

Kudzu Bug – Invasive Pest Coming to Arkansas and the Impact on Soybeans

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It's only a matter of time before the kudzu bug finds its way to Arkansas. After initially being found in Georgia in 2009, the kudzu bug is now established and causing problems in Virginia, North and South Carolina, Florida and Alabama. Kudzu bug has since moved into east Tennessee and recently into western Mississippi (Vicksburg). Obviously, it won't be long before the bug will be found here in the Natural State. Surveys were conducted in 2012 concentrating on counties with major corridors from the east: Interstate 40 (Crittenden County), Highway 49 (Phillips County) and Highways 159, 65 and 82 (Ashley and Chicot Counties). Surveys indicated no kudzu bugs in the state at that time.

However, it seems inevitable that kudzu bug will make its way into Arkansas. Although the kudzu bug is as much a nuisance pest for homeowners and gardeners, for the purpose of this fact sheet, we will concentrate on the impact of this invasive pest in soybeans.

History of Kudzu Bug

The kudzu bug, *Megacopta cribraria*, also referred to as the bean plataspid, globular stink bug and lablab bug, is native to India and China and is found throughout the Far East. It was initially found in the U.S. in 2009 and has spread

quickly across the Southeast. It is now well established in Tennessee and Alabama. Based on experience, once it is detected in an area, it is possible to see economic damage the next season.



Figure 1. Kudzu bug adult



Figure 2. Relative size of kudzu bug

Identification and Biology

Adult kudzu bugs are pea-sized, about 1/6-1/4" long (4 to 6 mm), somewhat oblong in shape with a wide posterior and olive-green colored with brown speckles (see Figures 1 and 2). The kudzu bug appears to waddle when it walks and is an excellent flier. They are "true bugs," having piercing-sucking mouthparts.

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Figure 3. Kudzu bug eggs



Figure 4. Kudzu bug nymph

Kudzu bugs overwinter as adults. In early spring they become active and seek reproductive plant hosts, such as kudzu and soybeans. Adults may feed on many different plants while in search of a reproductive host. Overwintered adults often infest kudzu and begin feeding and laying eggs (Figure 3). However, some overwintered adults may infest soybeans. Soybeans appear to become attractive to adults at the V-3 growth stage. Overwintered adults live and lay eggs for many weeks. Development from egg to adult takes 6-8 weeks in the spring and about 6 weeks in the summer months as temperatures warm. In Georgia, two generations occurred during 2010 and 2011.

Injury and Pest Status of Kudzu Bug

Adults and immature insects (nymphs, Figure 4) gather in large groups and suck sap from a host plant, weakening and stunting it (Figure 5). Adults have been observed sucking sap from the host plant's leaves, stems, budding flowers and mature green pods. Severe infestations of adults and nymphs feeding on leaf sap can cause extensive defoliation in host plants.

Injury to plants likely results from nutrient and moisture loss, rather than a direct loss of biomass from removal of plant tissue. Furthermore, sooty mold can develop on the leaves from the sugary excretion of the insect, reducing photosynthetic output. On soybeans, the kudzu bug adults and nymphs feed on stems (last-instar nymphs with

purplish wing pads), while small nymphs have been observed feeding on leaf veins (Figure 6).

Yield data collected from trials in Georgia and South Carolina indicate an average yield loss of 18 percent, with a range of 0-47 percent on unprotected soybeans.

Excessive kudzu bug feeding negatively impacts soybean yield by reducing the number of pods per plant, reducing beans per pod and/or reducing seed size. Yield loss is likely due to the physiological timing when stress occurs on the soybean plant. These yield loss components are very similar to what we observe on soybeans that are drought stressed.



Figure 5. Large numbers of kudzu bug infesting soybeans



Figure 6. Kudzu bug injury from feeding on soybeans

Scouting and Threshold for Kudzu Bug

Kudzu bugs can be scouted using a 15-inch diameter sweep net. Kudzu bug populations can be extremely large, especially on field edges. **We are suggesting a threshold of one immature kudzu bug per sweep.** This suggested threshold is based on field trials in Georgia where a single properly timed insecticide application preserved soybean yield. In the majority of trials conducted, nymphs usually appear at about the R-2 to R-3 growth stage. If adult numbers are extremely large (multiple adults per sweep) and soybeans are stressed, treatment should be considered; this is a judgment call, but the idea is to avoid bug-induced stress on soybeans that are also stressed for some other reason. **Be advised that treatments for kudzu bug may disrupt the soybean ecosystem by reducing beneficial insects and may**

enhance establishment of caterpillar pests, such as corn earworm, soybean looper and armyworms.

Controlling Kudzu Bug in Soybeans

Efficacy data from trials conducted in Georgia and South Carolina indicate that several insecticides provide very effective control. However, like other insect pests, coverage and penetration of the canopy are extremely important in achieving acceptable levels of control. The following table is a list of insecticides that are currently labeled for soybeans. The last column shows the percent control (based on trials from other states) of several selected insecticides. It appears that Bifenthrin (Brigade, Discipline, Fanfare, etc.) provides good control along with premixes such as Endigo (lambda-cyhalothrin plus thiamethoxam), Brigadier (bifenthrin plus imidacloprid) and Hero (bifenthrin and zeta-cypermethrin).

Table 1. Insecticides Currently Labeled for Soybeans With Activity on Kudzu Bug

Insecticide	Rate Range (per acre)	% Control (2-5 DAT)
Asana XL	5.8-9.6 oz	72
Baythroid XL	1.6-2.8 oz	65
Belay	3-6 oz	62
Brigade, Discipline, Fanfare, Sniper	2.1-6.4 oz	90-95
Brigadier	5.1-6.4 oz	91
Cobalt Advanced	6-38 oz	82
Declare	1.28-1.54 oz	85
Dimethoate	1.0 pt	84
Endigo	4-4.5 oz	92
Hero	4.0-10.3 oz	96
Karate	1.6-1.92 oz	89
Karate + Orthene	0.5-1.0 lb	94
Leverage	2.8 oz	53
Lorsban Chlorpyrifos	0.5-1.0 pt	75
Methyl Parathion	1-2 pt	80
Mustang Max	3.2-4.0 oz	81
Orthene	0.5-1.0 lb ai	81
Sevin XLR	1.0 pt	90
Stallion (chlorpyrifos + zeta-cypermethrin)	9.25-11.75 oz	69

Acknowledgments

Kudzu Bug – Identification and Control in Soybeans.

United Soybean Board.

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Rice, Marlin, Biologist, Pioneer Seed. Figures 1, 2, 4, 5 and 6. Clemson University, Figure 3.

All chemical information is given with the understanding that no endorsement of named products is intended, nor is criticism implied of similar products that are not mentioned. Before purchasing or using any pesticide, always read and carefully follow the directions on the container label.

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