

Insect Pest Update: Sorghum and Soybeans

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Sugarcane Aphid Found in Hanover

If you have sorghum planted this year, you may find yourself with an insect pest that is new to Hanover; the sugarcane aphid (SCA). SCA has been slowly making its way north from Texas since 2013. It was first found this week in Hanover County (8/8/16) but its rapid reproduction cycle makes it a pest you need to scout for immediately.

When scouting for SCA, first look for sooty mold on the upper-side of leaves (Figure 1). Where the sooty mold is present, aphids are present. To identify which aphid species you have, look on the underside of the leaves where you spot sooty mold. There were two different aphids found during scouting, the greenbug (Figure 2) and the sugarcane aphid (Figure 3). The pest of major concern at this time is SCA. Sugarcane aphid can be identified with a hand lens by looking for yellowish aphids with black “tailpipes” (Figure 4).

Once you identify that you have SCA, check to see if they are present at levels that justify pesticide application. To estimate the aphid population, walk into the field at least 25 ft. and examine plants along a 50ft row. If the honeydew is present, look underneath the leaves and estimate the number of SCA present using the picture guide provided by Texas A&M (Figure 5). Check the upper and lower leaves of 15-20 plants per location. Make sure to check any areas near grass weeds such as Johnson grass. Check at least 4 locations per field (total of 60-80 plants), to get an accurate estimation of the population. If no SCA are present, recheck the fields in a week.

While scouting, also look for the aphids’ natural enemies. Anywhere I saw aphids I saw many natural enemies doing their jobs. The ones that I saw the most of were parasitic wasps and lady bugs. The parasitic wasp lays its eggs IN the aphids which kills the aphid. These aphids then turn a grayish tan and are referred to as mummies (Figure 6). If you see aphid mummies it is a great sign that these wasps are multiplying and acting as an army against the unwanted aphids. I also saw many lady bugs both in their immature and adult forms (Figure 7) which eat the aphids. **If you decide to make an insecticide application, keep in mind that you will kill these “good guys” too that are helping you control the aphid population for free.**

If you estimate over **50 aphids per leaf on 25% of the sorghum plants**, it warrants insecticide application. Since aphids reproduce quickly, they quickly become resistant to insecticides. Many of the insecticides applied to row crops including sorghum are pyrethroids. This has increased insects’ resistance to this group of insecticides. **Pyrethroids should not be**

applied to control aphids due to resistance. The two insecticides that are labeled and recommend for sorghum insect control are Sivanto and Transform WG (Table 1).

Table 1. Insecticides recommended for the control of sugarcane aphid in sorghum in Virginia.

Insecticide	Active Ingredient	Application Rate	Max Annual Application Rate	Pre-Harvest Interval
		oz/A	oz/A/year	days
Sivanto	flupyradifurone	4-7	28	7 (forage) AND 21 (grain)
Transform WG	sulfoxaflor	0.75-1.5	3.0	7 (forage) AND 14 (grain)

If you are unsure of which aphid species you have or need guidance in estimating the population, please call me at 804-752-4307 or your local Extension Agent.



Figure 1. Sooty Mold on Sorghum infested with aphids.



Figure 2. Green aphids (greenbugs) are not usually an economically important pest in sorghum.



Figure 3. The underside of a sorghum leaf is heavily infested with sugarcane aphids.



Figure 4. Immature Sugarcane aphids are distinguished from other sorghum aphids by being yellow and having black "tailpipes".



Quick Aphid Checker

Estimate the number of sugarcane aphids (SCA) per leaf to help time foliar insecticides for SCA control on sorghum. Each photo represents an estimate from the table. For example, photo A shows about 12 aphids.

Estimate the Number of Aphids per Leaf		
Photo	Range	Estimate
A	1–25	12
B	26–50	38
C	51–100	75
D	101–500	300
E	501–1000	750
F	>1000	1500
Field Average = $\frac{\text{Total of All Estimates}}{\text{Total \# of Leaves Examined}}$		

Learn more about sugarcane aphids at
<http://txscan.blogspot.com>

Photos courtesy of Travis Ahrens, Mike Brewer, and Pat Porter.

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Figure 5. A way to estimate the number of aphids present is provided by Texas A&M <http://ccag.tamu.edu/files/2015/05/Scouting-School.pdf>.



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Figure 6. Mummified aphid after a parasitic wasp laid her eggs inside the aphid which kills the aphid.



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Figure 7. Lady bug adults (left) and immature (right) eating sugarcane aphids.

Insect Pest Thresholds in Soybeans

In both full season and double-cropped soybean fields, there are economically important insect pests. These insects include but are not limited to, corn earworms, stink bugs, kudzu bugs and a complex of defoliators. Pest populations can reach a certain point, or threshold, before they will cause economic loss. This publication highlights these thresholds and pest identification. At the end of the section is a card you can print and keep in your wallet as a quick guide to the insects and thresholds discussed.

Using a Sweep net:

To scout for insects, make 15-sweeps into the top of soybean plants right-to-left and left-to-right as you walk down the row. Each sweep in the top 6 inches of soybean plants should have enough force to dislodge insects and leave a few leaves in the net. This sampling method has been tested to give threshold numbers that are listed below that justify an insecticide application.

Corn Earworm:

The economically important stage of the corn earworm (CEW) for soybeans is the caterpillar. The caterpillars are different colors including yellow, brown, green, and pink. To distinguish the CEW caterpillars from other common caterpillars found on soybean, look for light and dark stripes that run the length of their bodies, four pairs of prolegs, and black spots, or hair tufts, all over their body.



Image 1. Corn earworm caterpillar.

When using a sweep net to sample corn earworms, the thresholds are based on 15 sweeps and only worms 3/8 inch or larger are counted. Waiting until worms are this size can prevent spraying too early before egg hatch, thus avoiding the likelihood of a second spray later. A threshold of 2.5 CEW/15 sweeps is a generalized threshold to keep in mind when scouting for this pest. It is recommended however, that you calculate the threshold for your cropping system using the **CEW Threshold Calculator**: <http://www.ipm.vt.edu/cew/>. Table 1 below lists some calculated thresholds based on row width, a chemical application estimate of \$11/acre and price of soybeans at \$9.00/bu.

Table 1. Calculated sweep net thresholds of corn earworms based on the soybeans planted row widths using a chemical application estimate of \$11/acre and price of soybeans at \$9.00/bu.

Row Width	Rows Sampled	Threshold: average number of CEW per 15 sweeps
7"	5	1.83
14"	3	1.8
21"	2	2.34

Stink bugs:

Both the nymph and adult stages of stink bugs are economically important in soybeans because they both use their piercing-sucking mouth parts to damage the pods and seeds. The "Field Guide to Stink Bugs of Agricultural Importance in the United States" can be used to identify both the immature and adult stages of different stink bug species (https://pubs.ext.vt.edu/444/444-356/444-356_pdf.pdf). The most common stink bugs found in soybeans include the brown stink bug, *Euschistus servus* (Image 2), the green stink bug, *Acrosternum hilare* (Image 3), and the brown marmorated stink bug (Image 4), *Halyomorpha halys*. The invasive brown marmorated stink bug injures more soybeans than the native stink bugs and therefore has more economic impact and a lower threshold as represented in Table 2.



Image 2. Adult brown stink bug which is native to Virginia.



Image 3. Adult green stink bug which is native to Virginia.



Image 4. Adult invasive brown marmorated stink bug with white stripes on its antenna.

The thresholds for stink bugs are based on 15 sweeps, just as the corn earworms, and both the nymphs and the adults are counted. Thresholds are higher for soybeans grown for grain than for soybeans grown for seed because of the higher tolerance for pod feeding or seed damage in the grain beans.

Table 2: Sweep net thresholds for stink bugs based on type of soybean, grain or seed, and the stink bug species present.

Soybean type	Threshold: average number of stink bugs per 15 sweeps
Grain	5
Grain where BMSB is predominant species	3-5
Seed	2.5

Kudzu bugs:

When surveying for kudzu bugs, the threshold is based off the number of nymphs per sweep. The nymphs are light green to dark brown in color, are about the size of a pencil eraser and are hairy in appearance (Image 5). The threshold is **1 nymph per sweep**. The adults are 4-6 mm long, oblong, olive green colored with speckles. Kudzu bugs produce an offensive odor like the closely related stink bug. There is no threshold established for the adults at this time.

These bugs damage the soybean plant by sucking the juices out of the stems and leaves and by promoting the development of sooty mold.



Image 5. Adult and immature kudzu bugs.

Insects that cause injury to the leaves (Defoliator complex):

There are many worms and insects that cause damage to soybean leaves. These include grasshoppers, bean leaf beetles, armyworms, and green cloverworms. But the most serious threat often comes from soybean looper. This worm looks similar to the green cloverworm and moves in the same looping like fashion. The two best methods to distinguish soybean loopers from green cloverworms are the fact they have only two pairs of prolegs (Image 6 *with a white box around the prolegs) and they do not thrash around when disturbed. Soybean loopers also curl up like CEW instead of wiggling vigorously like the green cloverworm.

Soybean loopers often show up late in the season after CEW scouting has ended. It is important to spray for CEW only if the thresholds are met because this spray can kill beneficials that help suppress the looper population later in the season. Loopers can defoliate much faster than other foliage feeding pests. They are also more difficult to control and pyrethroid sprays are often ineffective. If you see significant numbers of this worm pest, consider an insecticidal spray because they can do a lot of damage quickly.

The threshold for loopers and other defoliators is not measured with a sweep net as it is for pod and stem feeding insect pests. Instead, the threshold for defoliators is based on the

percent defoliation. The percent defoliation is often over estimated when eyeballing a field. Image 6 can be used as a gauge to estimate the percent defoliation of a leaf. But note that often the upper canopy can have more defoliation than the lower leaves and should not be used to estimate the total plant defoliation.

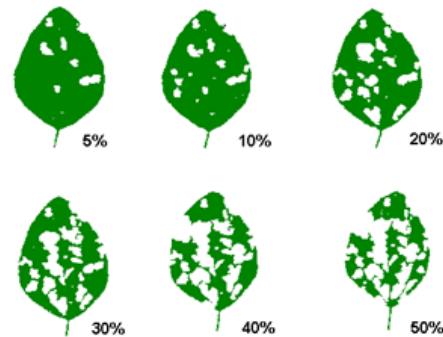
Because of the amount of leaf area present, there are separate thresholds for soybeans with full canopies verses soybeans with a smaller canopy. Most full-season and some double-cropped soybeans with good growing conditions develop larger canopies which can withstand more defoliation than some double-cropped soybeans. It is recommended to spray an insecticide when fields reach these defoliation thresholds:

Full Canopy Soybeans:

- 40% pre-bloom
- 15% from flowering to pod-fill
- 35% fully developed seeds
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Small Canopy Soybeans:

- 20% pre-bloom
- 10% from flowering to pod-fill
- 15% fully developed seeds



Soybean Pests Thresholds

Corn Earworm: 2.5/15 sweeps
Calculator: webipm.ento.vt.edu/cew/

Stink bugs: 5/15 sweeps
3-5/15 sweeps if BMSB is present

Kudzu bug: 1 nymph/sweep

Soybean looper: Heavy defoliator (2 pairs of pro-legs)



Defoliation Thresholds

Full season planting:

- 40% prior to bloom, 15 % from flowering to pod fill and 35% after pod fill



Double-crop plantings:

- 20% prior to bloom, 10 % from flowering to pod fill and 15% after

