

Sugarcane aphid (*Melanaphis sacchari*) – a new pest of sorghum

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A new pest of sorghum, the sugarcane aphid (*Melanaphis sacchari*) was found for the first time in South Carolina in October 2014. This invasive species was first detected in the continental United States on sugarcane in Florida in 1977 and in Louisiana in 1999.

The insect switched hosts in 2013 and was found on grain and forage sorghum in Texas. This new strain or biotype was also found in Mississippi in 2013, and it rapidly spread in 2014 to Arkansas, Tennessee, Alabama, Georgia, and South Carolina, and in 2015 to Kentucky, Missouri, North Carolina, New Mexico and Virginia. It is currently unknown if the aphid can successfully overwinter in South Carolina. However, the insect was able to successfully infest sorghum fields in South Carolina in 2015 and 2016, with first infestations occurring mid-June in each year.



Fig. 1. Sugarcane aphid infestations in grain sorghum in South Carolina in October 2014.

Identification



Fig. 2. Sugarcane aphids on grain sorghum

The dark cornicles (tail pipes) and dark tarsi (feet) differentiate this species from the other main pest species of aphids in sorghum. Three other species of aphids can be found on sorghum in South Carolina, but these are minor pests. Greenbugs have a characteristic dark along the back. Yellow sugarcane aphids are covered with hairs and have a brighter yellow color compared to sugarcane aphids. Corn leaf aphids can be identified by their blue-grey color. The color of sugarcane aphids can range from grey to pale yellow.

Life Cycle

All sugarcane aphids are female that reproduce asexually in the United States, though production of eggs has been reported from Mexico. They give birth to live wingless females. Adults can be either winged or wingless. The aphid is not believed to

overwinter in South Carolina. Adults and nymphs are thought to need a live host plant to survive the winter, with annual movement occurring from southern locations in Texas, Louisiana, Mexico, Florida and the Caribbean. Since 2015, sugarcane aphids have been found on Johnsongrass in South Carolina in early June before moving into sorghum.

Injury

The sugarcane aphid can cause significant economic damage to sorghum. The insect feeds on plant sap and can seriously injure or kill plants. While feeding, aphids secrete a sticky substance called honeydew which can cover plants and cause problems with harvesting. In 2015, infestations of sugarcane aphids were severe enough in some fields in South Carolina to cause complete crop failure, though on average, yield losses were less across the state. Data from states in the Mid-South indicate yield losses from 20 to 50%, with complete crop losses in some cases. Research trials at the Pee Dee and Edisto RECs are focusing on assessing the impact of this pest on sorghum in South Carolina and providing management recommendations.

Management

Management of sugarcane aphids in grain sorghum can involve several control tactics. A range of natural enemies have been shown to help in reducing populations, including several lady beetle species, green lacewings, hoverflies, and an *Aphelinus* parasitoid. However, natural enemies often do not provide sufficient levels of control under heavy aphid pressure.

Insecticides are often needed. Labeled products for control of aphids on sorghum include chlorpyrifos and dimethoate, but,

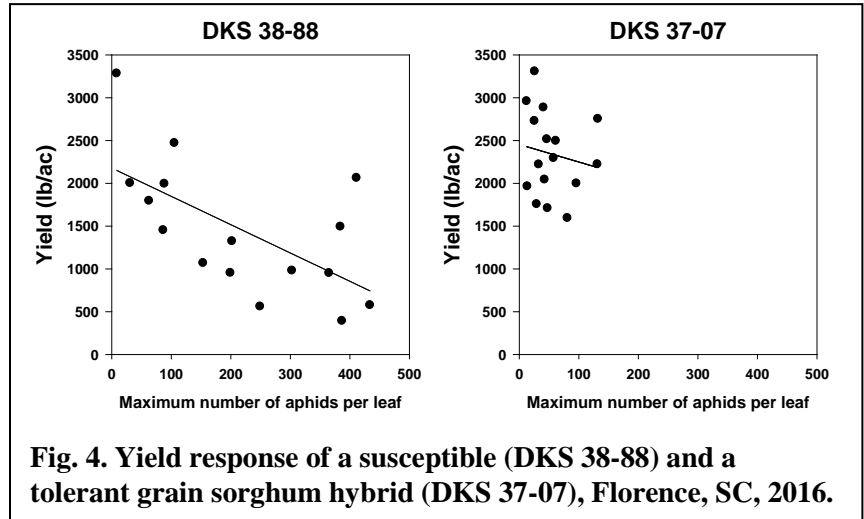
often, these products only provide fair control, and pre-harvest intervals are lengthy (30 and 28 days, respectively, at the lowest rates). Data from trials in South Carolina indicated that dimethoate provided poor levels of control, and chlorpyrifos provided fair levels of control, though a high rate may be needed with heavy infestations. Pyrethroids will flare populations of aphids by reducing numbers of their natural enemies, so they should not be used when sugarcane aphids are present. The new insecticide Sivanto Prime (flupyradifurone) is labeled on sorghum in South Carolina. Under FIFRA section 2(ee), a reduced rate (4-7 oz of product per acre) of Sivanto Prime is available for control of sugarcane aphid on sorghum. This insecticide provides very good levels of control. A section 18 Emergency Exemption is currently available for Transform (sulfoxaflor) in South Carolina, providing two good products for sugarcane aphid control on grain sorghum. The current section 18 label expires on 30 November 2017. Insecticide seed treatments can also help to control sugarcane aphids. A late planted trial in Florence with heavy sugarcane aphid pressure showed the value of seed treatments (Fig. 3), though the decision to use a seed treatment will only pay off when infestations begin early in the season. Since seed treatments only have activity for the first few weeks after planting, they may not always be needed since aphid pressure can peak later in the growing season beyond this window where seed treatments are effective. More information on insecticides for sugarcane aphid control can be found in the [Clemson University Pest Management Handbook](#).

Selection of a grain sorghum hybrid with tolerance to sugarcane aphid is a key decision. Several grain sorghum hybrids have levels of tolerance to sugarcane aphid feeding relative to susceptible standard hybrids. A list of tolerant hybrids can be found on the Sorghum Checkoff website [here](#), though trials in South Carolina have not included all listed hybrids. An important consideration is that the value of using tolerant hybrids will only be apparent under moderate to heavy aphid pressure. Yield potential should be a primary factor when choosing hybrids. A good resource to help choose a hybrid with



Fig. 3. Sorghum treated with insecticide seed treatment (left) and untreated (right), Florence, SC, 2016.

good yield is the [Clemson University sorghum variety test data](#). Work began in 2016 at the Pee Dee and Edisto RECs to quantify the value of tolerance to sugarcane feeding in untreated plots and plots treated with insecticide. Our data underline the value of selecting tolerant hybrids; although complete control is not achieved under moderate to heavy pressure, these tolerant hybrids can help to delay the need for the first application of insecticide. Under moderate to low pressure, yield loss can be prevented by selecting a tolerant hybrid, as shown in Fig. 4 – aphids did build up and yields were not affected by aphids in a tolerant hybrid (DKS 37-07), whereas the opposite occurred in a susceptible hybrid (DKS 38-88).



Because sugarcane aphids can build up rapidly, fields should be scouted at least once a week, preferably twice a week. Ongoing trials at the Pee Dee REC in Florence aim to establish thresholds. Based on data from a trial in 2016 and from other trials in the southern U.S., a threshold of 50 aphids per leaf can be considered a threshold. All fields should be scouted, regardless of hybrid planted. Even tolerant hybrids will need an application under moderate to heavy pressure.

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