Texas Cooperative EXTENSION
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EVALUATION OF GRAIN SORGHUM VARIETIES IN NAVARRO COUNTY, TEXAS

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SUMMARY:

Two field variety trials were conducted in 2007 in the communities of Frost and Kerens. 5 Medium and Medium Early varieties were evaluated in Kerens and 9 Medium and Medium Late varieties (including 1 Medium Early variety) were evaluated in Frost. Varieties were planted, grown and harvested to compare yield performance and economic return under local field growing conditions. Yields were moderate. The adjusted yield of the top Medium Early or Medium maturity variety in the Kerens plots was Pioneer 85G01-1N281 at 3,711 lbs/ac. The adjusted yield of the top Medium Late maturity variety in the Frost plots was Pioneer 64G6L at 4,582 lbs/ac. Yields averaged 3,448.12 lbs/ac in the Medium Early or Medium maturity plots in Kerens and averaged 3,839.42 lbs/ac in the Medium Late maturity plots in Frost.

PROBLEM:

Variety selection is one of several primary production inputs that impacts the profitability of farming enterprises. New varieties are introduced each year that have the potential to increase yield through improved genetics for yield and insect and disease resistance. These varieties need to be tested against established varieties under local growing conditions to determine which varieties have the greatest profit potential.

OBJECTIVE:

The purpose of this trial was to compare the yield performance and gross economic return of grain sorghum varieties of varying maturity ranges under the field growing conditions.

METHODS AND MATERIALS:

Kerens Plots

Twelve rows of each variety were planted March 25, 2007 on 30 inch rows. The site was a Wilson-Burleson Clay Loam. Cotton had been the previous crop grown. Land preparation included discing twice, field cultivating then planting. No preplant fertilizer was applied and 250 pounds per acre of 32-0-0 was topdressed. 3 quarts per acre of Expert (Atrazine + Dual + Roundup) were applied and seed was treated with insecticide. Plots were harvested August 17, 2007 using a John Deere combine. Harvested plot size was 0.342 acres and harvest price was $5.87/bu. Yields were weighed with an electronic weigh wagon. Samples were taken on each variety to obtain bushel weight and moisture.

Frost Plots

Six rows of each variety were planted March 24, 2007 on 38 inch rows. The site was a

Houston Black Clay. Cotton had been the previous crop grown. Land preparation included shredding stalks, discing, field cultivating and planting. Preplant fertilizer was applied at 340 pounds per acre of 32-0-0 and 100 pounds per acre of 18-46-0 (Diammonium phosphate) and no topdress application was made.. 2 quarts per acre of Bicep Lite II Magnum were applied and seed was treated with insecticide. Plots were harvested August 14, 2007 using a Gleaner R72 combine. Harvested plot size was 0.397 acres and harvest price was $6.25/bu. Yields were weighed with an electronic weigh wagon. Samples were taken on each variety to obtain bushel weight and moisture.

RESULTS AND DISCUSSION:

Kerens Plots

The adjusted yield of the top Medium Early or Medium maturity variety in the Kerens plots was Pioneer 85G01-1N281 at 3,711 lbs/ac. The lowest yielding variety was BH Genetics 6030 with an adjusted yield of 3,039 lbs/ac. The yield range between the highest and lowest yield variety was 672 lbs/ac. The average of all varieties was 3,448.12 lbs/ac. Refer to Figure 1.

Frost Plots

The adjusted yield of the top Medium Late maturity variety in the Frost plots was Pioneer 64G6L at 4,582 lbs/ac. The lowest yielding variety was Garst N5363 with an adjusted yield of 3,095 lbs/ac. The yield range between the highest and lowest yield variety was 1,487 lbs/ac. The average of all medium varieties was 3,839.42 lbs/ac. Refer to Figure 2.

ECONOMIC ANALYSIS:

Economic return was calculated based on the actual yield and cash harvest price. As expected the varieties with the highest actual yield had the highest economic return.

The highest economic return for the Medium Early or Medium maturity varieties in the Kerens plots was Pioneer 85G01-1N281 at $231.96 per acre while the lowest return was BH Genetics 6030 at $189.91 per acre which represents a difference of $42.05. Average return per acre was $215.51. Refer to Figure 1.

The highest economic return for the Medium Late maturity varieties in the Frost plots was Pioneer 84G6L at $286.38 per acre while the lowest return was Garst N5363 at $193.44 per acre which represents a difference of $92.94. Average return per acre was $239.96. Refer to Figure 2.

Figure 1: Medium Early and Medium Maturity Grain Sorghum Variety Trial - Kerens

Variety	Maturity Range	Weight Plot lbs	Moisture %	Bu. Wt. lbs	Yield lbs/a	Yield Adj. * lbs/a	Return Gross $/a
Pioneer 85G01-1N281	ME	1256	13.1	54.1	3673	3711	231.96
Dekalb 3707	M	1318	17.7	46.7	3854	3688	230.51
Garst B3B3R	ME	1206	14.2	30.3	3526	3518	219.86
Triumph 463-CAC	ME	1142	15.4	48.9	3339	3285	205.29
BH Genetics 6030	ME	1038	13.9	45.9	3035	3039	189.91
Average		**1192**	**14.86**	**45.18**	**3485.4**	**3448.12**	**215.51**

Figure 2: Medium Late Maturity Grain Sorghum Variety Trial - Frost

Variety	Maturity Range	Plot Weight lbs	Moisture %	Bu. Wt. lbs	Yield lbs/a	Adj. * Yield lbs/a	Return Gross $/a
Pioneer 84G6L	ML	1792	12.7	57.7	4514	4582	286.38
Asgrow A571	ML	1730	11.9	53.0	4358	4464	279.01
Garst 5464	ML	1564	12.3	57.1	3940	4017	251.09
BH Genetics 5224	M	1544	12.1	56.0	3889	3975	248.44
Dekalb 37-07	ME	1514	12.7	55.2	3814	3871	241.95
Dekalb S53-67	ML	1530	15.0	58.1	3854	3809	238.07
Triumph TR481	ML	1428	14.0	56.8	3597	3597	224.81
Pioneer 84677	ML	1238	13.3	55.2	3118	3144	196.49
Garst N5363	ML	1264	16.4	50.4	3184	3095	193.44
Average		**1511.56**	**13.38**	**55.50**	**3807.44**	**3839.42**	**239.96**

* All yields adjusted to 14% moisture for comparison.

CONCLUSIONS:

Variety selection is an important decision in farming enterprises in determining profits and economic feasibility of agronomic practices. Producers should evaluate yearly data and compare to other years data of new and established varieties to evaluate their performance under different weather and growing conditions. This evaluation should be used in making future variety selections.

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