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MISSISSIPPI
Corn for Silage

VARIETY TRIALS, 2000

Experiment Station
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This report contains data generated as part of the Mississippi Agricultural and Forestry Experiment Station research program. Joint sponsorship by the organizations listed on page 8 is gratefully acknowledged.

Trade names of commercial products used in this report are included only for clarity and understanding. All available names (i.e., trade names, code numbers, chemical names, etc.) of varieties or products used in this research project are listed on page 8.

Mississippi Corn for Silage Variety Trials, 2000

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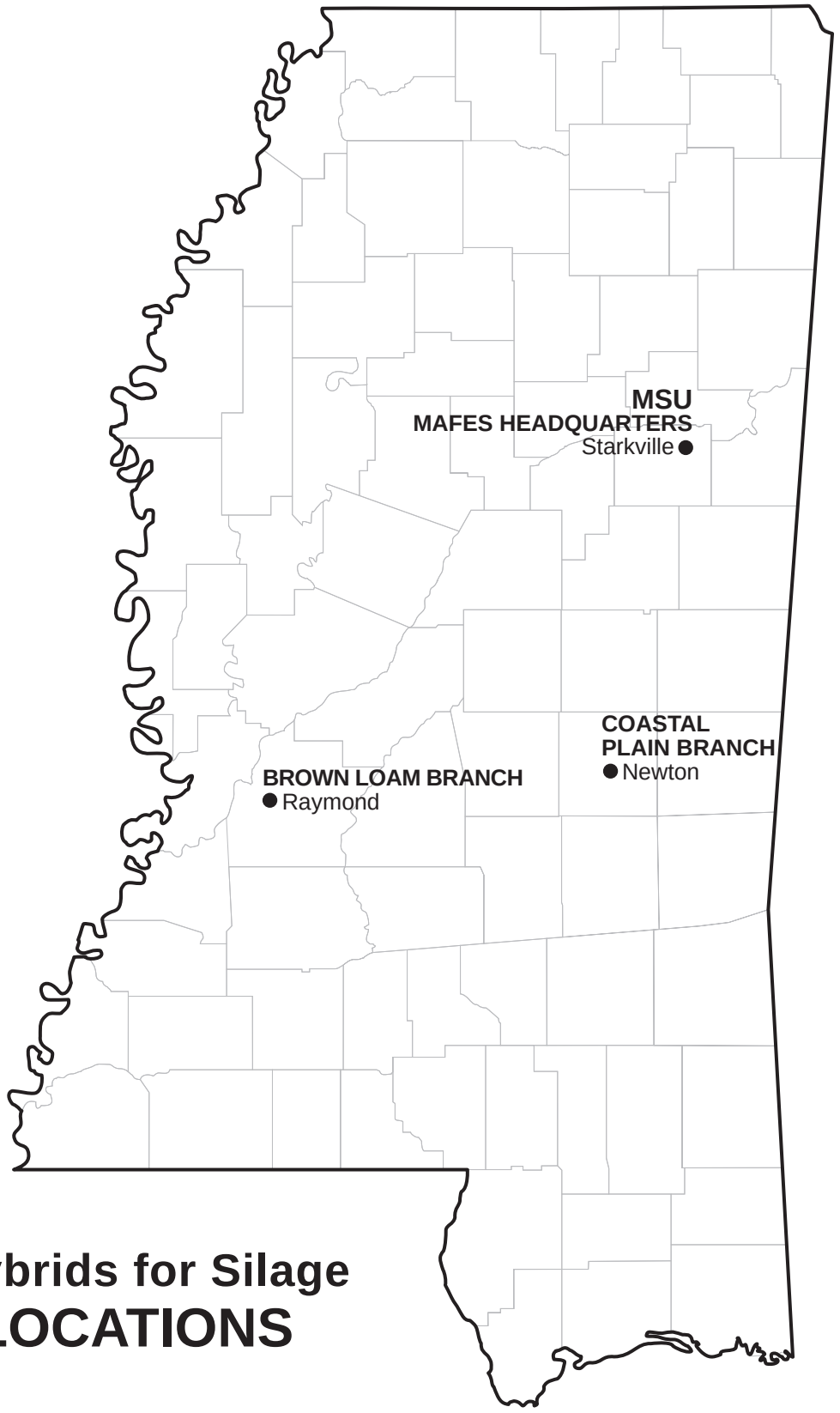

Corn Hybrids for Silage
TEST LOCATIONS

Mississippi Corn for Silage Variety Trials, 2000

Procedures

The 2000 corn hybrids trials for silage were conducted at three locations on experiment station land – Mississippi State University in Starkville, Coastal Plain Branch Experiment Station in Newton, and Brown Loam Branch Experiment Station in Raymond (see map on the third page). Two experiments were planted at each location.

One experiment was designed to determine silage yield and various components of forage quality, while the other experiment was designed to determine grain yield of each hybrid. In the silage yield experiment, plots consisted of two 25-foot-long rows, which were spaced 38 inches apart at MSU and Raymond and 30 inches apart at Newton. The grain yield experiment was identical in row spacing to the silage tests, but row length was 16.75 feet. Experimental design was a randomized complete block with four replications at each location.

Seeds of all entries were supplied by participating companies and packaged for planting at rates of 24,000 or 28,000 seeds per acre as specified. A four-row planter equipped with 31 cell cone units was used for planting. Established stands were not thinned. Nitrogen, phosphorus, potassium, and lime were applied according to soil test recommendations. Weeds were controlled by cultivation and/or herbicides currently registered for use on corn with strict adherence to all label instructions. Lorsban was donated by Dow Elanco and banded at planting for insect control.

Silage was harvested with a two-row silage harvester, and the biomass from the entire plot was blown into an automatic weigh wagon. Chopped samples were collected from each plot for dry matter and forage quality determinations. Samples were placed in a forced-draft oven at 140°F until dry. Estimates for forage quality determined in these trials were crude protein, acid detergent fiber, estimated total digestible nutrients, net energy lactation, net energy gain, and net energy maintenance. Mineral analyses were made for calcium, phosphorus, magnesium, and potassium.

An Almaco SPC-20 plot combine was used to harvest the grain yield experiments. The harvested grain was weighed, the moisture content was determined, and grain yields were converted to bushels per acre at 15 percent moisture.

MISSISSIPPI STATE UNIVERSITY, STARKVILLE

Crop Summary

The weather was generally good until high temperatures and drought conditions began in early July. However, by that time most hybrids had already passed critical growth stages, thereby minimizing the effects of poor late-season conditions.

Soil type	**Leeper silty clay loam**
Soil pH	**6.3**
Soil fertility	**P=H+; K=L**
Fertilizer added	**Preplant – N@ 50 lb/A, K @ 120 lb/A**
	Sidedress – N @ 150 lb/A
Herbicide application	**Preemergence – Bicep @ 2.5 qt/A**
	Postemergence – Beacon @ .76 oz/A
Planting date	**April 25**
Harvest date	**(Silage) August 1**
	(Grain) September 1

Rainfall Summary

	Inches
April	**7.64**
May	**2.35**
June	**4.41**
July	**0.63**
August	**0.55**
Total	**15.58**

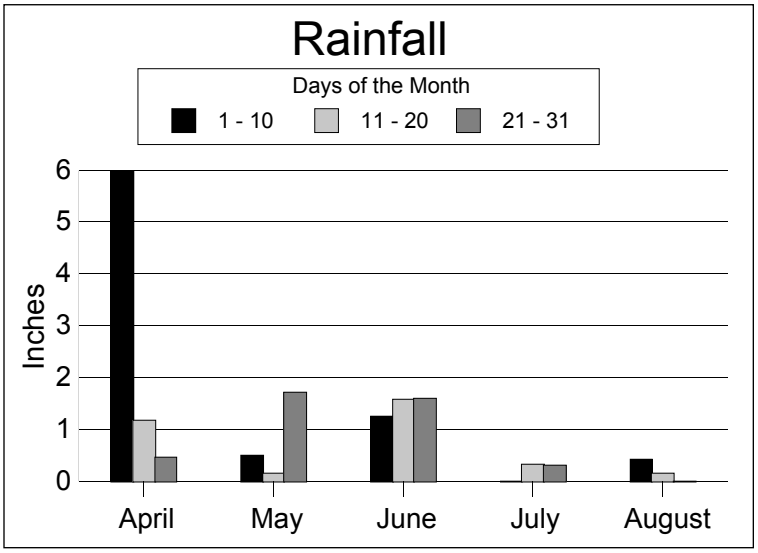

Table 1. Silage yield, grain yield, crude protein, and acid detergent fiber content of eight corn hybrids grown at Mississippi State University, Starkville, Mississippi, 2000.

Hybrid	Brand	Silage yield[1]	Grain yield	Crude protein	Acid detergent fiber
		tons/A	*bu/A*	*pct*	*pct*
P31B13	Pioneer	18.6	148.6	7.9	27.7
P33J56	Pioneer	18.4	141.6	8.3	27.3
DK 697	DEKALB	17.7	143.6	8.0	29.2
P31G20	Pioneer	15.6	102.9	8.2	29.0
SS1150	SS	15.4	65.8	8.5	37.1
SS859CL	SS	15.1	92.8	7.6	29.0
SS849CL	SS	14.2	135.0	8.0	28.0
SS897	SS	11.7	86.5	9.2	29.4
Overall Mean		15.8	114.6	8.2	29.6
LSD (.10)		3.4	35.5	.7	2.7
CV (%)		17.4	25.5	6.6	7.5
R^2 (%)		61.8	72.0	55.5	74.2

[1]At 35 percent dry matter.

Table 2. Forage quality estimates for eight corn hybrids grown at Mississippi State University, Starkville, Mississippi, 2000.[1]

Hybrid	Brand	NE lactation	NE gain	NE maintenance	TDN estimate
		MC/cwt	*MC/cwt*	*MC/cwt*	*pct*
P31B13	Pioneer	70.8	44.7	71.9	68.4
P33J56	Pioneer	71.2	45.0	72.4	68.7
DK 697	DEKALB	69.7	43.4	70.5	67.4
P31G20	Pioneer	69.8	43.5	70.6	67.5
SS1150	SS	63.6	36.1	62.4	61.9
SS859CL	SS	69.8	43.5	70.7	67.5
SS849CL	SS	70.6	44.5	71.7	68.3
SS897	SS	69.5	43.2	70.2	67.3
Overall Mean		69.4	43.0	70.0	67.1
LSD (.10)		2.1	2.4	2.7	1.9
CV (%)		2.5	4.7	3.2	2.3
R^2 (%)		73.9	74.8	74.6	74.3

[1]Analysis values are based on composite samples; NE = net energy, TDN = total digestible nutrients.

Table 3. Phosphorus, calcium, potassium, and magnesium content of eight corn hybrids grown at Mississippi State University, Starkville, Mississippi, 2000.

Hybrid	Brand	Percent silage mineral content			
		P	CA	K	MG
P31B13	Pioneer	.22	.25	.96	.21
P33J56	Pioneer	.23	.25	.99	.21
DK 697	DEKALB	.22	.25	.85	.23
P31G20	Pioneer	.22	.28	.91	.22
SS1150	SS	.20	.30	1.09	.24
SS859CL	SS	.21	.24	.83	.22
SS849CL	SS	.22	.26	.97	.24
SS897	SS	.23	.32	1.14	.24
Overall Mean		.22	.27	.97	.23
LSD (.10)		.02	.04	.14	.08
CV (%)		6.1	11.3	12.0	6.3
R^2 (%)		40.7	56.7	55.5	66.1

MAFES Coastal Plain Branch, Newton

Crop Summary

Adequate soil conditions allowed for planting in the optimum planting window for the climate and soils in the Newton area. Germination and early plant growth was exceptional until the first of May. From April 13 until June 15, the area received only 3.37 inches of rainfall. During this period, the potential of the crops turned from excellent to below average. Weather conditions allowed for a timely harvest.

Soil type	**Prentiss very fine sandy loam**
Soil pH	**6.2**
Soil fertility	**P=H; K=M**
Fertilizer added	**Preplant– 0-0-60 @ 100 lb/A**
	13-13-13 @ 500 lb/A
	Sidedress – 32% N @ 120 lb/A
Herbicide application	**Frontier 6E @ 24 oz/A**
	Atrazine 4L @ 2 qt/A
Planting date	**March 14**
Harvest date	**(Silage) July 12**
	(Grain) August 17

Rainfall Summary

	Inches
April	**5.03**
May	**1.78**
June	**3.92**
July	**3.50**
August	**3.19**
Total	**17.42**

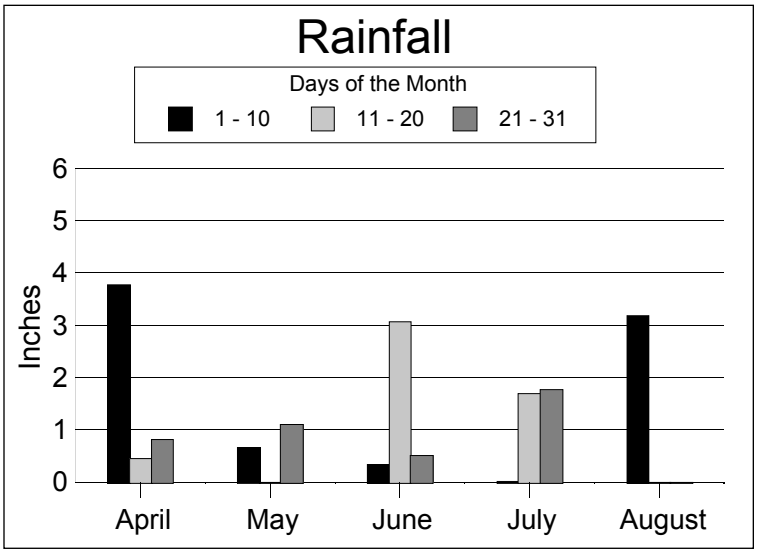

Table 4. Silage yield, grain yield, crude protein, and acid detergent fiber content of eight corn hybrids grown at Newton, Mississippi, 2000.

Hybrid	Brand	Silage yield[1]	Grain yield	Crude protein	Acid detergent fiber
		tons/A	*bu/A*	*pct*	*pct*
P31G20	Pioneer	16.1	69.5	8.6	30.0
P31B13	Pioneer	14.7	75.3	8.8	30.0
P33J56	Pioneer	14.0	83.2	9.0	30.6
DK 697	DEKALB	13.3	68.4	8.4	31.6
SS849CL	SS	12.6	79.4	9.1	28.8
SS859CL	SS	12.3	86.8	8.4	30.1
SS1150	SS	12.0	36.6	9.0	33.8
SS897	SS	11.3	71.2	9.0	29.4
Overall Mean		13.3	71.3	8.8	30.5
LSD (.10)		3.2	18.9	.7	4.6
CV (%)		20.0	21.8	6.2	12.3
R^2 (%)		43.2	67.0	32.1	23.6

[1]At 35 percent dry matter.

Table 5. Forage quality estimates for eight corn hybrids grown at Newton, Mississippi, 2000.[1]

Hybrid	Brand	NE lactation	NE gain	NE maintenance	TDN estimate
		MC/cwt	*MC/cwt*	*MC/cwt*	*pct*
P31G20	Pioneer	69.0	42.6	69.6	66.8
P31B13	Pioneer	69.1	42.6	69.6	66.8
P33J56	Pioneer	68.6	42.0	69.0	66.4
DK 697	DEKALB	67.8	41.1	68.0	65.7
SS849CL	SS	70.0	43.7	70.8	67.7
SS859CL	SS	69.0	42.5	69.5	66.8
SS1150	SS	66.1	39.1	65.7	64.2
SS897	SS	69.6	43.2	70.3	67.3
Overall Mean		68.6	42.1	69.1	66.5
LSD (.10)		3.6	4.2	4.7	3.2
CV (%)		4.3	8.2	5.6	4.0
R^2 (%)		23.6	23.7	23.7	23.6

[1]Analysis values are based on composite samples; NE = net energy, TDN = total digestible nutrients.

Table 6. Phosphorus, calcium, potassium, and magnesium content of eight corn hybrids grown at Newton, Mississippi, 2000.

Hybrid	Brand	Percent silage mineral content			
		P	CA	K	MG
P31G20	Pioneer	.22	.28	1.04	.21
P31B13	Pioneer	.22	.30	1.27	.23
P33J56	Pioneer	.22	.32	1.21	.23
DK 697	DEKALB	.21	.29	1.12	.24
SS849CL	SS	.23	.30	1.23	.24
SS859CL	SS	.22	.28	1.09	.22
SS1150	SS	.21	.31	1.23	.25
SS897	SS	.23	.30	1.20	.23
Overall Mean		.22	.30	1.07	.23
LSD (.10)		.02	.04	.18	.03
CV (%)		8.6	12.3	12.4	11.2
R^2 (%)		29.5	21.5	39.6	32.1

Brown Loam Branch, Raymond

Crop Summary

The corn test emerged to a good stand. Above-average rainfall the first 60 days after planting got the corn off to a good start, but below-average rainfall and extreme summer heat at critical times resulted in poor yields. No problems resulted from weeds or disease.

Soil type . . . . . Calloway silt loam
Soil pH 6.5
Soil fertility . . . . . P–H; K–M
Fertilizer added . . . . . Preplant – 0-25-26 @ 350 lb/A
Sidedress – N @ 180 lb/A
Herbicide application . . . Preemergence – Atrazine @ 1 qt/A
Dual @ 1 qt/A
Planting date . . . . . April 11
Harvest date . . . . . (Silage) July 19
(Grain) August 21

Rainfall Summary

	Inches
April	**8.81**
May	**2.00**
June	**5.03**
July	**1.72**
August	**0.66**
Total	**18.22**

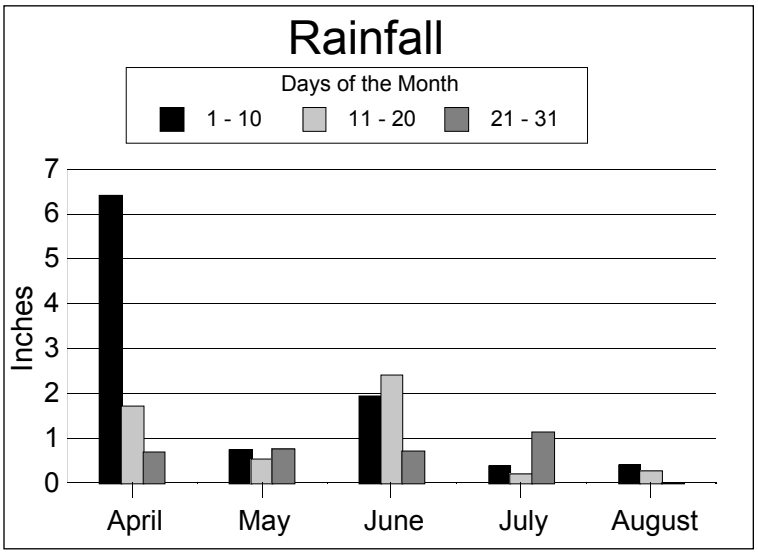

Table 7. Silage yield, grain yield, crude protein, and acid detergent fiber content of eight corn hybrids grown at Raymond, Mississippi, 2000.

Hybrid	Brand	Silage yield[1]	Grain yield	Crude protein	Acid detergent fiber
		tons/A	*bu/A*	*pct*	*pct*
P31B13	Pioneer	15.1	95.9	8.2	29.2
SS849CL	SS	12.5	105.4	8.4	28.6
P31G20	Pioneer	11.8	106.3	7.8	31.2
DK 697	DEKALB	11.4	72.5	7.9	32.3
P33J56	Pioneer	11.2	92.6	8.8	29.3
SS859CL	SS	11.1	100.0	8.3	31.8
SS1150	SS	9.9	77.8	8.9	39.0
SS897	SS	8.9	96.7	8.9	29.5
Overall Mean		11.5	93.3	8.4	31.3
LSD (.10)		3.3	37.8	.6	3.0
CV (%)		23.5	33.3	6.1	7.8
R^2 (%)		50.9	35.0	61.2	73.2

[1]At 35 percent dry matter.

Table 8. Forage quality estimates for eight corn hybrids grown at Raymond, 2000.[1]

Hybrid	Brand	NE lactation	NE gain	NE maintenance	TDN estimate
		MC/cwt	*MC/cwt*	*MC/cwt*	*pct*
P31B13	Pioneer	69.7	43.4	70.5	67.4
SS849CL	SS	70.1	43.9	71.0	67.8
P31G20	Pioneer	68.2	41.6	68.5	66.1
DK 697	DEKALB	67.3	40.6	67.3	65.3
P33J56	Pioneer	69.6	43.3	70.4	67.4
SS859CL	SS	67.6	40.9	67.8	65.6
SS1150	SS	62.1	34.3	60.4	60.6
SS897	SS	69.5	43.1	70.1	67.2
Overall Mean		68.0	41.4	68.2	65.9
LSD (.10)		2.3	2.7	3.0	2.1
CV (%)		2.8	5.4	3.6	2.6
R^2 (%)		73.2	74.0	73.7	73.1

[1]Analysis values are based on composite samples; NE = net energy, TDN = total digestible nutrients.

Table 9. Phosphorus, calcium, potassium, and magnesium content of eight corn hybrids grown at Raymond, Mississippi, 2000.

Hybrid	Brand	Percent silage mineral content			
		P	CA	K	MG
P31B13	Pioneer	.22	.28	.97	.20
SS849CL	SS	.22	.28	.94	.24
P31G20	Pioneer	.21	.28	.94	.24
DK 697	DEKALB	.21	.29	.97	.25
P33J56	Pioneer	.23	.28	.97	.24
SS859CL	SS	.20	.31	.98	.20
SS1150	SS	.20	.36	1.21	.25
SS897	SS	.23	.31	1.10	.27
Overall Mean		.21	.30	1.01	.24
LSD (.10)		.02	.03	.09	.04
CV (%)		7.9	7.5	7.4	13.3
R^2 (%)		43.5	79.0	73.2	43.0

Table 10. Characteristics of hybrids in the Mississippi Corn Silage Trials, 2000.

Company	Hybrid	Planting rate (X 1000)	Days to maturity	Grain texture[1]	MDIV resistance[2]	MCDV resistance[2]
Monsanto 3100 Sycamore Rd. Dekalb, IL 60115 815-758-9323	DK697	28	119	M	–	–
Pioneer Hi-Bred Intl 6767 Old Madison Pike Suite 110 Huntsville, AL 35806 256-971-0760	33J56 31B13 31G20	28 28 24	113 119 132	M M –	MR MS –	MR MS –
Southern States Coop P.O. Box 26234 6606 West Broad St Richmond, VA 23260 804-281-1253	SS 859CL SS 849CL SS 897 SS 1150	28 28 28 28	119 118 118 122	M M – –	MR MR – –	MR MR – –

[1]M = Medium; H = Hard; and MH = Medium Hard.
[2]MDIV = Maize Dwarf Mosaic Virus; MCDV = Maize Chlorotic Dwarf Virus (corn stunt); S = Susceptible; R = Resistant; and MR = Moderately Resistant.