



DEFENSE AGAINST

THE SUGARCANE APHID

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STAND AGAINST THE PEST



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SUGARCANE APHID IN THE U.S.

The sugarcane aphid, *Melanaphis sacchari*, was discovered late in the 2013 growing season in the coastal sorghum regions. The sugarcane aphid is a new pest to the U.S. sorghum industry, and it is capable of causing substantial damage to the crop if left unmanaged. **It is important for producers to be proactive and constantly scout for and monitor the pest because early detection is critical to minimize the aphid's harmful effects.**

HOST PLANTS



Sugarcane aphids will only survive and multiply significantly in sorghum genotypes, including Johnsongrass, shattercane, sorghum-sudangrass, sudangrass, forage sorghum and grain sorghum.

Sugarcane aphids will not survive on any of the major crops such as corn, cotton, soybeans or wheat. However, sugarcane aphids are distributed by the wind, so small colonies can be found in these crops, but at this time, have not been found to be of economic importance.

IDENTIFYING THE PEST



Identifying and treating for the sugarcane aphid in a timely manner is crucial. Sugarcane aphids are **gray, tan or pale yellow**, often called the white aphid. A pair of **black cornicles** or tailpipes can be seen on the aphid's back end. **Tips of feet and antennae are black.** A magnifying glass is required to see the black cornicles, feet and antennae. Colonies, or groups of sugarcane aphids are usually clustered around the **midrib of the bottom side of the sorghum leaf**. Additionally, sugarcane aphids are prolific producers of honeydew. The honeydew often originates from the aphids on the under side of leaves directly above.



BIOLOGY OF THE SUGARCANE APHID

1

Almost all sugarcane aphids are females and are born pregnant and give birth to 1-3 offspring each day.

2

Sugarcane aphid offspring become adults within five days and live an average of 28 days.

3

A proportion of the aphids in a colony will develop wings as adults. These winged sugarcane aphids are then dispersed with wind currents.

4

They have piercing, sucking mouthparts and feed on the sap of the plant, taking away nutrients that would otherwise go to growth and grain production.

5

Sugarcane aphids excrete a honeydew substance that causes the leaves to be shiny and sticky.

6

These pests are known to overwinter on sorghum species as far north as central Texas. It is currently unknown how far north the sugarcane aphid can potentially overwinter, but it is doubtful they can overwinter very far north.

APHID EFFECTS: HONEYDEW



Heavy infestations of the sugarcane aphid causes leaves to be covered with a **sticky, shiny** substance called **honeydew**. This honeydew is made up of plant sugars and water, which are harmless to animals. Honeydew is water soluble and washes off of the plant by rain or sprinkler irrigation. If honeydew is left on the plant, it eventually dries into a harmless residue.

APHID EFFECTS: SOOTY MOLD



Black sooty mold will often begin growing on the honeydew of sorghum leaves. This black sooty mold blocks out sunlight and decreases the plant's ability to produce sugars through photosynthesis. Over time, black sooty mold causes leaves to turn yellow and eventually the leaf tissue dies.

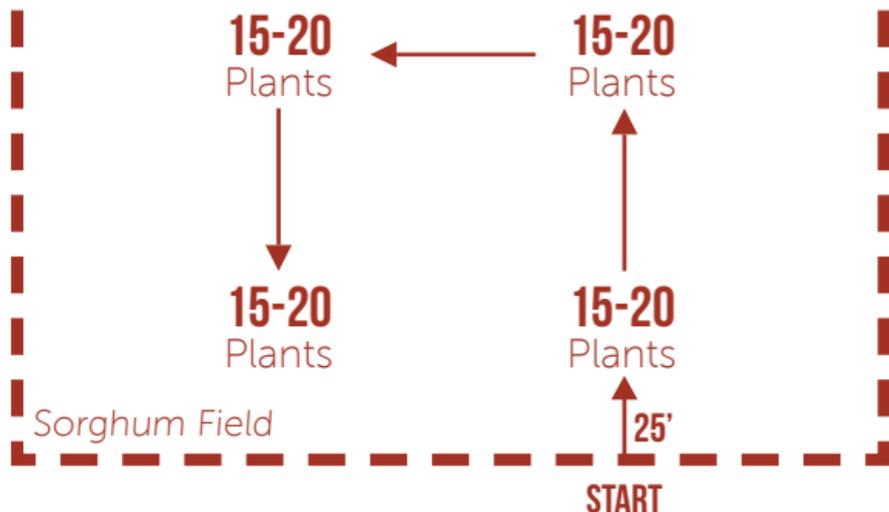
APHID EFFECTS: LEAF NECROSIS



Loss of plant sap from the sugarcane aphid feeding on sorghum leaves takes away nutrients from the plant that could otherwise be utilized for plant health and grain yield. Plant stress caused by the sugarcane aphids can also lead to uneven and lack of head emergence, poor grain set and will likely contribute to an increase in lodging.

SCOUTING FOR THE PEST

SCOUT 4 LOCATIONS THROUGHOUT FIELD



- 1 Fields should be scouted once a week for signs of the aphid. Once they are found, begin scouting at least twice a week.
- 2 The first sign of sugarcane aphid buildup in a field is usually honeydew on lower leaves.
- 3 To determine if an insecticide treatment is needed, note the presence and number of aphids on leaves in at least four areas of the field.
- 4 In each area of the field examined, collect a leaf from the bottom and top of 20 plants, and observe the presence and number of aphids.

WHEN TO TREAT FOR APHIDS

Threshold levels change and vary between regions. It is important to check with local experts to determine regional thresholds and scouting procedures. In general, two methods are currently being utilized to determine when to apply an insecticide to treat for sugarcane aphids.

Texas A&M University entomologists recommend threshold has been reached when 25 percent of the plants are infested with 50 aphids per leaf.

Mississippi State has explored thresholds by growth stage, which are described in the following table.

Regardless of the threshold level used, it is critical that insecticide application occurs as soon as possible. Otherwise, severe loss can occur.

Growth Stage	Threshold
Pre-boot & Boot	20 percent of plants infested with localized area of heavy honeydew and established aphid colonies.
Heading, Soft Dough & Dough	30 percent of plants infested with localized area of heavy honeydew and established aphid colonies.
Black Layer	Heavy honeydew and established aphid colonies on the flag leaf or in the head. Only treat to prevent harvest problems. Observe preharvest insecticide intervals.

INSECTICIDE OPTIONS



There are several possible insecticide options available to control the sugarcane aphid, but in 2015 **Sivanto** and **Transform** proved to be the most effective labeled products. Sivanto, flupyradifurone, is sold by Bayer CropScience under a federal 2ee label. Transform, sulfoxaflor, was sold in 2015 by Dow AgroSciences under a section 18 label. It is currently unknown if Transform will be available in 2016, but it is anticipated that some states will reapply for a section 18.

One of the benefits of Transform and Sivanto is they are not harmful to beneficial insects, which is important for the control of sugarcane aphids. **Care should be taken in adding other insecticides to the mix that could be harmful to beneficial insects.** Additionally, movement of Sivanto and Transform in the plant is minimal, making coverage essential for adequate control.

INSECTICIDE APPLICATION

- When applying insecticides, it is important to read the full product label and follow instructions carefully.
- In general, ground rig application tends to work better than air application.
- Insecticide coverage is critical for sugarcane aphid control. Use spray nozzles and a spray pressure that maximizes coverage.
- Increasing the volume of water above the minimum requirements listed on the insecticide labels is recommended.
- Control will be lessened if insecticide application is made under cool conditions, including temperatures into the low 60 degrees fahrenheit.
- The duration of control will depend on many factors, but under heavy infestation levels, expect anywhere from 5-14 days with 10 days being the most common length of control.
- Check with local experts on the use of adjuvants. Research on their effectiveness has been mixed.

YIELD LOSS IF LEFT UNCONTROLLED

Crop Stage at 20% Infestation	Percent Yield Loss with no Treatment
Pre-boot	81-100%
Boot	52-69%
Heading	67%
Soft Dough	21%

Source: Mississippi State University

REASONS FOR POOR CONTROL

Several factors can impact the effectiveness of insecticides in controlling the sugarcane aphid. Here are a few potential reasons for poor control:

- Waiting too long to make the insecticide application and the number of sugarcane aphids are simply overwhelming.
- Rain occurs soon after application, washing insecticide off of the leaf.
- Cool temperatures occurring at or soon after application causing sugarcane aphid to feed less and thus not ingest insecticide.
- Poor plant coverage, usually a result of not using enough water.
- Not using the appropriate insecticide rate.

HYBRIDS AND TOLERANCE

Several commercial hybrids being sold on the market have shown some degree of tolerance to the aphid. Here are a few considerations about these hybrids:

- In most cases, the hybrid exhibits a degree of tolerance, meaning the sugarcane aphid can still be present on the plants, but yield is affected less than susceptible hybrids.
- Sound, integrated pest management strategies must still be utilized with commercial hybrids that have some tolerance to the aphid, as they may still require an insecticide treatment.
- The mechanism of resistance is not necessarily known for these hybrids at this time.

RESISTANCE RESEARCH

Private companies and university sorghum breeders continue investigating resistance. They have identified better sources of sugarcane aphid resistance and tolerance, and are working to incorporate these qualities into commercially available hybrids.

Ask your seed company representative or check the Sorghum Checkoff website for hybrids with some tolerance to the sugarcane aphid.

HARVEST CONSIDERATIONS



If sugarcane aphids are in significant numbers in the sorghum head or on the upper leaves, harvesting can be impeded due to honeydew. There is not a good threshold level at this time for when to spray sugarcane aphids to assist in harvest.

If sugarcane aphids are present and produce a significant amount of honeydew that can gum up the combine, many producers are opting to spray an insecticide to eliminate the risk of harvesting issues. In 2015, Transform was the insecticide of choice, since it had a shorter harvest interval after application of 14 days compared to Sivanto with 21 days. If desired, these insecticides can be mixed with preharvest desiccants.

ADDITIONAL RESOURCES

Sorghum Checkoff

www.sorghumcheckoff.com

Sugarcane Aphid News Blog

www.txscan.blogspot.com

Aphid Pest of Sorghum

www.ccag.tamu.edu/aphid-pest-of-sorghum/

Mississippi Crop Situation - Grain Sorghum

www.mississippi-crops.com

REGIONAL EXPERTS

**This is not an inclusive list.*

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BEST MANAGEMENT PRACTICES

1

Sugarcane aphids can only survive on sorghum-related species. To help reduce local populations, control Johnsongrass, volunteer sorghum and other sorghum species in and around your fields during winter and spring prior to planting.

2

Consider planting a hybrid that has shown tolerance to the aphid. Tolerance does not mean immunity to the aphid. These hybrids still require monitoring and treating with an insecticide if action thresholds are reached. Be careful in giving up hybrid adaptability, yield potential and other favorable agronomic characteristics. In most cases, these characteristics should not be given up in order to plant a sugarcane aphid tolerant hybrid. Visit SorghumCheckoff.com for a current list of hybrids showing some tolerance.

3

Plant seeds treated with an insecticide seed treatment. These seed treatments will protect sorghum from potential early season infestations. Acceptable seed treatments include Cruiser (thiamethoxam), Poncho and Nipsit (clothianidin) and Gaucho (imidacloprid).

4

Plant early. In many areas of the country, sugarcane aphids tend to infest fields later in the growing season. Early planting may avoid infestation.

5

Scout fields early and often using proper procedures to determine the level of aphid infestation. Once sugarcane aphid infestation occurs in the field, the number of aphids can increase quickly.

6

Apply insecticide as soon as the action threshold is reached. Threshold levels change and vary with individual states. Check with your local experts for current information. In general, the threshold is reached when 25 percent of the plants are infested with 50 aphids per leaf.

7

Use only recommended insecticides and follow label rates and application instructions. Coverage is critical. Best results are achieved when high volumes of water are used.

8

Preharvest. If aphids are present in the upper canopy or grain panicle in sufficient numbers to produce honeydew, consider applying an insecticide in order to prevent potential issues with harvest. If a harvest-aid product is used, tank mixing with the insecticide has worked well when the sugarcane aphid is present.

9

Avoid use of insecticides, especially pyrethroids, that are harmful to beneficial insects because they may result in sugarcane aphid numbers increasing rapidly.



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