

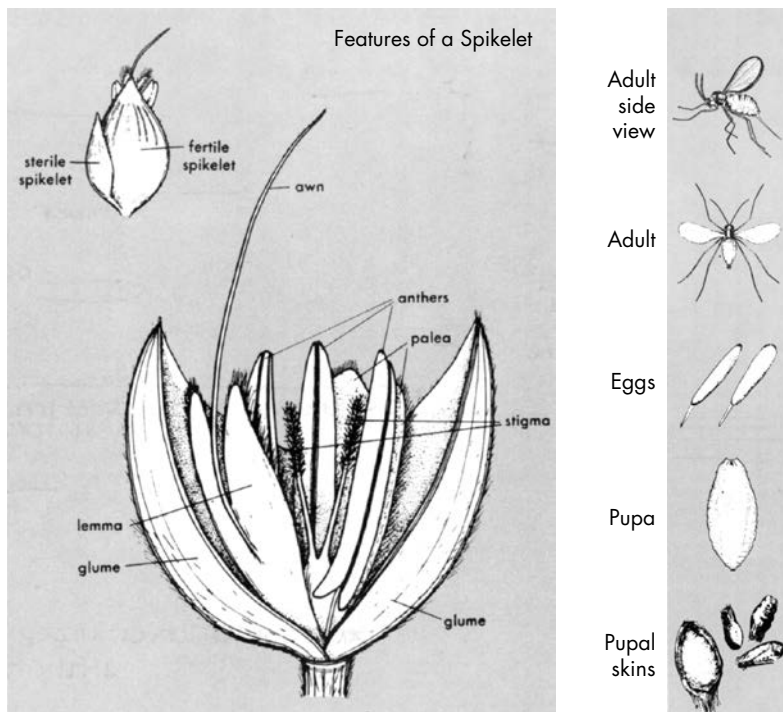
Sorghum Midge Control



The sorghum midge, *Contarinia sorghicola* (Coquillett), is one of the most destructive pests to grain sorghum in Mississippi and is difficult to detect in a field. Infestations are more common in areas where grain sorghum has been grown for several years and Johnsongrass is present.

The Sorghum Plant

Grain sorghum takes 55–65 days from emergence to blooming, and each head blooms for four to nine days, with about 200–300 fresh blooms daily. The head blooms first in the top, and new blooms develop downward. Each head has about 500–1,500 grains. Sorghum is susceptible to damage from sorghum midges only during blooming.



Life Cycle

Overwintering Stage

Larvae overwinter inside cocoons spun within the spikelets of sorghum, Johnsongrass, or other host-plant residue. Temperature, cultural practices, and several other factors influence timing and percent emergence in the spring.

Adult Stage

The sorghum midge is a small, orange fly that is difficult to see. The edges of its wings appear fringed under magnification. The female lives one day, laying 30–120 eggs, singly, in the glume. About 90 percent of the eggs are laid during the four days following plant-head emergence. The life cycle of the midge is about 14–18 days. The male lives only a few hours.

Egg Stage

The sorghum midge egg is white, cylinder-shaped, and attached to the spikelet by a tapering stalk. The egg hatches in 42–60 hours, depending on temperature.

Larva Stage

The colorless larva feeds on the seed and changes to an orange color as it develops. A mature larva is flat, spindle-shaped, and comes to a point at the head. The larva stage lasts 9–11 days.

Pupa Stage

Pupae are orange at first but change to near-black on all body parts except the abdomen, which remains orange. After emergence, adults keep their body colors. A pupa moves to the tip of the glume as emergence nears. A sign of emergence is the whitish-cast skins sticking out from the glume tip. The pupa stage lasts two to three days before adults emerge.

Damage

The sorghum midge is found in all Mississippi counties where sorghum is grown. Its main hosts are sorghum and Johnsongrass, but midges can develop in a few other grasses.

The midge can damage sorghum only during the bloom period. Once blooming begins, an individual head can be damaged for the first four to nine days. Adult midges do not damage sorghum. However, the female flies to blooming sorghum and crawls over seed heads in search of egg-laying sites.

The female sorghum midge deposits a single egg between the glumes of a floret. Larvae destroy the seed, resulting in “blank” or shriveled seed coats that often appear discolored. Heads with severe midge damage appear small and compressed with blank areas.

Scouting Methods

Check fields weekly during the production season.

During the sorghum bloom period, it is best to inspect fields daily, or at least once every two days, to detect adult sorghum midges. Randomly select several sites in each field for inspection to get this information.

Inspect fields for adult midges from midmorning until shortly after noon. If checks are later, sampling may not represent actual adult midge activity. Use either the visual or bag inspection method.

Visual Method

1. Select a site for inspection; stop near the sorghum head to be observed (without disturbing the head).
2. Kneel; observe the head with a blue sky as background. Midge adults are more difficult to locate and sample accurately during windy conditions.
3. Count and record the number of adult midges flying around and crawling on each head.
4. If midges are not seen, lightly thump the peduncle below the head; this may cause adults to move.
5. Determine the average number of midges per sorghum head for a field: Total the number of midges and the number of heads inspected, and divide the total number of midges by the total number of heads.

Bag Method

1. Place a small, clear plastic bag over the blooming head. Lightly hit the bag to dislodge adult midges from the blooming head. Quickly remove the bag from the sorghum head.
2. Count adult midges visible in the bag. Look closely, since there will be debris in the bag.
3. Calculate infestation level as described in the visual method.

Control

Cultural

Plant sorghum uniformly at the same depth and on the same date, between April 15 and May 10. A crop planted under these conditions rarely has problems with worms or sorghum midges. Sorghum planted after these dates or in staggered plantings over 6–10 days is much more susceptible to insect attack. Sorghum midge reproduction is highest in fields with staggered plantings or uneven emergence.

Cultural practices that help manage sorghum midges include reducing Johnsongrass in and around fields, especially before it heads, and destroying crop residues. This reduces the number of overwintering larvae.

Midge-resistant sorghum varieties may have an important role as more varieties become commercially available.

Significant yield loss occurs where large numbers of midges are found in small plantings or where blooming is not uniform. When head emergence is not uniform, it may take more than one application to protect the whole field. However, large fields planted early with uniform blooming usually lose only a few seeds from midge damage, and increased seed size often makes up for losses.

Threshold

Apply an insecticide to a field when an average of one adult midge per head is observed after 20–30 percent of the heads begin to bloom.

Information Sheet 1331 (POD-12-16)

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Extension Service of Mississippi State University, cooperating with U.S. Department of Agriculture. Published in furtherance of Acts of Congress, May 8 and June 30, 1914. GARY B. JACKSON, Director