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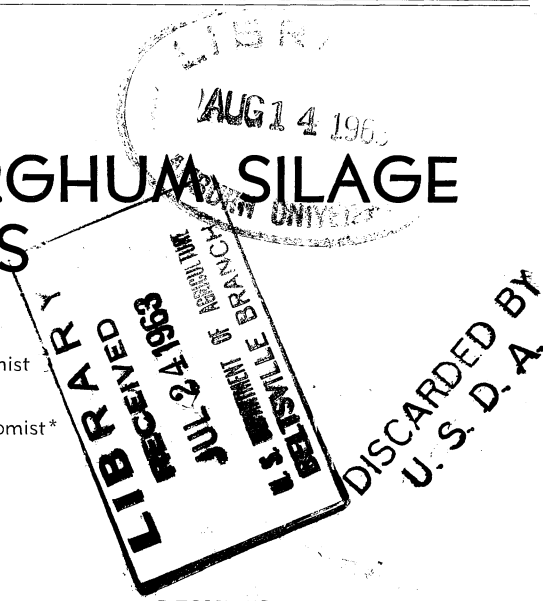
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PERFORMANCE of SORGHUM SILAGE VARIETIES

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RESULTS

IN RECENT YEARS a large number of forage sorghum varieties has been released. Many of these varieties are leafier and produce much more grain than older varieties. In tests reported here, some of the newer sorghum varieties were compared with corn varieties commonly grown for silage.

Silage variety trials were conducted at five locations in Alabama during 1962. This report presents data from these trials and in addition data from similar experiments in 1960-61. The entries were planted in 3-row plots 20 feet long with four replications. Row spacings varied with location to accommodate available cultivating equipment. The tests were planted in late April or early May and fertilized at planting with 20 to 30 pounds per acre of nitrogen and adequate rates of phosphorus and potassium. All tests were sidedressed with 60 to 80 pounds of nitrogen per acre each year. The sorghum varieties were harvested when they reached the dough stage and corn when well dentured. The center row of each plot was harvested and a sample of green forage was oven dried for determination of dry forage yields.

Reported in Tables 1-6 are maturity, height, grain production, disease resistance, sugar content, and forage yield of the varieties tested.

Climatic summary. The 1962 crop season was one of deficient moisture throughout the growing season. Yields in the tests reported herein were severely reduced only at the Lower Coastal Plain Substation where drought prevailed from May through September.

Maturity. The average time required from planting to the proper maturity for harvest varied from 80 days for the very early varieties to 140 days for the latest maturity entry, Table 1. These data are 3-year averages of the Tennessee Valley Substation, Plant Breeding Unit, Black Belt Substation, and Gulf Coast Substation tests and are presented as a guide for farm planning. Some variation in maturity should be expected because of location, time of planting, and rainfall distribution.

Varieties requiring an average of 81 to 95 days from planting to harvest are classified as early; those requiring 96 to 110 days are medium-early; those requiring 111 to 125 days are medium-late; and those requiring 126 to 140 days or more are classified as late-maturing varieties. The early and medium-early sorghum varieties produced a

* The tests were conducted in cooperation with John Boseck, Tennessee Valley Substation; J. W. Langford, Plant Breeding Unit; E. L. Mayton, Piedmont Substation; L. A. Smith and H. W. Grimes, Black Belt Substation; Lavern Brown, Lower Coastal Plain Substation; and Harold Yates and J. E. Barrett, Gulf Coast Substation.

TABLE 1. SOME CHARACTERISTICS OF SILAGE VARIETIES TESTED IN ALABAMA, 1960-62

Entry	Height	Proportion of head or ear in dry matter ¹		Sugar content (brix) of juice
		1st	2nd	
		harvest	harvest	
	Feet	Pct.	Pct.	Pct.
Early Maturity (81-95 days)				
<i>Sorghum-Sudan Hybrids</i>				
Asgrow Grazer.....	9	18	19	7
DeKalb SX-11.....	8	---	---	11
<i>Sudan Hybrid</i>				
Suhi-1.....	8	---	---	9
<i>Sorghum</i>				
DeKalb FS-1A.....	6	48	17	8
Medium-Early Maturity (96-110 days)				
<i>Corn</i>				
Pfister 488.....	8	38	---	---
Auburn 602.....	9	49	---	---
Dixie 18.....	9	36	---	---
<i>Sorghum</i>				
Lindsey 92F.....	10	28	8	14
Lindsey 101F.....	7	29	18	12
NK-300.....	6	39	33	7
NK-320.....	9	33	12	8
Frontier S-212.....	7	9	9	15
DeKalb FS-22.....	10	11	2	15
NK-315.....	8	27	21	13
NK-330.....	5	28	16	14
Asgrow Silo King.....	8	33	5	11
Medium-Late Maturity (111-125) days				
<i>Sorghum</i>				
Taylor-Evans Milk Maker.....	8	15	10	11
Taylor-Evans Yieldmaker.....	11	19	13	12
Asgrow Titan.....	9	8	10	16
Lindsey 115F.....	11	14	8	15
Asgrow Beefbuilder.....	12	9	12	15
Tracy.....	10	6	6	16
Brawley.....	9	19	10	18
Late Maturity (126-140 days)				
Sart.....	14	4	---	15

¹ Plant Breeding Unit, Tallassee, Alabama.

second cutting in southern and central Alabama. Regrowth from the stubble required less time for maturity than did the first crop.

Height. Height of the varieties varied from 6 to 14 feet, Table 1. The taller varieties generally produced the most forage, but were more susceptible to lodging, particularly when they produced heavy heads.

Grain production. The proportion of forage yield that was head or ear varied from 4 per cent for Sart sorghum to 49 per cent for Auburn 602 corn, Table 1. Eight of the forage sorghums were more than 25 per cent head at harvest.

Sugar content. Sugar content of the juice of sorghums was determined in the field with a hand refractometer. The content of dissolved solids (an indirect measure of sugar) in the plant juice varied from 7 to 18 per cent, Table 1.

Disease resistance. The newer sorghum varieties described in this report were developed in the semi-arid region of the western United States

and may not have sufficient disease resistance in humid areas. Many of these varieties were badly damaged by red rot (*Colletotrichum graminicolum* (Ces.) A. W. Wils). Red rot is a disease of the interior of stalks and may cause lodging. The Sart variety is highly resistant to red rot and Tracy has some resistance.

Yield. Yields are reported as oven dry matter rather than green weight because stage of maturity, time of harvest, and weather conditions affect moisture content, Tables 2-6. Dry matter content of the forages at harvest generally varied from 25 to 35 per cent. The approximate silage yield per acre can be computed by multiplying the oven dry weight by 3 or 4.

Corn yields varied from 3.70 to 7.37 tons of dry forage per acre as compared with sorghum yields of 3.92 to 15.39 tons.

At Belle Mina only one cutting of sorghum can normally be expected, Table 2. In central and southern Alabama, the early maturing varieties often make sufficient regrowth from the stubble to mature before frost. Yields from the second cutting sometimes exceed those from the first cutting. If a second cutting is expected, planting must be done early and the crop sidedressed with nitrogen after the first cutting. Second cutting yields given in the tables were harvested only from varieties that headed before frost. Regrowth from some varieties was vigorous.

Lodging. Lodging may be a problem with some of the taller sorghum varieties, particularly when a high proportion of head is produced. Lodging is also associated with red rot. This disease often develops on sorghums in humid areas. During 1962, two varieties, NK 320 and Silo King, lodged badly at 4 of the test locations, Tables 2, 3, 4, and

TABLE 2. YIELDS OF SILAGE VARIETIES AT TENNESSEE VALLEY SUBSTATION, BELLE MINA, 1960-62

Entry	Oven-dry forage per acre			
	1962		2-year av.	3-year av.
	Lodging	Total		
	Pct.	Tons	Tons	Tons
T-E Yieldmaker.....	31	8.68	7.11	7.38
Asgrow Beefbuilder.....	9	8.34	7.23	8.31
Lindsey 115F.....	1	8.22	6.62	7.42
Sart.....	0	8.14	9.42	---
DeKalb FS-22.....	0	7.55	6.74	---
Asgrow Silo King.....	49	6.46	6.24	6.34
Lindsey 101F.....	91	6.46	5.90	---
NK-300.....	11	6.11	5.78	5.92
NK-320.....	98	5.91	5.80	---
Dixie 18 corn.....	0	5.73	6.26	---
Pfister 488 corn.....	0	5.34	5.19	---
DeKalb FS-1A.....	0	3.92	3.60	4.12
DeKalb SX-11.....	0	1.73	3.92	4.89

TABLE 3. YIELDS OF SILAGE VARIETIES AT PLANT BREEDING UNIT, TALLASSEE, 1960-62

Entry	Oven-dry forage yields per acre					
	1962				2-year av.	3-year av.
	Lodging	First	Second	Total		
	<i>Pct.</i>	<i>Tons</i>	<i>Tons</i>	<i>Tons</i>	<i>Tons</i>	<i>Tons</i>
Lindsey 115F	50	7.09	5.29	12.38	11.26	11.09
Lindsey 101F	10	6.54	5.40	11.94	10.34	9.46
T-E Milkmaker	10	6.95	4.71	11.66	---	---
DeKalb FS-22	50	6.16	4.84	11.00	10.82	10.11
Asgrow Beefbuilder	2	7.64	3.20	10.84	9.36	9.19
T-E Yieldmaker	6	7.06	3.49	10.55	9.84	9.52
Asgrow Titan	0	6.54	3.97	10.51	---	---
NK-320	80	6.14	4.18	10.32	9.42	9.70
Asgrow Grazer	0	3.90	3.88	10.27 ¹	---	---
Asgrow Silo King	80	6.34	3.68	10.02	7.49	7.18
NK-315	0	5.89	3.85	9.74	8.94	8.76
Lindsey 92F	90	6.09	3.07	9.16	---	---
NK-330	0	5.24	3.87	9.11	9.03	8.83
Tracy	0	5.80	2.90	8.70	7.50	---
Sart	30	8.47	0	8.47	7.68	7.79
NK-300	0	5.17	2.98	8.15	7.71	7.48
Frontier S-212	0	5.31	2.30	7.61	8.36	---
Brawley	1	5.78	1.82	7.60	6.82	---
DeKalb FS-1A	0	3.70	2.80	6.50	6.44	6.43
Dixie 18 corn	0	5.58	0	5.80	5.36	---
Auburn 602 corn	0	4.96	0	4.96	---	---
Pfister 488 corn	5	4.03	0	4.03	4.74	---

¹ Total included a third harvest of 2.49 tons.

TABLE 4. YIELDS OF SILAGE VARIETIES AT BLACK BELT SUBSTATION, MARION JUNCTION, 1960-62

Entry	Oven-dry forage yields per acre					
	1962				2-year av.	3-year av.
	Lodging	First	Second	Total		
	<i>Pct.</i>	<i>Tons</i>	<i>Tons</i>	<i>Tons</i>	<i>Tons</i>	<i>Tons</i>
Asgrow Beefbuilder	24	7.15	2.32	9.47	8.96	---
Lindsey 115F	70	6.74	2.26	9.00	8.20	7.59
NK-315	0	6.58	2.38	8.96	8.78	---
NK-320	91	5.79	2.31	8.10	7.79	7.06
DeKalb FS-22	0	5.52	2.44	7.96	6.91	6.54
Sart	0	6.04	1.61	7.65	8.02	9.37
Suhi-1 Sudan	0	4.65	2.67	7.32	---	---
Lindsey 101F	0	5.03	2.21	7.24	8.06	---
NK-300	0	4.56	2.58	7.14	7.07	6.41
NK-330	0	5.49	1.54	7.03	6.83	---
DeKalb SX-11	0	4.26	2.04	6.30	6.83	7.22
Asgrow Grazer	0	3.90	2.36	6.26	---	---
Silo King	84	4.13	1.83	5.96	6.96	6.44
DeKalb FS-1A	0	3.67	2.20	5.87	5.94	5.25
Dixie 18 corn	0	4.20	0	4.20	4.10	4.57
Auburn 602 corn	0	3.70	0	3.70	---	---

6. Lindsey 115-F lodged at Tallassee and Marion Junction, Tables 3 and 4. Six other sorghum varieties were lodged at one or more locations.

SUMMARY

A large number of forage sorghum varieties with widely different characteristics have been tested at several locations in Alabama for 3 years. Variety recommendations are made on the basis of yield, grain content, lodging, and maturity class. Sorghum varieties are listed alphabetically within each subgroup and are equally acceptable. If a lower yielding but early maturing forage is desired, the sorghum-Sudan hybrids such as Asgrow Grazer and DeKalb SX-11 are satisfactory for silage production.

TABLE 5. YIELDS OF SILAGE VARIETIES AT LOWER COASTAL PLAIN SUBSTATION, CAMDEN, 1962

Entry	Oven-dry forage per acre		
	July 5	Aug. 15	Total
	<i>Tons</i>	<i>Tons</i>	<i>Tons</i>
NK-320	---	3.00	3.00
Lindsey 115F	---	2.93	2.93
Asgrow Beefbuilder	---	2.91	2.91
DeKalb FS-22	---	2.60	2.60
Asgrow Grazer	1.77	0.80	2.57
Sart	---	2.53	2.53
NK-315	---	2.49	2.49
Silo King	---	2.43	2.43
Lindsey 101F	---	2.26	2.26
NK-330	---	2.13	2.13
Suhi-1 Sudan	1.07	0.95	2.02
DeKalb SX-11	0.91	0.92	1.83
Dixie 18 corn	---	1.73	1.73
NK-300	---	1.66	1.66
DeKalb FS-1A	---	1.31	1.31

TABLE 6. YIELDS OF SILAGE VARIETIES AT GULF COAST SUBSTATION, FAIRHOPE, 1960-62

Entry	Lodging at each harvest, 1962		Oven-dry forage yield per acre				
	First	Second	1962		Total	2-year av.	3-year av.
	<i>Pct.</i>	<i>Pct.</i>	<i>First</i>	<i>Second</i>			
T-E Yieldmaker.....	8	5	8.37	7.02	15.39	13.01	---
Asgrow Beefbuilder.....	0	2	8.55	5.63	14.18	12.73	---
Lindsey 115F.....	8	0	7.96	5.31	13.27	11.82	---
Lindsey 101F.....	0	2	8.50	4.70	13.20	---	---
NK-320.....	0	80	7.57	4.75	12.32	10.26	9.74
DeKalb FS-22.....	0	0	5.14	6.00	11.14	10.90	10.85
NK-300.....	0	0	6.95	4.12	11.07	9.32	8.68
DeKalb FS-1A.....	0	0	7.51	3.47	10.98	8.66	7.99
Sart.....	0	15	5.39	3.48	8.87	10.56	10.69
Dixie 18 corn.....	0	--	7.37	0	7.37	6.84	6.46

RECOMMENDATIONS

High Forage Yield, Low Grain, High Sugar

Medium-early maturity: DeKalb FS-22

Medium-late maturity: Tracy
Milkmaker (Trial basis)

Late maturity: Sart

High Forage Yield, Medium Grain, Medium to High Sugar

Medium-early maturity: Lindsey 101F
NK-315
NK-330

Medium-late maturity: Beefbuilder
Lindsey 115F
Yieldmaker

Sorghum-Sudan hybrids: Asgrow Grazer
DeKalb SX-11