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## Purdue University identifies the #1 predator of soybean aphids

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### **Abstract**

In a 2006 article published in the journal *Environmental Entomology*, Purdue University entomologists Nicolas Desneux, Bob O'Neil, and Ho Jung Yoo identified *Orius insidiosus* as the key, or #1, predator of soybean aphids in Indiana. *Orius insidiosus*, also known as the insidious flower bug, which is similar but not the same as the minute pirate bug, is a tiny true bug, black in color with partially black-yellow-white wings, and a piercing, sucking mouthpart. Many of our readers may not immediately recognize this insect based on this description, but if you've ever been in a corn field during October, these small black insects have probably bitten you and left a strong mental impression as the burning sensation from the bite greatly exceeds the diminutive size of the insect. In other words--little bug, big bite.

### **Keywords**

Entomology

### **Disciplines**

Agricultural Science | Agriculture | Entomology

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## Purdue University identifies the #1 predator of soybean aphids

by Marlin E. Rice and Matt O'Neal, Department of Entomology

In a 2006 article published in the journal *Environmental Entomology*, Purdue University entomologists Nicolas Desneux, Bob O'Neil, and Ho Jung Yoo identified *Orius insidiosus* as the key, or #1, predator of soybean aphids in Indiana. *Orius insidiosus*, also known as the insidious flower bug, which is similar but not the same as the minute pirate bug, is a tiny true bug, black in color with partially black-yellow-white wings, and a piercing, sucking mouthpart. Many of our readers may not immediately recognize this insect based on this description, but if you've ever been in a corn field during October, these small black insects have probably bitten you and left a strong mental impression as the burning sensation from the bite greatly exceeds the diminutive size of the insect. In other words--little bug, big bite.



An insidious flower bug next to a soybean aphid. (Marlin E. Rice)

The Purdue entomologists used field surveys and exclusion-cage techniques to identify the effects of natural enemies on the growth of soybean aphid populations in 2004 and 2005. They found that soybean aphid populations were significantly limited by natural enemies in the field, and generalist predators (those that will eat anything they can catch) dominated the natural enemy community. One species, the insidious flower bug, represented 85-90 percent of predators found. There was a significant negative relationship between aphid population

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growth and the bug's abundance, meaning that as the insidious flower bug population went up, the soybean aphid population went down. For other predators, there were no relationships between abundance and aphid population growth.



*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)*

The insidious flower bug was a significant predator of soybean aphids when they occurred in clumped distributions, but it was a less efficient predator when soybean aphids were randomly distributed. In the absence of all predators, soybean aphids were able to increase up to a maximum 7.7-fold, whereas in the presence of predators, aphids only achieved a maximum increase of 2.9-fold. Using the economic threshold of 250 aphids per plant, 10 aphids would exceed the threshold in  $\square$ 3 weeks (assuming no immigration or emigration). In contrast, aphids exposed to predators would require  $\square$ 8 weeks to reach the threshold.

Depending on the arrival date and number of colonizing aphids, the delay induced by predation could result in reduced damage to soybeans.

In Iowa soybeans, there are many species of predators, including the insidious flower bug, that prey on soybean aphids. Unlike other species of predators, such as the multicolored Asian lady beetle, the insidious flower bug can be found in soybeans before the aphid arrives. The judicious use of insecticides, timed with the 250 aphid per plant threshold, can conserve this important predator, allowing it to reduce the risk of soybean aphid outbreaks. This study indicates the importance of one natural enemy species in helping to reduce soybean aphid populations.

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