

Sugarcane Aphid - A New Aphid Pest of Sorghum

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An aphid outbreak occurred in grain sorghum fields in south and east Texas; southern Oklahoma; northeastern Mexico; southwest, central and northeast Louisiana and eastern Mississippi in 2013 (Fig. 1). It was first detected near Beaumont, TX. Large populations of aphids developed on sorghum plants, mostly after harvest. The most distinctive feature of these late-season infestations was extensive honeydew production. Choked combines and lost grain due to sticky crops were reported in northeast Texas and Louisiana as farmers harvested aphid-infested fields.

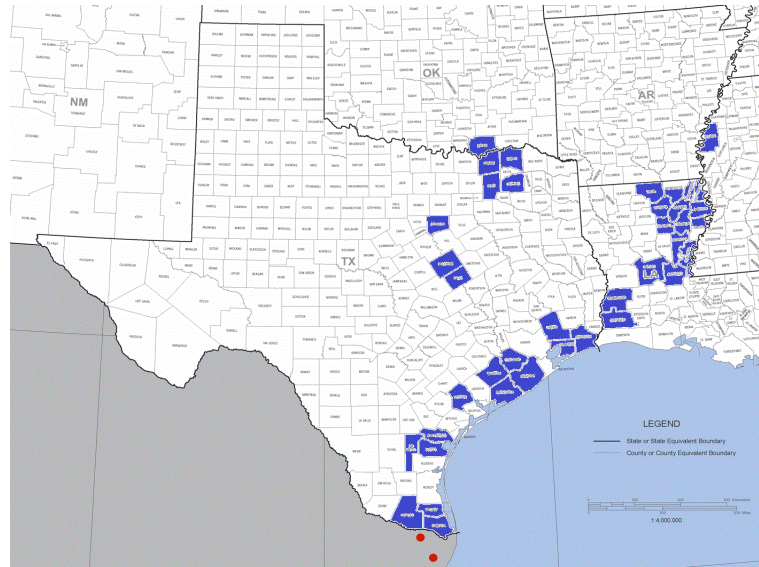


Figure 1. The sorghum aphid *Melanaphis* sp. was detected in 38 counties and parishes of Texas, Louisiana, Oklahoma, and Mississippi in 2013. All sorghum growing counties in this geographical range may be at risk. Further range expansion into western Texas, Arkansas, and the Mississippi Delta is a possibility depending on the weather and host plants. This aphid spreads rapidly across a wide geographic range. The two red circles are the approximate locations where this aphid was reported in Mexico.

Identification/History

Upon its discovery in 2013, this sorghum feeding aphid was determined to be in the genus *Melanaphis*, but species identification was slower and more difficult. Several experts independently concluded in the fall of 2013 that the pest was *Melanaphis sacchari*, the sugarcane aphid. This suggests that the insect has undergone a complete or partial host-switch since it now readily colonizes plants in the genus *Sorghum* (grain sorghum, forage sorghums, sorghum x sudan crosses and Johnsongrass), but not those in the genus *Saccharum* (sugarcane). Also, small colonies of this aphid have been observed on corn plants as well, but it does not appear to be well adapted to feed on corn.

The sugarcane aphid is a key pest of sorghum and sugarcane in tropical regions around the world (Africa, Asia, Australia, Central and South America). Though reported in Hawaii in 1896, it was first reported in the continental U.S. on sugarcane in Florida in 1977. It was also reported on sugarcane in Louisiana in 1999. These infestations were characterized by summer outbreaks followed by winter population decline.

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



Figure 2. *Melanaphis* sp. outbreak in sorghum in summer 2013 (top left Beaumont, fall population on Johnson grass (bottom left Corpus Christi) Note the presence of a few winged aphids and many unwinged aphids. Severe whole plant damage top right, Beaumont and sooty mold/honeydew damage (bottom right Corpus Christi).

The sugarcane aphids seen in 2013 were grey to tan or light yellow in color (Figs. 2 and 3). Unlike other common aphid species that feed on sorghum, the cornicles (paired tailpipe-like structures at the rear of the aphid) are dark in color and the tarsi (feet) are also dark at high magnifications (see Figure of distinct aphid species in last page). The dark cornicles and tarsi contrast distinctively with the lighter body color of the sugarcane aphid. Sugarcane aphid can be distinguished from greenbug because it does not have the distinctive dark line or band down the back seen on the greenbug. It can be distinguished from the yellow sugarcane aphid by the absence of numerous hairs on the body as can be seen (with magnification) on the yellow sugarcane aphid and, the legs and head are not dark as they are on the corn leaf aphid. Large groups of sugarcane aphids may be found on sorghum leaves during the growing season.



Figure 3. *Melanaphis* sp. and a predacious syrphid larva on a sorghum leaf (Dec. 2013). Note great variation in color detected in December compared to the yellow-tone colors of the summer in Fig. 2

Behavior

Early in the infestation cycle, sugarcane aphids colonize the lower surfaces of the more mature, lower leaves of sorghum plants (Fig. 2). They progressively move upwards and may eventually colonize even the seed heads (panicles) (Fig. 4). When conditions are favorable, small colonies can quickly grow to large colonies which produce large amounts of sticky honeydew. Highly sticky leaf surfaces may help protect the aphids from predation.



Figure 4. *Melanaphis* sp. damaging sorghum plants and colonizing sorghum heads in an experimental field in Weslaco November 2013. Left image of sorghum rows shows a consistent and differential response to the aphid among sorghum cultivars/hybrids.

Damage

Aphid feeding produces yellow to red or brown leaf discoloration which is visible on both sides of the leaf. Indirect damage is caused by the abundant honeydew which may support the growth of black, sooty mold fungus. Infestations of seedling grain sorghum can kill young plants and later infestations can prevent the formation of grain. Additional harvest-associated losses may occur. Honeydew coated leaves can stick to the inner parts of harvest equipment preventing efficient movement of crop material through the machine. Combines may choke and requiring service time to remove lodged stalks and heads. Losses may also occur as sticky leaves foul grain separation from stalks and leaves in the combine, causing grain to “ride over” and be lost on the ground. Reports of up to 50% losses of grain sorghum were reported in 2013.

Management and Control

Natural enemies including lady beetles, syrphid fly larvae, green lacewings and parasitic wasps have been observed feeding on sugarcane aphids. In addition, variety screening work has shown that certain sorghum lines can tolerate sugarcane aphid feeding without significant leaf damage. However, when sugarcane aphid populations are increasing rapidly, insecticides may be needed to prevent yield losses. Small plot tests and field observations indicate that the insecticide Dimethoate 4EC at 1 pt/ac can provide control. In addition, a Section 18 Emergency Exemption Label has been requested for Transform WG insecticide. It has been effective in tests when used at a rate of 0.75 oz/ac.

The sugarcane aphid (*Melanaphis sacchari*): This species can be misidentified with other aphid species. The new aphid that damage sorghum is taxonomically indistinct to *M. sacchari*, and it might be a new biotype that switched hosts or an invasive species recently introduced into the U.S.



All aphids reared by Dr. Scott Armstrong, USDA-ARS Lab Stillwater, and photographed by Dr. Rick Grantham. Oklahoma State University Insect Diagnostic Lab, Dep. of Entomology and Plant Pathology. Stillwater, OK.

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