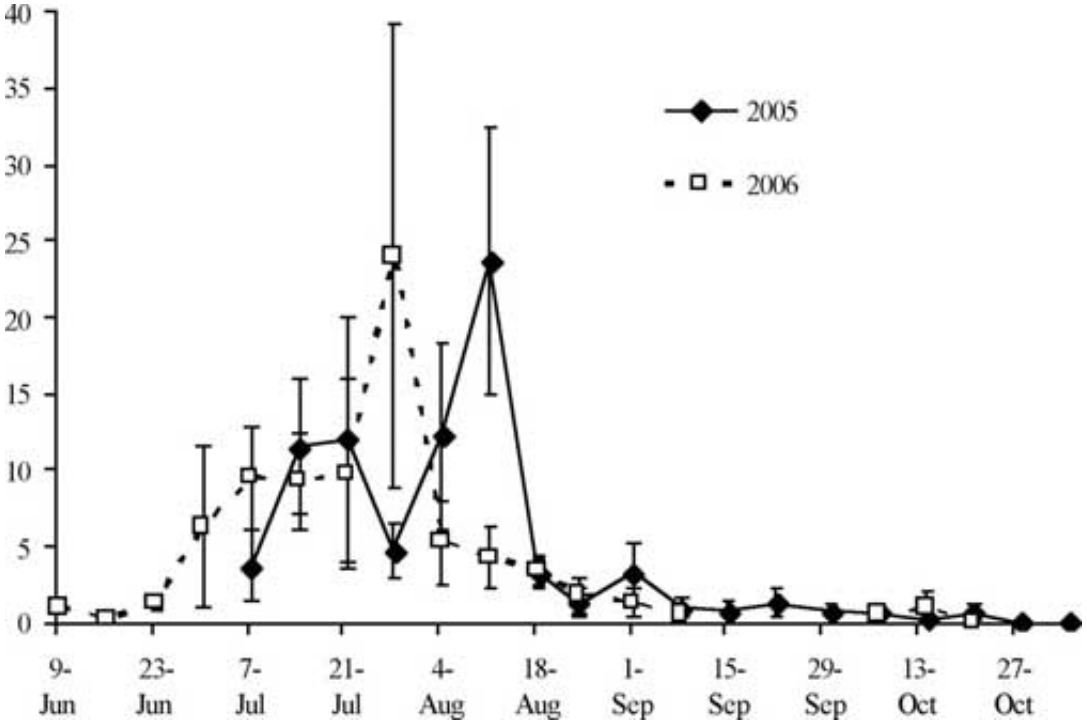


[5]

Figure 3. The four aphid suction traps in Iowa are located in O'Brien, Floyd, Boone, and Lucas counties.

[6]

Figure 4. An insidious flower bug feeding on a winged soybean aphid. Note the needle-like mouthparts are inserted into the aphid, which then remove the body fluids. These insects were collected on buckthorn during October in Ames. (Marlin E. Rice)



[7]

Figure 5. Seasonal abundance of winged cowpea aphids collected in suction traps in Iowa, 2005–2006.

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Source URL:
http://www.ipm.iastate.edu/ipm/icm//ipm/icm/2006/12-18/aphids.html

Links:
[1] http://www.soybeans.umn.edu/crop/insects/aphid/aphid_sagemodel.htm
[2] http://www.ipm.iastate.edu/ipm/icm/taxonomy/term/710
[3] http://www.ipm.iastate.edu/ipm/icm//ipm/icm//ipm/icm/node/2204
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