

Grain Sorghum Variety Trials in Greenlee County, 1991

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Abstract

Nine grain sorghum hybrids were compared in replicated tests in two locations in the Duncan-Virden valley. Four full season, four mid-full season and one non-specified experimental hybrids were included in the trials. A new mid-full season hybrid, DeKalb 66, was the top yielding cultivar in the test with a yield of 9830 pounds per acre. It yielded about 700 pounds per acre more than the top yielding hybrid in the previous trial. The devastating effect of hail was seen as one of the tests was hailed on in mid season.

Introduction

These trials were a continuation of the trials held in 1990 (1) where the new mid-full season hybrids were compared against the traditional full season hybrids. Across the country the full season hybrids are being replaced with high yielding faster maturing cultivars. The three highest yielding hybrids were joined with six other hybrids in the test. Of particular interest were the three new mid-full season hybrids by DeKalb, Northrup King and Asgrow.

Methods and Materials

The nine grain sorghum hybrids were compared in two locations picked at extreme ends of the Duncan-Virden valley. One was located at the head of the valley, in Virden and the other was at the lower end of the valley in York. Both tests were full sized field tests with four replications. The farmer-cooperator's equipment was used for planting and all the cultural practices. Both fields were harvested by the same custom harvester. Plots were weighed in the field using an electronic weigh-wagon and percent moisture and bushel weights determined at the site. Plant heights and populations were measured just prior to harvest. Crop histories of the two sites are shown below:

Crop History (field 1)

Cooperator: Stan Jones, Virden
Soil type: Pima silty loam
Elevation: 3650 above sea level
Planting date: 3 May 1991 Rate: 8.75 lbs per acre
Fertilizer: 150 lb/ac 11-52-0 preplant
 200 lbs of NH₃ applied later
Herbicide: Banvel
Insecticide: Parathion once for greenbugs
Irrigation: By furrow every other row
Harvest: 27 November

Crop History (field 2)

Cooperator: Ray Tyler
Soil type: Pima clay loam
Elevation: 3450 feet above sea level
Planting date: 14 May 1991 Rate: 7 lbs per acre
Fertilizer: 300 lbs 16-20-0 preplant
 180 lbs of NH₃ applied later
 Foliar Fe applied
Herbicide: Banvel
Insecticide: Parathion once for greenbugs
Irrigation: By furrow
Harvest: 3 December

Hail storm at the end of July shredded the foliage just prior to head emergence.

Results and Discussion

Yield and agronomic data are shown in Tables 1 and 2. Contrary to the findings of the previous year, the mid-season hybrids were the top yielders. In the Jones trial DeKalb 66 put on a sterling performance, with individual reps yielding more than 5 tons per acre. Its height proved its downfall in the Tyler trial as its lodging cost it yield. The white mid-season Asgrow A504, one of the shorter hybrids had no lodging and produced the highest yield in the Tyler field while yielding the lowest in the Jones field. The two locations turned out to be very different in results even though the inputs were very similar. The hail storm at the Tyler field proved very costly in yield. The lodging at the Tyler field also was costly as grain was lost in the hybrids with the most sever lodging. The reason for the lodging is not completely understood. The Tyler field was planted 11 days later, received 25 lbs more N, 8 lbs less P and was harvested a week later than the Jones field. Even though the Tyler field was planted later, it matured earlier (perhaps due to the hail) and the delayed harvest date was probably the most detrimental factor on the lodging.

References

1. Clark, Lee. 1991. Grain Sorghum Variety Trials in Greenlee County, 1990. Forage and Grain, A College of Agriculture Report, The University of Arizona, Tucson, AZ. Series P-90, pp. 99-101.

Acknowledgments

Appreciation is expressed to Northrup King Company for the use of an electronic weigh wagon to determine the harvest weights.

Table 1. Yields and other agronomic values for grain sorghum varieties grown on the Stan Jones farm in Virden, NM, 1991.

Variety	Yield ¹ (lbs/ac)	%M	Bu Wt (lbs)	Pl Ht (in.)	Pl Pop (pl/ac)	Maturity
DeKalb 66	9830 a ²	13.3 ab	61.3 a	59.4 a	69205 cd	MtF
SG 942 ³	9502 ab	13.4 ab	61.3 a	56.3 b	67390 cd	Full
DeKalb 69	9149 b	13.2 ab	59.9 b	55.8 b	61036 d	Full
NK KS737	8583 c	13.8 ab	60.8 ab	50.1 c	92576 ab	MtF
NK X8949	8465 c	13.2 ab	60.5 ab	51.3 c	95072 a	MtF
Crgl 6670	7283 d	13.6 ab	60.0 b	51.6 c	72608 cd	Full
NK S9750	6877 de	13.0 b	59.8 b	51.8 c	97795 a	Full
Asg X5020	6740 e	14.0 a	60.4 ab	46.9 d	90534 ab	--
Asg A504 (white)	6535 e	13.3 ab	60.5 ab	45.5 d	78281 bc	MtF
Average	8107	13.4	60.5	52.0	80500	
LSD(05)	427.6	0.83	1.10	2.51	14775	
C.V.(%)	15.6	5.3	1.54	8.90	20.8	

Table 2. Yields and other agronomic values for grains sorghum varieties grown on the Ray Tyler farm north of Duncan, AZ, 1991.

Variety	Yield ¹	%M	Bu Wt	Pl Ht	Pl Pop	Lodging
Asg A504 (white)	5049 a ²	13.1 a	61.4 a	52.1 d	60619 bc	0.0
NK X8949	4641 ab	13.6 a	60.0 b	51.5 d	67068 ab	7.0
NK KS737	4492 abc	13.3 a	61.5 a	53.5 cd	70077 a	13.0
DeKalb 66	4336 abc	12.9 a	61.3 a	57.6 ab	53310 de	96.3
SG 942 ³	4165 bc	13.6 a	61.4 a	55.5 bc	57610 cd	47.8
NK S9740	3972 bcd	13.4 a	59.9 b	52.4 d	63629 abc	25.0
DeKalb 69	3934 bcd	13.6 a	60.4 ab	58.5 a	48151 e	98.8
CRGL 6670	3811 cd	14.0 a	59.9 b	50.5 d	64058 abc	35.0
Asg X5020	3365 d	13.5 a	60.8 ab	51.1 d	70507 a	0.0
Average	4196.0	13.44	60.71	53.64	61670.0	35.9
LSD(05)	699.4	1.19	1.15	2.72	6937.5	27.9
C.V.(%)	17.3	17.3	1.75	5.99	14.2	-

1. Yields are in pounds per acre at 14% moisture.
2. Numbers within columns followed by the same letter are not significantly different at the 5% level of probability using Duncan's Multiple Range test.
3. Garrison Seed Company.