



Texas Agricultural Extension Service
The Texas A&M University System

Result Demonstration Report

Stewart Farm Sorghum Variety Trial

Cooperator: Spur Stewart (2000)

Author: Joe Pope, County Extension Agent - Ag

Erath County

SUMMARY: In comparing seven different varieties of sorghums for silage production, yields are less than expected due to the drought throughout the growing season. Even in the face of the drought, yields ranged from a low of 6.8 tons per acre to as high as 12.6 tons per acre. There were three brown mid rib (BMR) varieties in the trial, which had the lower yields, while the photo-period sensitive (PPS) plant variety, named 4 Ever Green, yielded the highest. There was a considerable difference in the percentage of harvest moisture among the varieties, from 56% harvest moisture with a Honey Graze variety to 75.5% with the 4 Ever Green. The brown mid rib varieties showed up with a higher quality, as expressed in percent ADF and percent Lignin.

OBJECTIVE: To evaluate seven sorghum varieties for silage production, based on tonnage and quality.

MATERIALS AND METHODS: Seven sorghum varieties were planted on April 7 on the Stewart Farm. Manure had been applied to the field during the fall and winter months and plowed in. Additional nitrogen was applied through anhydrous ammonia, for a total of over 200 total units of nitrogen. The varieties included brown mid ribs, one photo-period sensitive variety, one sorghum sudangrass variety, and two forage sorghums. All plots were hand harvested on July 25, with tonnage determined per acre. Samples were taken to the lab to determine the percent of harvest moisture and to run quality analysis.

RESULTS AND DISCUSSIONS: Table 1 shows the results of each of the varieties included in the trial for harvest moisture and tonnage. Yield for all the varieties was less than expected, which can be attributed to our drought conditions during the growing season. Even with the drought, there was still a range in tonnage produced per acre from 6.8 tons to 12.6 tons, based on 35% DM. The percent of harvest moisture ranged from 56% to 75.5%. The brown mid rib varieties were the lower yielding varieties, which has historically been a problem with this variety for the Central Texas area. Another problem that has been experienced with brown mid rib varieties is that of lodging. This proved to be the case with the BMR 100 variety, however, both the Dairy Master and Honey Graze showed little lodging in the plots.

Samples were taken from each plot and quality analysis was run. Testing was conducted for the percent ADF, percent cellulose, and percent crude protein.

Table 1. Yield results of sorghum varieties for silage.

Variety	Harvest Moisture (%)	Yield/A (tons @ 35% DM)
4 Ever Green	75.5	12.6
Pacesetter	74.5	11.1
Super Sile 20	72.0	10.3
FS5	60.5	10.2
Honey Graze	56.0	8.5
Dairy Master	73.5	7.0
BMR 100	69.0	6.8

As shown in Table 2, the brown mid rib varieties had better quality, with the lowest ADF and lowest percent lignon. The percent crude protein in all plots was relatively close, ranging from a low of 5.9% to 8.1%. Pacesetter, which is a sorghum sudangrass variety, had the highest percent crude protein, which could be expected, as it had no seed head. All other varieties had good seed head developed with the exception of 4 Ever Green, which also had no seed head.

Table 2. Quality analysis of sorghum varieties for silage.

Variety	% ADF	% LIG	% CP
4 Ever Green	37.9	5.8	7.6
Pacesetter	36.7	6.1	8.1
Super Sile 20	42	7.1	6.0
FS5	34	6.0	6.4
Honey Graze	36.3	4.8	6.2
Dairy Master	32.4	3.3	5.9
BMR 100	29.7	4.2	7.1

Additional variety trials are needed, especially trials done under more ideal growing conditions. The 2000 growing season was extremely dry, and definitely impacted how the different varieties responded. This trial does demonstrate how well each variety performed in severe drought conditions, however.

The average price being paid for silage in the county is approximately \$18 per ton standing in the field. It is, therefore, important to achieve as high a yield goal as possible to maximize returns per acre. Quality must also be taken into consideration, as dairymen are looking to utilize the highest quality feed possible in their rations. Higher quality varieties must be considered, but growers must be able to achieve higher yields than were obtained in this trial in order to be profitable. Sorghum is also a good rotational crop for peanuts, but with peanut acreage declining, this also is becoming less of an important factor. There is a need for a quality crop that can be produced at a profit to be grown on much of the abandoned peanut land. Of course, silage will continue to be considered because of the great need for it within the dairy industry.

As stated earlier, less than ideal weather conditions occurred during the 2000 growing season, which impacted the results of this trial. Weather conditions can change composition, quantity, and quality of silage. This trial demonstrates how well each variety did in severe drought conditions.

Additional trials will be conducted in the future to continue evaluating the varieties and help producers to grow and utilize those with the best value.

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