

Sugarcane Aphid: A New Pest of Sorghum



Raul T. Villanueva, Michael Brewer, M. O. Way, Stephen Biles, Danielle Sekula, Ed Bynum, James Swart, Clyde Crumley, Allen Knutson, Patrick Porter, Roy Parker, Gary Odvody, Charles Allen, David Ragsdale, William Rooney, Gary Peterson, David Kerns, Tom Royer, and Scott Armstrong*

A new aphid pest has infested grain sorghum in South and East Texas, southern Oklahoma, eastern Mississippi, northeastern Mexico, and central, northeast, and southwest Louisiana (Fig. 1).

In 2013, large populations of sugarcane aphids (*Melanaphis sacchari*) developed on sorghum plants. They produced large amounts of honeydew, which choked combines and caused lost grain in northeast Texas and Louisiana. Growers lost up to 50 percent of grain sorghum yield in infested fields during 2013.

History

This insect appears to have changed its host from sugarcane to plants in the genus *Sorghum*—grain sorghum, forage sorghums, sorghum x sudan crosses and johnsongrass; or it might be a new introduced pest species. Small colonies have also infested corn plants, but they do not appear to feed well on corn.

*All of the Texas A&M AgriLife Extension Service, except Brewer, Way, Peterson, and Odvody, of Texas A&M AgriLife Research; Ragsdale and Rooney, of Texas A&M University; Kerns, of Louisiana State University; Royer, of Oklahoma State University; and Armstrong, of the U.S. Department of Agriculture—Agricultural Research Service

The aphid is a key pest of sorghum and sugarcane in tropical and subtropical regions around the world, including Africa, Asia, Australia, and Central and South America. Although it was reported in

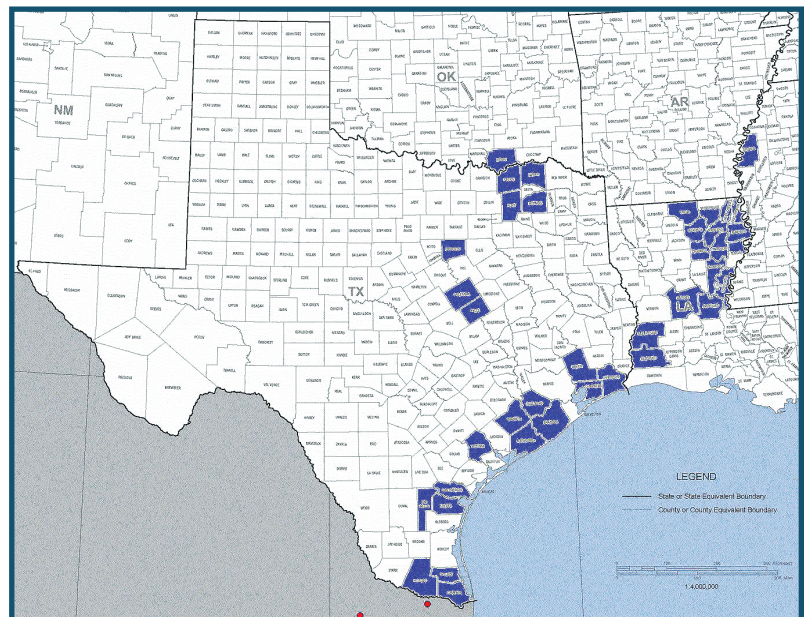


Figure 1. The new aphid pest of sorghum was detected in 38 counties and parishes of Texas, Louisiana, Oklahoma, and Mississippi in 2013. All sorghum-growing counties in this geographical range may be at risk. They could expand into western Texas, Arkansas, and the Mississippi Delta, depending on the weather and host plants. This aphid spreads rapidly across a wide geographic range. The two red dots are the approximate locations where this aphid was reported in Mexico.

Hawaii in 1896, it was first found in the continental United States on sugarcane in Florida in 1977. It was also observed on sugarcane in Louisiana in 1999. These infestations broke out in summer and declined by winter.

Neither introduction resulted in permanent infestation by the pest, an indication that it was not, at that time, able to adapt to a more temperate environment.

Identification

The sugarcane aphids seen in 2013 were gray to tan or light yellow (Figs. 2, 3, and 4). Unlike other common aphid species that feed on sorghum, sugarcane aphids have dark, paired, tailpipe-like structures, called cornicles, at the rear, and their tarsi (feet) are dark at high magnification. The dark cornicles and tarsi contrast distinctively with the lighter body color of the sugarcane aphid.

Sugarcane aphids differ from other aphids that attack grain sorghum (Fig. 2):

- Greenbugs have a distinctive darker green stripe down the back; sugarcane aphids do not.
- Yellow sugarcane aphids have many hairs on the body (seen with magnification).
- The legs and head of corn leaf aphids are dark.

Behavior

Sugarcane aphids colonize the lower surfaces of lower leaves first and then advance to the upper leaves (Figs. 3 and 4). In some situations if they are not controlled, the aphids may even colonize the grain sorghum head (Fig. 5).

When conditions are favorable, small colonies can quickly grow to large colonies and produce large amounts of sticky honeydew. Highly sticky leaf surfaces may help protect the aphids from predation.

Damage

Aphid feeding causes yellow to red or brown leaf discolorations on both sides. The honeydew may also support the growth of black, sooty mold fungus. Infestations of seedlings can kill young grain sorghum plants; later infestations can prevent grain from forming.

During harvest, honeydew-coated leaves and stalks stick to the inner parts of harvest equipment, clogging the combine and preventing it from moving material through the machine efficiently. Combines may require service time to wash off the honeydew and remove lodged stalks and heads. The sticky leaves also prevent the grain from separating from the stalks and leaves in the combine, causing the grain to “ride over” and be lost on the ground. Grain sorghum losses of up to 50 percent were reported in 2013.

The aphid that damages sorghum is taxonomically indistinct to the sugarcane aphid (*Melanaphis sacchari*), and it might be a new biotype that switched hosts or an invasive species recently introduced into the United States.

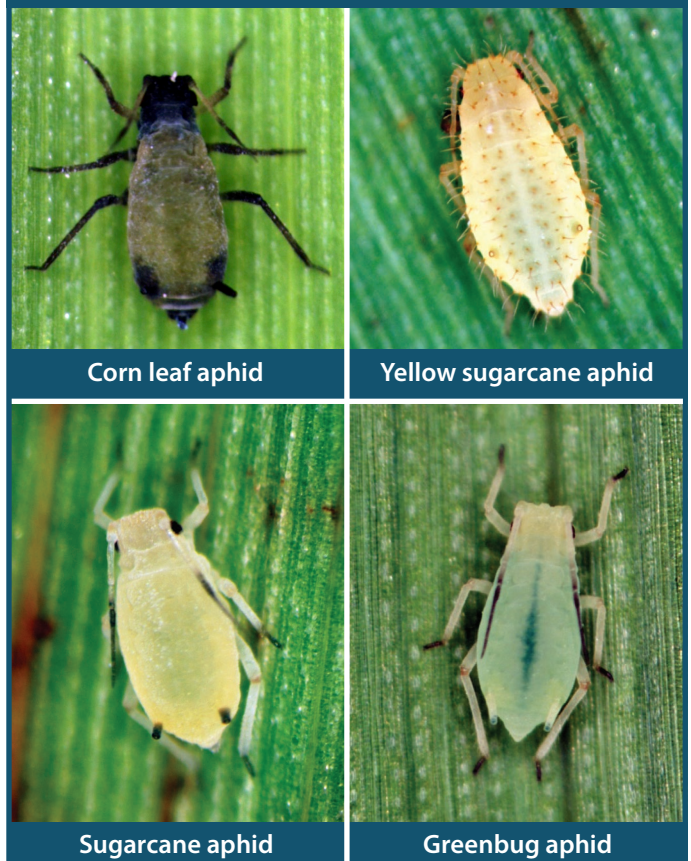


Figure 2. Aphid species that affect grain sorghum. All aphids reared by Scott Armstrong, USDA–ARS Lab Stillwater, OK, and photographed by Rick Grantham, Oklahoma State University Insect Diagnostic Lab, Stillwater.

Management and control

Natural enemies of sugarcane aphids include lady beetles, syrphid fly larvae, green lacewings, and parasitic wasps. Some sorghum lines can tolerate sugarcane aphid feeding without significant leaf damage.

However, when populations of sugarcane aphids are increasing rapidly, insecticides may be needed to prevent yield losses and honeydew buildup before

harvest. Small plot tests and field observations indicate that the insecticide Dimethoate 4EC can provide control at 1 pint per acre. However, data from Louisiana and Mexico showed that Dimethoate was not effective in controlling sugarcane aphids.

Also, a Section 18 Emergency Exemption Label has been requested for the insecticide Transform WG. It has been effective in tests when used at a rate of 0.75 ounce per acre.



Figure 3. Sugarcane aphid outbreak in sorghum in summer 2013 (top left), fall population on johnsongrass (bottom left). Note the presence of a few winged aphids (alates) and many unwinged aphids. Severe whole plant damage (top right) and sooty mold/honeydew damage (bottom right).



Figure 4. Sugarcane aphids and a predacious syrphid larva on a sorghum leaf (December 2013). Note great variation in color detected in December compared to the yellow tones of the summer in Figure 3.



Figure 5. Sugarcane aphids damaging sorghum plants and colonizing sorghum heads in an experimental field in Weslaco November 2013. At left, rows of sorghum cultivars/hybrids show a consistent and differential response to the aphid.

Acknowledgments

Thanks to the many grain sorghum producers who first noticed damaged fields and invited us to their fields. Thanks to industry for providing insecticide products. Many thanks to the Texas Grain Sorghum Board and United Sorghum Checkoff for their encouragement to address this problem.



Texas A&M AgriLife Extension Service

AgriLifeExtension.tamu.edu

More Extension publications can be found at *AgriLifeBookstore.org*

Educational programs of the Texas A&M AgriLife Extension Service are open to all people without regard to race, color, sex, religion, national origin, age, disability, genetic information, or veteran status.

The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating.