

Grain Sorghum Hybrid Resistance to Insect and Bird Damage, 2014

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Thirty-seven grain sorghum hybrids were evaluated for resistance to insect and bird damage in 2014 in Tifton, and a total of 10 insect pests were observed. While sorghum midge and bird damage was relatively low, sorghum webworm and aphid damage was high. Those insects in order of importance are: sugarcane aphid, sorghum webworm, sorghum midge, leaf-footed bug, fall armyworm, corn earworm, corn leaf aphid, stink bugs (southern green and brown stink bugs), and chinch bug. Diseases were of minimal importance in the experimental plots.

The hybrids were planted with four replications on May 29, 2014. The flowering date (or days to anthesis) occurred in July through early August. The flowering time (50% panicles are flowering) of the hybrids was between 43 and 61 days after planting. Fall armyworm and corn leaf aphid damage was assessed in May and June, but the data were not included because the foliar damage ratings were low. Similarly, corn earworm, leaf-footed bug, stink bug, and chinch bug populations were low after flowering, and thus those data are not included either. Sugarcane aphid, a new pest to Georgia, was first observed on the back surface of the leaves in late August. The infestations of the sugarcane aphid can be determined by the shiny honeydew deposition and sooty mold growth on the surface of lower leaves of the sorghum plants. Although the sugarcane aphid is a new sorghum pest in Georgia, it has been a serious problem in other sorghum growing areas in the southern states. Given the fact that the aphid has other perennial grass hosts for overwintering, its prevalence in Georgia in the coming years needs to be closely monitored.

Sugarcane aphid, sorghum midge, and bird damage were rated on September 7, 2014. Sugarcane aphid was rated using the following scale: Very Good (VG) = no aphid or few aphids colonizing the leaves; Good (G) = a lot of aphids without damage symptoms, but with their honeydew visible on the surface of lower leaves; Fair (F) = high aphid population with lower leaves covered with honeydew that had attracted many predators, bees and wasps. In addition, sooty mold and aphid exuviae (or whitish-caste skins) are abundant on the surface of lower leaves of a plant; and Poor (P) = dead plants caused by aphid feeding, which was also covered with sooty mold. Sorghum webworm and midge-caused grain loss was rated together according to the visual estimates of empty glumes (%) per panicle. Grain loss attributed to sorghum webworm was identified by the webworm feeding hole at the tip of an empty glume, whereas midge damage lacked a feeding hole, but had a whitish-caste skin hanging at the tip of a glume. Both sorghum webworm and midge damage was assessed in combination according to the following rating scale: Very Good (VG) = 0-15% empty glumes on any of the sorghum panicles in an experimental plot; Good (G) = a few empty glumes (16-30%) observed on a panicle; Fair (F) = 31-75% empty glumes on a sorghum panicle; and Poor (P) = majority of sorghum panicles with more than three quarters (> 75%) empty glumes. Finally, bird feeding damage on developing kernels was determined by the partial kernels, and the splattering of the kernel juice on the leaves. Bird damage was based on the following scale: Very Good (VG) = less than 10% grain loss; Good (G) = 11-25% loss; Fair (F) = 26-50% loss; and Poor (P) = greater than 50% loss of grains per panicle. In general, the bird damage could be reduced by timely harvest of the crop.

The table on page 67 shows that three hybrids (i.e., 83P17, SPX3550, and GX13231) had the least amount of aphid damage. Sorghum midge and webworm are cyclic insect pests in grain sorghum production in the southern Coastal Plain region. Damage caused by webworm is usually high on late flowering hybrids. The combined sorghum webworm and midge damage rating was high in 2014, which could be the result of dry weather conditions around the flowering time. Sorghum webworm population was much greater than the midge population in 2014, although the grain loss by the two kernel-feeding pests was rated in combination. Hybrid KS310 showed the least amount of grain loss, whereas X446 had the most grain loss caused by sorghum webworm and midge in 2014. In addition, bird damage was relatively low in general. The hybrids NK8828 and NK8831 consistently showed less bird damage than the other hybrids in both 2013 and 2014. When all ratings were combined, hybrids NK8828, KS310, and SPX3550 were identified as the best hybrids in 2014.

It is highly recommended that growers use available insect- and disease-resistant hybrids, which is one of the most economical pest management strategies for sorghum production in our region. Producers should be aware that later plantings tend to have increased insect pest pressure. In addition, the bird damage can generally be minimized by timely harvest. For further integrated insect management information, please consult with your local County Agents and/or Extension Entomologists.

This test was maintained and flowering-date data were collected by Penny Tapp, Aaron Pryor, and Tyler Lusk from the Crop Genetics and Breeding Research Unit, USDA-ARS, Coastal Plain Experiment Station, UGA-Tifton, Georgia.

**Evaluation of Grain Sorghum Hybrids for
Resistance to Insect and Bird Damage, 2014,
Tifton, Georgia¹**

Company or Brand Name	Hybrid	Days to Anthesis ²	Aphid	Webworm and Midge		Bird-feeding resistance ⁵	
			Resistance ³ 2014	Resistance ⁴ 2014 2+ years		2014	2+ years
Athens	101	54	F	G	.	VG	.
Athens	102	60	G	G	.	G	.
Athens	103	59	F	G	.	VG	.
Athens	104	56	G	F	.	VG	.
DeKalb	DKS53-53	57	F	F	.	VG	.
Dyna-Gro	GX13231	56	VG	F	.	G	.
Dyna-Gro	GX13661	56	G	F	G	VG	G
Dyna-Gro	M77GB52	55	G	G	VG-	G	G-
Gayland Ward	EXP 9010	58	G	F	.	VG	.
Gayland Ward	GW 1160	53	G	F	.	G	.
Gayland Ward	GW 9417	56	G	F	G	VG	G
Pioneer	84P80	57	G	F	G-	VG	G
Sorghum Partners	83P17	59	VG	F	F	G	G-
Sorghum Partners	K35-Y5	48	G	G	VG-	G	G-
Sorghum Partners	KS310	43	G	VG	VG-	G	F
Sorghum Partners	NK266	50	F	F	G	G	F
Sorghum Partners	NK6638	56	G	F	G	G	G-
Sorghum Partners	NK7633	53	F	F	G-	G	G-
Sorghum Partners	NK7829	60	G	F	F	G	G-
Sorghum Partners	NK8416	59	F	F	G-	G	G-
Sorghum Partners	NK8817	60	G	F	F	VG	G
Sorghum Partners	NK8828	61	G	G	G-	VG	VG
Sorghum Partners	NK8831	58	F	F	G	VG	VG-
Sorghum Partners	SP3425	46	G	G	G	G	F
Sorghum Partners	SP6919	56	G	F	.	VG	.
Sorghum Partners	SP7868	58	G	F	G-	VG	G
Sorghum Partners	SPX3550	50	VG	G	.	G	.
Sorghum Partners	SPX3675	50	F	G	.	F	.
Sorghum Partners	SPX3678	53	F	F	.	G	.
Sorghum Partners	SPX3680	53	G	F	.	G	.
Sorghum Partners	X445	60	G	F	G-	G	G-
Sorghum Partners	X446	52	G	P	.	VG	.
Sorghum Partners	X742	55	G	F	G	G	G-
Sorghum Partners	X840	60	G	G	G	G	G-
Southern States	SS 655	55	F	F	G+	VG	G+
Southern States	SS 840	54	F	F	.	VG	.
Southern States	SS800	54	F	F	G	G	G

Evaluation of Grain Sorghum Hybrids for Resistance to Insect and Bird Damage, 2014, Tifton, Georgia¹ (Continued)

1. The test plots were maintained with irrigation.
2. Days from planting to 50% bloom.
3. Aphid resistance: Very Good (VG) = no aphid or few aphids colonizing the leaves; Good (G) = a lot of aphids without damage symptoms, but honeydew was visible on the surface of lower leaves; Fair (F) = high aphid population shown by lower leaves covered with honeydew that has attracted predators, bees and wasps. In addition, sooty mold and aphid exuviae are abundant; and Poor (P) = dead plants caused by aphid feeding, and covered with sooty mold.
4. Sorghum webworm and midge resistance: Very Good (VG) = 0-15%, Good (G) = 16-30%, Fair (F) = 31-75%, and Poor (P) = >75% glumes are without grains on a panicle.
5. Bird-feeding resistance: Very Good (VG) = less than 10% loss; Good (G) = 11-25% loss; Fair (F) = 26-50% loss; and Poor (P) = over 50% loss.