

Evaluation of White Sorghum Hybrids

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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 the Arkansas Grain Sorghum Hybrid Performance trials in 2012 are shown in Table 1. Under irrigated conditions, yields of white sorghum 3 and 1 were similar to other high yielding red hybrids grown in Arkansas and show good yield potential. In contrast, white sorghum 4 and 2 were consistently lower yielding.

No production problems were experienced in 2011 or 2012 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

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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. 2012 Arkansas Grain Sorghum Hybrid Performance Trials (Sorted by Irrigated Average).							
Hybrid	Irrigated Average	Dryland Average	Keiser Dryland	Keiser Irrigated	Rohwer Dryland	Rohwer Irrigated	Stuttgart Irrigated
	----- Bu/acre -----						
Pioneer 84P80	162.6	143.1	152.3	165.9	133.9	152.2	169.7
Dyna-Gro 765B	161.3	132.3	134.3	165.4	130.2	152.4	166.1
Pioneer 83P99	159.9	135.3	145.8	163.6	124.8	144.6	171.4
Pioneer 83P17	154.2	121.3	122.1	157.4	120.5	148.4	156.8
White 3 366/58	152.7	116.8	119.4	160.5	114.2	133.3	164.3
White 1 304/5	152.0	117.7	128.0	166.2	107.3	128.9	160.9
DEKALB DKS53-67	151.4	134.3	146.6	153.8	121.9	150.4	150.1
REV® RV9953™	151.4	129.8	133.2	156.5	126.4	142.7	155.1
Pioneer 84G62	148.8	131.3	141.4	155.5	121.1	139.9	150.9
BH 5566	148.5	125.2	137.6	154.1	112.8	139.0	152.4
Dyna-Gro 771B	147.4	126.7	139.6	159.7	113.8	134.2	148.4
REV® RV9782™	147.1	131.6	136.0	153.5	127.2	137.6	150.3
Triumph TR 4951	146.6	129.3	134.6	152.3	124.0	144.8	142.7
Triumph TR 4941	146.2	125.4	138.6	156.6	112.2	135.1	146.8
REV® RV9883™	145.7	123.8	119.2	153.3	128.4	136.4	147.4
REV® RV9973™	142.5	113.9	117.7	156.5	110.0	135.1	135.9
Triumph TRX 85131	140.8	127.4	134.1	135.3	120.7	140.0	147.0
REV® RV9823™	140.7	128.0	126.3	142.7	129.6	137.6	141.7
Dyna-Gro 772B	140.5	114.7	114.3	147.9	115.0	136.7	136.9
Dyna-Gro 766B	137.9	110.5	107.7	130.4	113.2	133.8	149.4
REV® RV9803™	137.2	119.9	122.8	132.9	116.9	136.7	142.0
Dyna-Gro CX12522	136.3	105.1	110.9	136.7	99.3	128.6	143.6
White 2 315/10	131.9	109.8	117.0	141.8	102.5	122.2	131.6
BH 5227	124.0	106.7	111.0	131.5	102.3	118.4	122
White 4 341/87	105.6	94.3	94.2	118.8	94.3	96.9	101
GRAND MEAN	144.5	122.1	127.4	149.9	116.9	136.2	147.4
LSD (0.05)			15.8	9.4	8.8	10.6	13.2

Summary: White food grade grain sorghum was successfully grown in 2011 and 2012. Yields of white hybrids 3 and 1 when irrigated have consistently been as good as or better than standard red hybrids that are currently grown. Under non-irrigated conditions, yields of all white hybrids were average or below average.

With Irrigation, white food grade grain sorghum has potential in Arkansas.