

2011 Evaluation of White Food Grade Grain Sorghum Hybrids for Production in Arkansas

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Introduction: Grain sorghum hybrids grown in Arkansas and the United States typically produce grain that is red or bronze in color and is primarily used for livestock feed. However there is increasing interest in using grain sorghum for human food consumption with one of the selling points is that the flour is gluten free. Grain sorghum being promoted for food grade grain sorghum has white grain, which will produce a white flour when ground. The sorghum flour can be used much like wheat flour. Niche markets for food grade white grain sorghum may develop and Arkansas producers could take advantage of it because of our close proximity to the Mississippi river for exports. Concerns with growing white food grade sorghum include grain sprouting from rainfall prior to harvest and bird feeding. White grain sorghum is reported to be more susceptible to sprouting prior to harvest than red hybrids. In the past white grain sorghum hybrids were more prone to bird feeding on developing/mature grain prior to harvest.



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Objectives: Determine if white food grade grain sorghums can be grown in Arkansas and evaluate what problems are encountered with production and determine which hybrids perform well in our environment.

Methods: Four white food grade grain sorghum hybrids (from Richardson Seeds LTD.) were entered in the Arkansas Grain Sorghum hybrid testing program to evaluate yield potential under irrigated (Rohwer, Stuttgart, Marianna, and Keiser) and Non-Irrigated conditions (Rohwer and Keiser).

Results: Yields from selected standard red sorghum hybrids grown in Arkansas compared to the four white food grade sorghum hybrids evaluated are shown in Table 1. Under irrigated conditions, yields of white sorghum 3 had the highest irrigated average across the four irrigated sites. At each irrigated site, white sorghum 3 had yields that were above the trial average. In contrast, white sorghum 4 consistently had lower yields compared to other hybrids and had the lowest irrigated average yields of all hybrids evaluated. At the two non-irrigated sites (Rohwer and Keiser), yields of the four white sorghum hybrids were only average.

No production problems were experienced in 2011 with growing white sorghums. Bird feeding was visually rated at each site prior to harvest and feeding damage for white hybrids were similar to those of red hybrids. Foliar disease ratings were taken at Marianna by Dr. Burt Bluhm and white hybrids showed similar resistances to common foliar diseases as common red hybrids. No grain sprouting was seen for any of the red or white hybrids this year. Growth and development of white hybrids were similar to red hybrids and very little lodging was seen in any of the trials. Test weight and quality were similar between red and white hybrids. The only negative aspect seen with the white hybrids is that grain

discoloration from rainfall and head molds were more easily seen on the white hybrids compared to red hybrids.

Table 1. Yields of Select Grain Sorghum Hybrids in Arkansas Performance Tests, 2011.								
	Keiser Irr	Keiser Non-Irr	Marianna Irr	Stuttgart Irr	Rohwer Irr	Rohwer Non Irr	Irr. Avg.	Non Irr Avg.
Hybrid	-----Bu/acre-----							
Dekalb 53-67	143.1	148.8	112.9	162.3	148.5	142.3	141.7	145.6
Pioneer 84G62	135.3	125.8	131.7	133.2	150.1	124.8	137.6	125.3
Triumph 82G	134.2	105.0	121.3	174.8	125.1	126.9	138.9	116.0
White 1	132.5	123.1	117.1	160.8	133.5	107.2	136.0	115.2
White 2	114.8	122.5	95.0	141.4	122.4	111.1	118.4	116.8
White 3	152.1	121.6	131.9	158.7	137.8	109.0	145.1	115.3
White 4	100.2	109.1	98.6	117.3	120.4	117.1	109.1	113.1
LSD (0.05)	18.1	14.1	11.7	21.8	11.7	13.3	---	---



Figure 9. White Food Grade Sorghum Grown at Marianna with Irrigation in 2011

Summary: White food grade grain sorghum was successfully grown in 2011. Yields were very good and some white hybrids out yielded the standard red hybrids grown in Arkansas, especially with irrigation. More evaluation will be needed to further document yield potential and grain quality.