

Evaluation of Grain Sorghum Hybrids for Resistance to the Sorghum Midge

Xinzhi Ni and J. Charles Mullis

Although grain sorghum is adapted to the growing season in Georgia, the plants are subject to attack from insects from the early seedling stage through maturity in the Coastal Plain. Six insect pests of sorghum in southern Georgia were detected in 2004. They are in order of importance: the sorghum midge, the sorghum webworm, the fall armyworm, the lesser cornstalk borer, the corn earworm, and the greenbug.

The sorghum midge is a very small, orange-colored fly. While the adult male lives for only a few hours, the female lives one day to deposit eggs (30-120 eggs per female) singly within the glumes of the flowering heads. Approximately 90% of the eggs are laid during the four days following the head emergence. The timing of the peak of adult population and plant flowering time is critical for high infestation. Then the larvae feed on developing seeds and the damage symptoms by the midge are known as seedless or "blasted" heads. The life cycle of the midge last 14-18 days.

The midge-infested heads can be separated from seed losses by other factors using the whitish-cast skins hanging at the tip of glumes during pre-harvest examination. The sorghum midge is a cyclic pest in grain sorghum production in Tifton and the Coastal Plain region.

Several current hybrids are resistant to the sorghum midge. It is highly recommended that growers use available resistant hybrids, because it is one of the most economic strategies available for midge control. For further integrated pest management information, please consult with your local county agent and/or extension entomologists.

Sorghum seed losses were recorded in four of the 34 cultivars in the test, which was planted on April 28, 2004. Evaluation of grain sorghum for resistance to the sorghum midge was conducted on August 9, 2004. The midge damage given in the following table is expressed as visual damage ratings in the field. Midge damage was evaluated on a scale from 0 to 9, where 0 = no damage, 1 = up to 10% of the dead destroyed, and 9 = more than 80% of the head destroyed. Midge damage ratings are based on 4 replications. Although the other five sorghum insect pests (i.e., sorghum webworm, fall armyworm, lesser cornstalk borer, corn earworm, and greenbug) were observed on sorghum plants, the populations were not high enough to engender any significant yield losses in 2004.

Data for this section were collected and compiled by J. C. Mullis of the Crop Genetics and Breeding Research Unit, USDA-ARS, Georgia Coastal Plain Experiment Station, Tifton, Georgia.

Evaluation of Grain Sorghum Hybrids for Resistance to the Sorghum Midge, Irrigated, 2004, Tifton, Georgia¹

Company	Hybrid	Days to Anthesis ²	Damage rating ³
University of Florida	FS-03BK-7	77	5
University of Florida	FS-03BK-5B	69	2
Walter Moss Seed Co.	M929MB	60	2
Sorghum Partners, Inc.	NK7633	64	2
Crosbyton Seed Co.	X1467	64	1
Crosbyton Seed Co.	X9067	65	1
Monsanto	A567	66	1
Monsanto	A571	64	1
Monsanto	DKS 53-11	65	1
Monsanto	DKS 54-00	65	1
Monsanto	X 303	66	1
Monsanto	X 304	65	1
Pennington Seed, Inc.	Penngrain DR	64	1
Pennington Seed, Inc.	PP777	64	1
Pennington Seed, Inc.	PP799E	66	1
Pioneer	83G66	65	1
Seed Resource	SR 278	59	1
Seed Resource	SR 424	64	1
Seed Resource	SR 426	65	1
Seed Resource	SR 506	64	1
Seed Resource	SR 510	64	1
Seed Resource	SR 514	66	1
Seed Resource	SR 544	66	1
Sorghum Partners, Inc.	NK8416	67	1
Sorghum Partners, Inc.	NK8817	67	1
Sorghum Partners, Inc.	NK8828	66	1
Southern States Coop	SS-650	64	1
Southern States Coop	SS-800	63	1
UAP	X1753	66	1
UAP	X1756	61	1
UAP	X1766	65	1
University of Florida	FS-03BK-4B	69	1
Walter Moss Seed Co.	M1024DPW	68	1
Walter Moss Seed Co.	M927ER	61	1

1. The test plots were irrigated five times with one inch of water each time, and the area was also fertilized using 25 lb N, 50 lb P, and 75 lb K/acre, plus sidedress of 100 lb N/acre.
2. Days from planting to 50% bloom.
3. Midge damage ratings were visual ratings described in the text, where 1 = the least damage and 9 = the most damage.