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SUMMER ANNUAL GRASS VARIETY TRIALS IN 1968

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VARIETIES OF SUMMER annual grasses were tested at five locations in 1968.

Seed were planted in 6-inch rows at all locations except at the Gulf Coast Substation where 12-inch rows were used. Tests were planted in late April and fertilized with 40 to 50 pounds of nitrogen per acre at planting and again after each cutting. Adequate phosphorus and potassium were applied at planting. Each plot was 5 × 20 feet and varieties were replicated four times. Two to four cuttings were obtained during the season. Hand separations of leaves and stems were made at each harvest from the Plant Breeding Unit test.

Digestible dry matter (DDM) was determined by placing nylon bags containing forage samples in the rumen of steers fitted with fistulas. The bags were removed after 24 hours and digestibility was calculated on the basis of undigested dry matter remaining in the bag. Two samples of each variety per harvest date were used from each variety. Total pounds per acre of DDM was calculated by multiplying percentage DDM times yield of dry matter per acre for each harvest.

RESULTS

Forage Yields

Drought reduced forage yields in 1968 below that of the previous two or three years at all locations. Top yields were more than 6 tons dry forage per acre at the Plant Breeding Unit, 4 tons at the Tennessee Valley Substation and approximately 3 tons at other locations.

Total yield at the Tennessee Valley Substation was highest for Pioneer 985 sorghum-sudan, primarily as a result of more rapid early season growth, Table 1. Severe drought prevented regrowth after the August clipping.

Sorghum-sudan hybrids generally outyielded pearl millet varieties at the Plant Breeding Unit, Table 2. Pearl millet varieties made no regrowth after the August 27 harvest as compared to the 1¼ tons or more of additional dry forage yield on sorghum-sudan hybrids by October 17. The hybrid sudan entries, Cumberland and Monarch, were more productive in the fall than pearl millet but less so than the better sorghum-sudan hybrids. When 3-year average yields of varieties are compared, Grazer-A sorghum-sudan made the highest total yield.

At the Black Belt Substation total yields of all sorghum-sudan hybrids were similar in 1968 and also for the two-year average, Table 3. Monarch hybrid sudan made poor regrowth after the July harvest.

Pearl millet varieties were generally more productive than sorghum-sudan hybrids at the Lower Coastal Plain and Gulf Coast Substations, Tables 4 and 5. Drought sharply reduced yields at both locations below those obtained in previous years.

Leaf Production

A high percentage of leaves is generally associated with higher quality forage. Leaf percentages differed considerably among varieties, Table 6. Pearl millet varieties were generally more leafy and produced more leaves per acre than sorghum-sudan hybrids. Several sorghum-sudan hybrids were more leafy than the sundan grasses in early summer. Sorghum-sudan hybrids which maintained high leaf percentages throughout the season were Grazer-A, Sordan 67, Pioneer 988, and Funk's G-78F. Among the varieties tested for two years, the highest leaf yields per acre were obtained with Gahi-1 and NK-X1002 millet.

Digestible dry matter (DDM)

Differences in percentage DDM among varieties were generally small, Table 7. Although leaf per-

centages of pearl millet varieties were higher than for sorghum-sudans, this was not reflected in higher percentage DDM. This suggests that stems of sorghum-sudan hybrids were highly digestible. The high percentage DDM at the October harvest indicates that these grasses offer promise in providing high quality forage in late summer and fall when perennial pasture quality is low and annual winter forages are not yet available.

When yields are expressed as DDM per acre (percent DDM \times total forage yield), differences among varieties range from 8,500 to 4,600 pounds per acre. Grazer-A sorghum-sudan produced more DDM per acre than other varieties in the test.

Diseases

Foliar diseases were low in the 1968 tests. No disease ratings were made on varieties at any location.

RECOMMENDED VARIETIES

Recommendations are based on two or more years of testing and include yield, leaf percentage, disease resistance, recovery after clipping, late summer production, and stem size. Certain varieties which performed well in 1968 are not placed on the recommended list as only one year's data are available.

Pearlmillet—(Not recommended on high lime soils of Black Belt.)

Gahi-1

Sorghum-sudan hybrids—(Not recommended in Gulf Coast region. Soils should be limed to pH 5.7 or above. Pearl millet is more productive than sorghum-sudan hybrids on very acid soil.)

Acceptable varieties are listed below in alphabetical order:

DeKalb SX-11

Funks 77F

Grazer-A

Gro-N-Graze

Pioneer 985

Pioneer 988

Sudan varieties:

None recommended

SOURCES OF SEED IN TESTS

Pearlmillet:

Gahi-1	Northrup King and Company, Atmore, Alabama
Millex 22, NK-X-1002	Northrup King and Company, Atmore, Alabama
Pearlex 21, Pearlex-28	W. R. Grace and Company, Ames, Iowa

Sudangrass:

Monarch	Caladino Farm Seeds, Wood- land, California
Cumberland	Tennessee Agricultural Experi- ment Station, Knoxville, Ten- nessee

Sorghum-Sudan hybrids:

Grazer-A	Asgrow Seed Company, San An- tonio, Texas
Gro-N-Graze, Sucrosse	George Warner Seed Company, Hereford, Texas
Funks 77F, G-78F	Funk Brothers Seed Company of Texas, Lubbock, Texas
DeKalb SX-11, SX-16	DeKalb Agricultural Association, Lubbock, Texas
Summergrazer	Cotton Hybrid Research, Win- der, Georgia
Pioneer 985, 988	Pioneer Corn Company, Tipton, Indiana
HG-12	U.S. Seeds, Farwell, Texas
Sordan 67	Northrup King and Company, Atmore, Alabama
Su-4	W. R. Grace and Company, Ames, Iowa

TABLE 1. FORAGE YIELD OF SUMMER ANNUAL GRASSES AT TENNESSEE VALLEY SUBSTATION, BELLE MINA, ALABAMA, 1968

Entry	Pounds oven-dry forage per acre		
	July 11	August 22	Total
Pioneer 985.....	5,557	3,382	8,939
DeKalb SX-16.....	4,642	2,928	7,570
Pearlex 28 millet.....	3,212	3,998	7,210
Sordan 67.....	3,852	3,296	7,148
Monarch sudan.....	3,484	3,552	7,036
Pearlex 21 millet.....	2,828	3,931	6,759
Su-4.....	3,339	3,035	6,374
Gahi-1 millet.....	2,858	3,471	6,329
Funks 77F.....	3,341	2,728	6,069
Cumberland sudan.....	3,453	2,531	5,984
Millex 22 millet.....	2,186	3,478	5,664
Sucrosse.....	3,171	2,438	5,609

All entries are sorghum-sudan hybrids unless otherwise designated as sudans or pearl millets.

TABLE 2. FORAGE YIELD OF SUMMER ANNUAL GRASSES AT PLANT BREEDING UNIT, TALLASSEE, ALABAMA, 1968

Entry	Pounds of oven-dry forage per acre					Average	
	June 27	July 19	Aug. 27	Oct. 17	Total	2 yr.	3 yr.
Crazer-A.....	2,602	3,594	4,870	1,718	12,784	13,398	12,019
Gro-N-Graze.....	2,632	3,897	4,378	1,340	12,247	11,577	-----
DeKalb SX-16.....	2,935	3,243	4,076	1,296	11,550	-----	-----
Summergrazer.....	2,940	3,032	4,294	1,220	11,486	-----	-----
Funks 77F.....	2,586	3,038	4,315	1,426	11,365	11,741	10,365
Funks G-78F.....	2,222	3,371	4,272	1,296	11,161	-----	-----
Pioneer 988.....	2,782	2,820	3,966	1,514	11,082	12,472	-----
Sordan 67.....	2,216	3,070	3,996	1,495	10,747	-----	-----
Pioneer 985.....	2,913	2,319	3,991	1,263	10,486	12,396	10,997
Sucrosse.....	2,551	2,284	4,084	1,489	10,408	13,147	-----
Pearlex 21 millet.....	1,982	4,588	3,834	0	10,404	-----	-----
U.S. Seeds HG-12.....	2,385	2,697	3,877	1,408	10,367	-----	-----
DeKalb SX-11.....	2,360	2,362	4,694	824	10,240	11,948	10,406
Gahi-1 millet.....	1,601	4,672	3,708	0	9,981	12,514	10,774
Monarch sudan.....	2,102	2,288	4,315	948	9,653	-----	-----
NK-X-1002 millet.....	1,544	4,353	3,430	0	9,327	11,636	-----
Su-4.....	2,464	1,865	3,768	915	9,012	-----	-----
Pearlex 28 millet.....	1,720	3,948	3,319	0	8,987	-----	-----
Cumberland sudan.....	1,372	1,844	3,542	811	7,569	-----	-----
Millex 22 millet.....	1,350	3,086	2,938	0	7,374	10,569	-----

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TABLE 3. FORAGE YIELD OF SUMMER ANNUAL GRASSES AT BLACK BELT SUBSTATION, MARION JUNCTION, ALABAMA, 1968

Entry	Pounds of oven-dry forage per acre				Average	
	May 29	July 15	Sept. 23	Total	2 yr.	3 yr.
DeKalb SX-16.....	2,064	3,308	1,121	6,493	-----	-----
Pioneer 985.....	2,234	3,018	990	6,241	8,376	-----
Su-4.....	2,252	3,054	931	6,236	-----	-----
Sucrosse.....	2,022	3,063	1,043	6,128	8,716	-----
Pioneer 988.....	2,321	2,981	808	6,111	8,808	-----
HG-12.....	2,200	2,794	848	5,842	-----	-----
Funks G-78F.....	1,883	2,827	988	5,698	-----	-----
Sordan 67.....	1,913	2,612	1,154	5,679	-----	-----
DeKalb SX-11.....	1,565	2,686	1,321	5,572	8,060	-----
Gro-N-Graze.....	1,668	2,712	1,135	5,515	8,170	-----
Funks 77F.....	1,644	2,637	1,117	5,390	8,532	-----
Monarch sudan.....	1,698	3,057	118	4,873	-----	-----

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TABLE 4. FORAGE YIELD OF SUMMER ANNUAL GRASSES AT LOWER COASTAL PLAIN SUBSTATION, CAMDEN, ALABAMA, 1968

Entry	Pounds of oven-dry forage per acre			Average	
	May 30	July 19	Total	2 yr.	3 yr.
Pearlex 28 millet.....	2,322	4,548	6,870	-----	-----
Pearlex 21.....	2,034	4,624	6,658	-----	-----
Millex 22 millet.....	2,651	3,921	6,572	-----	-----
Gahi-1 millet.....	2,334	4,143	6,377	9,112	-----
DeKalb SX-16.....	2,947	3,035	5,982	-----	-----
Funks 77F.....	2,392	2,834	5,226	8,052	-----
Su-4.....	2,505	2,610	5,115	-----	-----
Pioneer 988.....	2,240	2,630	4,870	8,506	-----
Sordan 67.....	2,414	2,505	4,919	-----	-----
Gro-N-Graze.....	1,732	2,676	4,408	8,550	-----

All entries are sorghum-sudan hybrids unless otherwise designated as sudans or pearl millets.

TABLE 5. FORAGE YIELD OF SUMMER ANNUAL GRASSES AT GULF COAST SUBSTATION, FAIRHOPE, ALABAMA, 1968

Entry	Pounds of oven-dry forage per acre				Average	
	July 2	July 23	Aug. 27	Total	2 yr.	3 yr.
Pearlex 28 millet.....	4,121	1,256	720	6,097	-----	-----
Pearlex 21 millet.....	3,646	1,300	920	5,866	-----	-----
DeKalb SX-16.....	2,921	1,246	1,507	5,674	-----	-----
Gahi-1 millet.....	3,455	1,482	503	5,441	9,875	8,708
Millex 22 millet.....	3,342	1,369	606	5,317	-----	-----
Sucrosse.....	2,920	1,070	680	4,670	-----	-----
Gro-N-Graze.....	2,485	1,124	972	4,581	8,596	-----
Sordan 67.....	2,187	1,112	985	4,284	-----	-----
Funks 77F.....	2,368	1,129	588	4,085	7,622	6,727

All entries are sorghum-sudan hybrids unless otherwise designated as sudans or pearl millets.

TABLE 6. LEAF PERCENTAGE OF SUMMER ANNUAL GRASSES AT PLANT BREEDING UNIT, TALLASSEE, ALABAMA, 1968

Entry	Per cent leaves in dry forage				Total pounds of dry leaves per acre	
	June 27	July 19	Aug. 27	Oct. 17	1968	2-yr. av.
Pearlex 21 millet	100	67	66	0	7,586	-----
Gahi-1 millet	100	66	62	0	6,984	7,321
Pearlex 28 millet	100	69	72	0	6,833	-----
NK-X 1002 millet	100	68	64	0	6,699	7,204
Grazer-A	61	50	46	46	6,414	6,042
Gro-N-Graze	48	44	52	45	5,858	5,266
Sordan 67	65	52	48	59	5,836	-----
Pioneer 988	56	52	50	52	5,794	5,596
SX-16	63	50	46	34	5,787	-----
Funks G-78F	64	50	46	51	5,462	-----
Summergrazer	50	46	43	50	5,321	-----
HG-12	60	51	48	42	5,258	-----
Funks 77F	46	43	48	45	5,208	5,294
Pioneer 985	50	48	49	53	5,194	6,337
SX-11	49	42	52	44	4,952	5,659
Monarch sudan	49	44	52	58	4,861	-----
Sucrosse	54	38	36	47	4,414	5,592
Millex 22 millet	100	44	57	0	4,383	5,337
Su-4	50	54	44	49	4,345	-----
Cumberland sudan	54	40	54	54	3,830	-----

All entries are sorghum-sudan hybrids unless otherwise designated as sudans or pearl millets.

TABLE 7. DIGESTIBLE DRY MATTER OF SUMMER ANNUAL GRASSES AT PLANT BREEDING UNIT, TALLASSEE, ALABAMA, 1968

Entry	Per cent digestible dry matter (DDM)				Total DDM per acre Lb.
	June 27	July 19	Aug. 27	Oct. 17	
Grazer-A	67	69	64	69	8,525
Gro-N-Graze	66	65	62	69	7,909
Funks 77F	67	66	63	70	7,454
DeKalb SX-16	68	64	61	68	7,439
Summergrazer	67	64	62	70	7,426
Pioneer 988	65	68	63	68	7,255
Funks G-78F	69	63	61	71	7,183
Pearlex 21 millet	70	69	66	---	7,083
Pioneer 985	69	63	63	68	6,844
HG-12	65	69	63	70	6,840
Sordan 67	66	62	59	70	6,771
DeKalb SX-11	68	65	61	69	6,572
Gahi-1 millet	69	63	63	---	6,384
Sucrosse	65	63	56	67	6,382
Monarch sudan	63	67	62	70	6,196
NK-X1002 millet	68	65	61	---	5,965
Su-4	67	66	60	69	5,774
Pearlex 38 millet	66	62	60	---	5,574
Cumberland sudan	66	66	61	69	4,844
Millex 22 millet	68	60	62	---	4,592

All entries are sorghum-sudan hybrids unless otherwise designated as sudans or pearl millets.