

Assassin Bugs Top the Food Web

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As Arizona's largest predators found in agricultural fields, assassin bugs (Family Reduviidae) play an important and sometimes surprising role in biological control. Our most common and beneficial genera are *Zelus* and *Sinea*, which feed on other insects as both nymphs (A) and adults. They stalk and ambush prey, skewer it with their needle-like beak, and inject it with venom (D–F). **In Arizona cotton, *Zelus renardii* Kolenati is our most common species and is the assassin bug that contributes most to biological control (A–F).** *Zelus* species have slender front legs that are covered in a sticky substance to aid in catching prey (F). Especially as nymphs, when their entire body exudes the sticky substance, they often have debris stuck to them, including whiteflies or other small insect cadavers (A). The other assassin bug found in cotton is the spined assassin bug, *Sinea confusa* Caud (H). Similar to a praying mantis, their front legs are spined, often held up in front of their body, and used to grasp prey (G).

Because of their large size (1/2–3/4 inch long), assassin bugs can consume almost any insect they encounter including whiteflies, *Lygus*, and even other beneficials. They play a special role in the arthropod food web, acting as “apex” predators without other predators of their own. They prefer to feed on slower moving prey like caterpillars (e.g., beet armyworms and budworm/bollworms), but Bt cotton has changed what's on the menu! **With fewer caterpillars to eat, *Zelus* depends on other, more common prey like *Lygus* nymphs (F), which can enhance the biological control of this key pest.** Recent studies show that broad-spectrum insecticides kill *Zelus* and other large predators (e.g., Nabids or Damsel bugs), releasing *Lygus* populations from biological control and causing them to resurge more quickly. However, *Zelus* can also negatively impact biological control. For example, lacewing larvae, which look similar to caterpillars but help to control aphids, are a favored prey of *Zelus*. By consuming lacewings (E), *Zelus* may sometimes reduce the biological control of aphids. As an apex predator, assassin bugs can impact the cotton food web in important ways and usually help keep pests in check.

Also see:

Ellsworth, P.C., L. Brown, A. Fournier, X. Li, J. Palumbo, S. Naranjo 2011.

“Keeping Cotton Green!” Univ. Ariz. IPM Short. URL:

<http://ag.arizona.edu/crops/cotton/files/SelectiveChemicalControlsvE.pdf>

