

Biology, Identification and Management of the Redbanded Stink Bug

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Overview

The redbanded stink bug, *Piezodorus guildinii* (Westwood), has become a significant pest of soybeans in Arkansas and other states in the lower mid-South. This pest is highly mobile and is generally more difficult to control with insecticides than the more common stink bugs typically found in Arkansas soybeans. Because of the damage potential and the reinfestation capabilities of this pest, growers and consultants need to recognize the redbanded stink bug when it is present.

Biology

Redbanded stink bug is a key pest of soybeans throughout South America (Panizzi and Slansky, 1985) and has recently become a significant pest of soybeans in the extreme southern U.S. In the spring, adults emerge from overwintering sites to look for secondary hosts on which to feed (Panizzi and Smith, 1977). While soybeans are in vegetative stages, these pests generally prefer other legumes (e.g., clover), where populations begin to build (Panizzi and Slansky, 1985). Later in the growing season, adults will typically migrate to podding soybeans (Paxton et al., 2007). It is estimated that four to eight generations of redbanded stink bug may occur per year in Louisiana (Davis et al., 2010). With so many generations occurring in a single growing season, generations in Louisiana can overlap by mid-July (Davis et al., 2010).

In Arkansas, this pest has been observed in July but thus far has

not reached high levels until August, and more often has not reached treatable levels until September. When generations overlap, eggs (Figure 1), nymphs and adults are present simultaneously, making



Figure 1. Eggs of redbanded stink bug, laid in rows of two. Photo by M. O. Way, Texas AgriLife.

insecticidal control challenging in terms of timing of insecticide application. More importantly, the inherent mobility of redbanded stink bug results in even more complex management decisions, as few insecticides labeled in soybeans have more than a few days of residual activity. Because scouting intervals in soybeans tend to be on a weekly basis at minimum, more redbanded stink bugs can infest a field after an insecticide has lost its effectiveness. This is often perceived as insecticide failure, and multiple insecticide applications are typically recommended in this scenario. As is the case with other insect pests, sequential rotation or tank-mixing of insecticide classes is highly recommended for overall efficacy as well as resistance management.

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Identification

Proper identification of this pest is key, as the recommended action threshold is lower than for other stink bugs in soybeans. Adults of redbanded stink bug are approximately half the size of the common stink bugs in Arkansas soybeans. The primary morphological characteristic used to identify the adult is a fixed spine that arises from the abdomen (Figure 2), as no other economically important stink bug in Arkansas has this feature. Because this spine can be hard to see, the redbanded stink bug is often recognized by its overall appearance – i.e., the adult appears more slender relative to its width compared to the more common stink bug species (Figure 3).

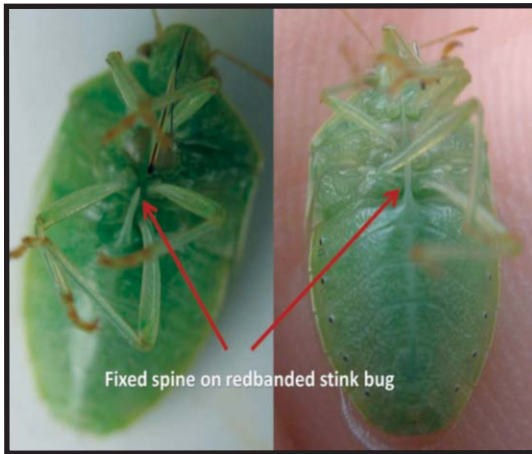


Figure 2. Abdominal spine of redbanded stink bug.



Figure 3. Coloration variants of bands on adults of redbanded stink bug.

One species of stink bug that may be confused with the redbanded stink bug is the redshouldered stink bug (*Thyanta* spp.). The redshouldered stink bug is shield-shaped and has a flatter “finish” than the redbanded stink bug, both similar to that of the larger green stink bug species (Southern green stink bug and green stink bug) (Figure 4). Because the redshouldered stink bug is green, often with a red or purple stripe across the pronotum, and is of similar size, it is often misidentified as redbanded stink bug.

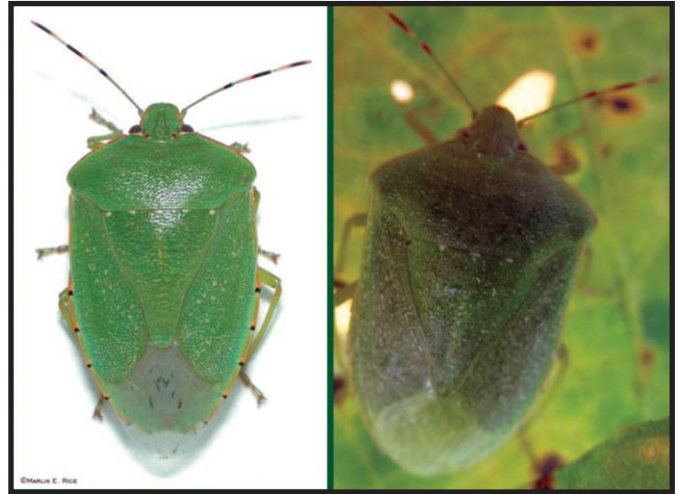


Figure 4. Green (L) and Southern (R) green stink bug adults. Green stink bug photo by Marlin Rice, formerly of Iowa State University.

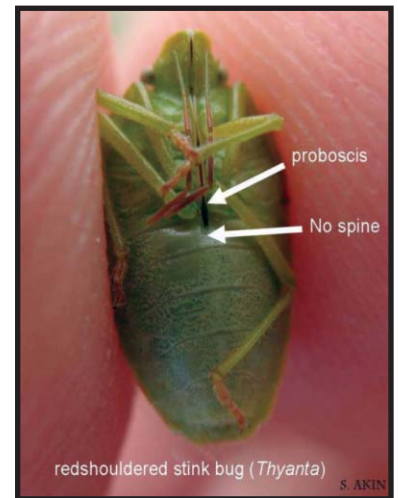


Figure 5. Ventral view of redshouldered stink bug, lacking spine.

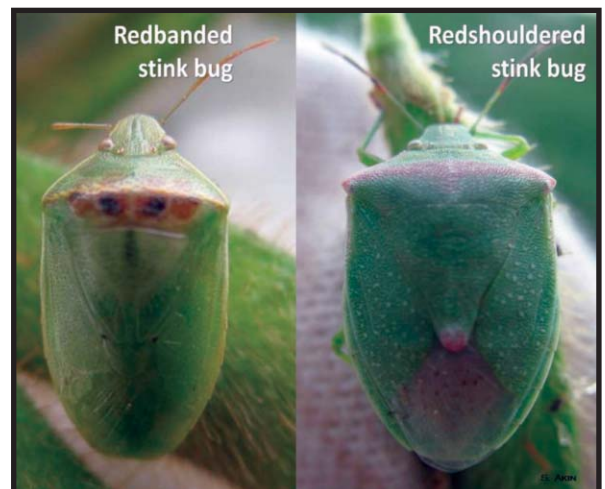


Figure 6. Dorsal view of redbanded (L) and redshouldered (R) stink bugs.

Adults of redshouldered stink bugs, however, do not have the spine on the abdomen (Figure 5) nor do they have the same general shape as the redbanded (Figure 6). Differences in nymphs are more distinct, as redshouldered nymphs have thinner stripes that run across the dorsal surface of the abdomen (Figure 7). Also, as with adults, nymphs of redbanded stink bug are shaped differently than other common stink bugs (Figure 8).



Figure 7. Redbanded (L) and redshouldered (R) stink bug nymphs.



Figure 8. Various stages of nymphs.

Damage

Although they can feed on stems, foliage and blooms of soybeans, both nymph and adult stages of redbanded stink bug prefer to feed on pods (seed). Feeding punctures can be identified by small brown or black spots. Feeding directly on the seeds and pods may reduce seed quality and quantity (Figure 9). Heavy feeding on pods and other structures delays maturity and causes abnormal production of leaflets and pods. Data from the University of Arkansas suggest that redbanded stink bug can cause more damage on a per-insect basis compared to other stink bug species.

Sampling

The best method for redbanded stink bug sampling is with a 15-inch-diameter sweep net (Figure 10). The successful economic threshold in Louisiana and Arkansas is 6 bugs in 25 sweeps (36/100). It is important to sweep deeper in the canopy when temperatures are high, as stink bugs tend to move lower into the canopy when hot. If this technique cannot be done consistently, sampling should be restricted to early morning or late evening during periods of high temperatures. As mentioned, fields should be sampled on at least a weekly basis due to the ability of redbanded stink bug to infest fields quickly.



Figure 9. Stink bug-injured soybean seed.



Figure 10. Sweep net sampling for redbanded stink bug in soybeans.

Cultural Control

Because redbanded stink bug tends to be a late-season pest, planting earlier-maturing varieties during early planting windows may help manage stink bug populations, regardless of species. As

redbanded stink bugs are highly mobile and selective, they readily infest temporarily isolated fields that may be the last fields with green pods (e.g., soybeans planted following wheat). Thus, fields planted earlier will likely have a chance to fully mature before redbanded stink bug populations arrive.

Chemical Control

Redbanded stink bug is not as susceptible to insecticides as green stink bug or Southern green stink bug. For example, pyrethroid insecticides, often considered standards for control of the latter two species, typically only provide suppression of redbanded stink bug when applied alone. The most consistently effective insecticides in this class contain the active ingredient bifenthrin (Table 1). Higher rates of acephate are generally effective (Table 1), but mixtures of two single active ingredients are highly effective for efficacy as well as resistance management (e.g., tank-mixing acephate and bifenthrin). Data from Division extension entomologists suggest the most effective single-labeled product for redbanded stink

bugs has been Endigo® (Syngenta Crop Protection), which is a pre-mix of lambda-cyhalothrin (e.g., Karate Z®) and thiamethoxam (Centric®). In general, deploying a combination of insecticides with two modes of action is better than using a single chemistry when seeking control of this pest.

Literature Cited

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Table 1. Labeled insecticides recommended for redbanded stink bug in soybeans and recommended rates (if applied alone).

Common Name	Trade Name	Rate/A	Rate Acres : Gallon	IRAC MoA #
lambda-cyhalothrin + thiamethoxam	Endigo ZC	4 - 4.5 fl oz	1 : 32 – 1 : 28.4	3 (pyrethroid) + 4A (neonicotinoid)
bifenthrin	Bifenthrin Brigade Bifenture Discipline Fanfare Sniper Tundra	6.4 fl oz	1 : 20	3 (pyrethroid)
acephate	many	1.0 lb ai	n/a	1B (organophosphate)

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