Mississippi Corn for Silage Variety Trials 1999

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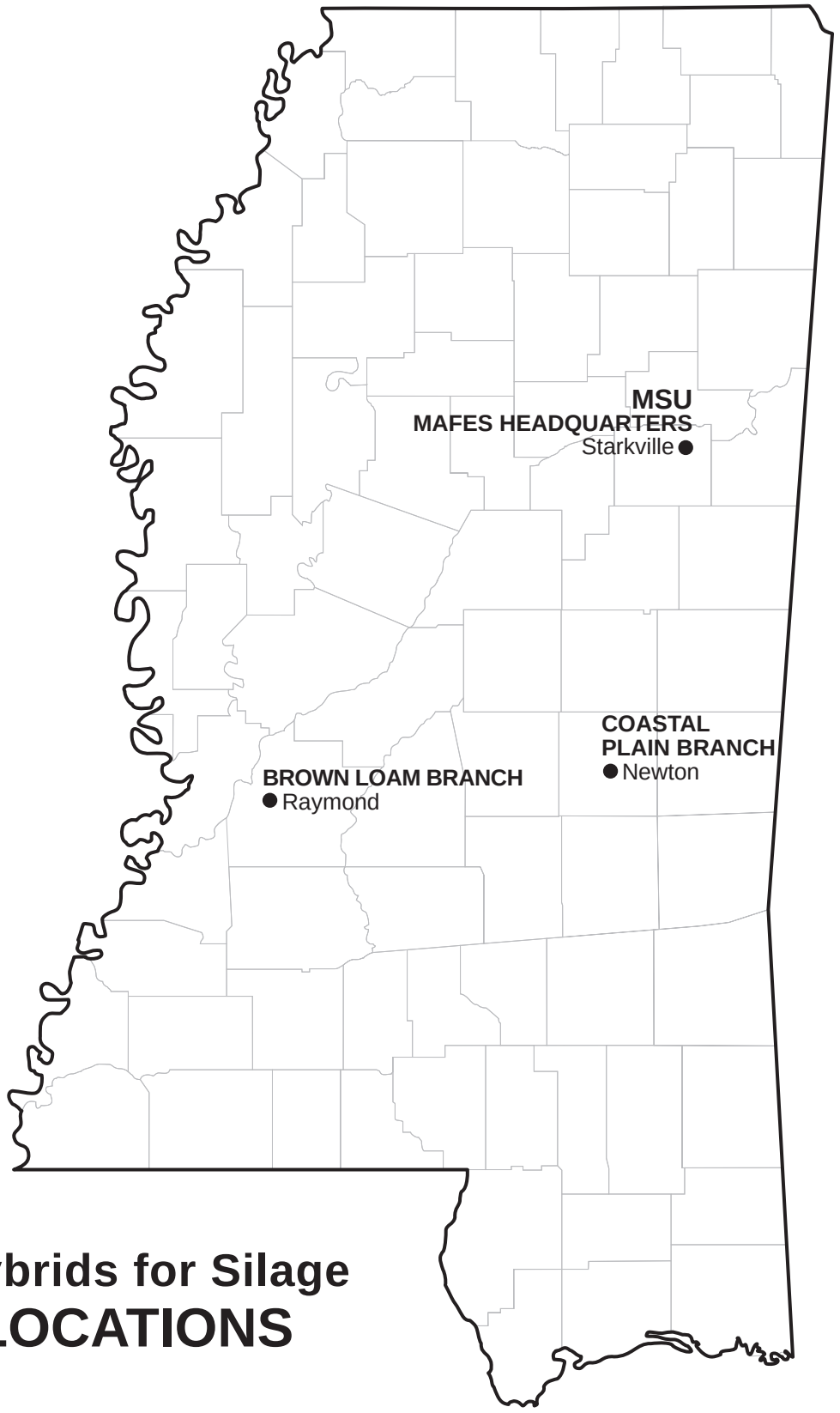

Corn Hybrids for Silage
TEST LOCATIONS

Mississippi Corn for Silage Variety Trials 1999

PROCEDURES

The 1999 corn hybrid trials for silage were conducted at three locations on experiment station land – Mississippi State University, Coastal Plain Branch Experiment Station in Newton, and Brown Loam Branch Experiment Station in Raymond (see the 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 rows spaced 38 inches apart at MSU and Raymond and 30 inches apart at Newton. The grain yield experiments used the same row spacings, but row length was 16.75 feet. Experimental design was a randomized complete block with four replications.

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

Except for a moderate dry period in June, rainfall amounts and distribution were generally adequate. Although temperatures were excessive at times, the heat seemed to have few adverse effects as yields were very good.

Soil type	**Leeper silty clay loam**
Soil pH	**6.1**
Soil fertility	**P-M, K-L**
Fertilizer added	**Preplant – 0-0-60 @ 200 lb/A + 32% Liquid N @ 50 lb/A Sidedress – N @ 150 lb/A**
Herbicide application	**Preemergence – Bicep II @ 2.5 qt/A**
Planting date	**April 13**
Harvest date	**(Silage) July 30 (Grain) September 3**

Rainfall Summary

	Inches
April	**4.49**
May	**3.02**
June	**3.61**
July	**4.49**
August	**0.89**
Total	**16.50**

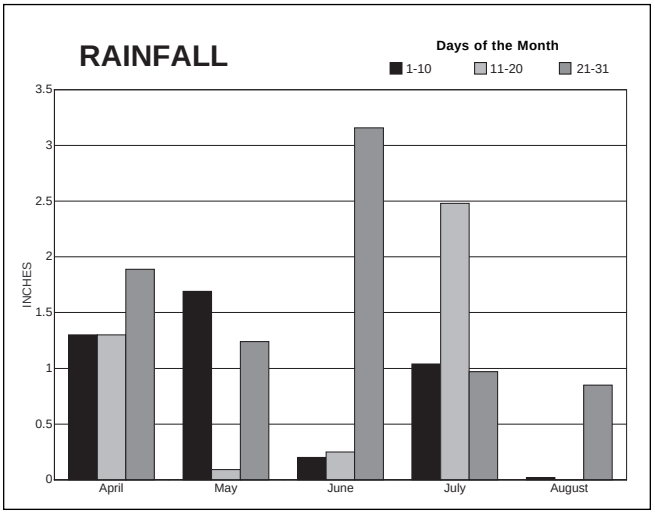

Table 1. Silage yield, grain yield, crude protein, and acid detergent fiber content of 10 corn hybrids grown at Mississippi State University, Starkville, Mississippi, 1999.

Hybrid	Brand	Silage yield[1]	Grain yield	Crude protein	Acid detergent fiber
		tons/A	*bu/A*	*pct*	*pct*
RX 897	Asgrow	22.2	182.4	9.7	26.3
N83-N5	Novartis	21.3	207.8	9.5	26.1
DK 714	DEKALB	20.6	193.1	9.6	26.1
TV 2930	Terral	19.7	136.8	9.5	27.1
897	SS	19.3	194.4	9.3	27.5
RX 913	Asgrow	18.7	195.8	9.1	28.6
859IT	SS	18.7	190.3	9.6	26.4
DK 697	DEKALB	18.3	195.2	9.6	25.4
849IT	SS	17.9	147.2	9.3	28.7
943	SS	16.9	171.2	9.7	27.3
Overall Mean		19.3	181.4	9.5	26.9
LSD (.10)		4.7	49.3	.6	3.2
CV (%)		20.2	22.6	5.5	9.9
R^2 (%)		21.6	67.2	27.5	29.9

[1]At 35 percent dry matter.

Table 2. Forage quality estimates for 10 corn hybrids grown at Mississippi State University, Starkville, Mississippi, 1999.[1]

Hybrid	Brand	NE lactation	NE gain	NE maintenance	TDN estimate
		MC/cwt	*MC/cwt*	*MC/cwt*	*pct*
RX 897	Asgrow	72.0	46.0	73.4	69.4
N83-N5	Novartis	72.1	46.2	73.6	69.6
DK 714	DEKALB	72.1	46.1	73.6	69.6
TV 2930	Terral	71.4	45.3	72.6	68.9
897	SS	71.0	44.9	72.2	68.6
RX 913	Asgrow	70.2	43.9	71.1	67.8
859IT	SS	71.9	45.9	73.3	69.4
DK 697	DEKALB	72.6	46.8	74.3	70.1
849IT	SS	70.0	43.8	70.9	67.7
943	SS	71.2	45.0	72.4	68.7
Overall Mean		71.4	45.4	72.7	69.0
LSD (.10)		2.5	2.9	3.2	2.2
CV (%)		2.9	5.2	3.7	2.7
R^2 (%)		29.9	30.1	30.0	29.9

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

Table 3. Phosphorus, calcium, potassium, and magnesium content of 10 corn hybrids grown at Mississippi State University, Starkville, Mississippi, 1999.

Hybrid	Brand	Percent silage mineral content			
		P	CA	K	MG
RX 897	Asgrow	.26	.29	.92	.23
N83-N5	Novartis	.26	.29	.99	.23
DK 714	DEKALB	.25	.30	1.05	.24
TV 2930	Terral	.25	.30	.96	.23
897	SS	.25	.31	.99	.23
RX 913	Asgrow	.24	.28	1.02	.23
859IT	SS	.25	.25	.93	.22
DK 697	DEKALB	.26	.29	.95	.23
849IT	SS	.24	.31	1.02	.24
943	SS	.26	.29	.98	.23
Overall Mean		.25	.29	.98	.23
LSD (.10)		.02	.04	.10	.02
CV (%)		6.25	11.14	8.66	6.72
R^2 (%)		39.85	29.67	27.77	21.58

MAFES Coastal Plain Branch, Newton

Crop Summary

Abundant rainfall in March delayed planting until the first week of April. After planting, conditions became extremely dry for the next 55 days. There were only 1.82 inches of rainfall in April and May. Early-planted corn was severely hurt, while later-planted corn received timely rains in June and early July, resulting in good yields.

Soil type	**Prentiss very fine sandy loam**
Soil pH	**6.8**
Soil fertility	**P-H, K-H**
Fertilizer added	**Preplant – N @ 22 lb/A, P @ 74 lb/A, K @ 60 lb/A**
	Sidedress – N @ 160 lb/A
Herbicide application	**Frontier 6E @ 22 oz/A + Atrazine 4L @ 2 qt/A**
Planting date	**April 6**
Harvest date	**(Silage) July 23**
	(Grain) August 23

Rainfall Summary

	Inches
April	**0.90**
May	**2.27**
June	**7.25**
July	**2.75**
August	**2.67**
Total	**15.84**

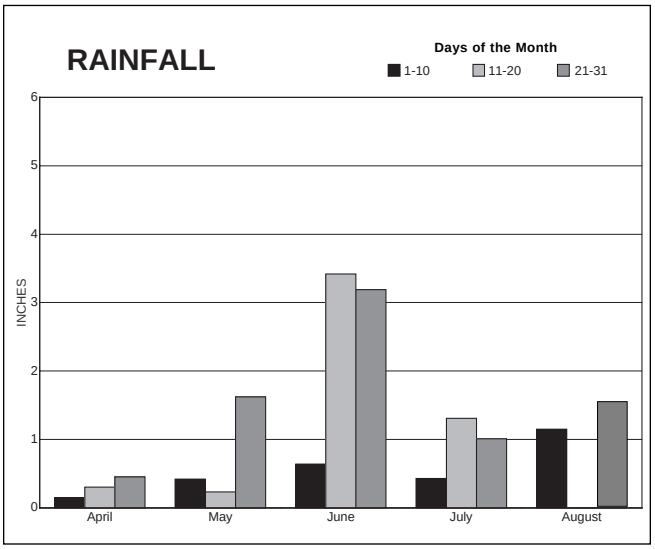

Table 4. Silage yield, grain yield, crude protein, and acid detergent fiber content of 10 corn hybrids grown at Newton, Mississippi, 1999.

Hybrid	Brand	Silage yield[1]	Grain yield	Crude protein	Acid detergent fiber
		tons/A	*bu/A*	*pct*	*pct*
RX 913	Asgrow	19.1	116.4	9.4	30.8
943	SS	19.0	138.2	9.2	27.8
859IT	SS	18.1	139.5	8.4	26.7
849IT	SS	17.9	140.7	10.5	30.4
DK 714	DEKALB	17.9	136.8	8.1	26.1
DK 697	DEKALB	16.4	146.5	8.1	26.5
RX 897	Asgrow	16.2	147.6	8.1	30.3
TV 2930	Terral	16.0	93.3	7.7	29.3
897	SS	15.7	143.3	10.0	29.0
N83-N5	Novartis	15.3	132.3	8.8	28.9
Overall Mean		17.2	133.4	8.8	28.6
LSD (.10)		5.0	28.5	1.5	5.4
CV (%)		24.0	17.7	13.7	15.6
R^2 (%)		22.2	50.4	48.3	23.7

[1]At 35 percent dry matter.

Table 5. Forage quality estimates for 10 corn hybrids grown at Newton, Mississippi, 1999.[1]

Hybrid	Brand	NE lactation	NE gain	NE maintenance	TDN estimate
		MC/cwt	*MC/cwt*	*MC/cwt*	*pct*
RX 913	Asgrow	68.5	41.9	68.8	66.3
943	SS	70.8	44.6	71.9	68.4
859IT	SS	71.6	45.6	72.9	69.1
849IT	SS	68.8	42.3	69.2	66.6
DK 714	DEKALB	72.1	46.1	73.5	69.5
DK 697	DEKALB	71.8	45.8	73.2	69.3
RX 897	Asgrow	68.8	42.3	69.3	66.6
TV 2930	Terral	69.6	43.2	70.3	67.3
897	SS	69.9	43.5	70.6	67.6
N83-N5	Novartis	70.0	43.7	70.8	67.6
Overall Mean		70.2	43.9	71.1	67.8
LSD (.10)		4.2	4.9	5.5	3.8
CV (%)		5.0	9.3	6.4	4.6
R^2 (%)		23.7	23.7	23.7	23.8

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

Table 6. Phosphorus, calcium, potassium, and magnesium content of 10 corn hybrids grown at Newton, Mississippi, 1999.

Hybrid	Brand	Percent silage mineral content			
		P	CA	K	MG
RX 913	Asgrow	.24	.31	1.26	.28
943	SS	.24	.32	1.12	.26
859IT	SS	.23	.28	.99	.25
849IT	SS	.26	.38	1.43	.30
DK 714	DEKALB	.23	.27	1.08	.23
DK 697	DEKALB	.23	.28	1.05	.25
RX 897	Asgrow	.22	.30	1.01	.25
TV 2930	Terral	.21	.30	.99	.25
897	SS	.25	.38	1.31	.28
N83-N5	Novartis	.23	.32	1.16	.26
Overall Mean		.23	.31	1.14	.26
LSD (.10)		.03	.08	.26	.05
CV (%)		9.83	20.76	19.06	14.64
R^2 (%)		41.13	38.00	44.77	38.29

Brown Loam Branch, Raymond

Crop Summary

Corn emerged to a good stand. Below-normal temperatures created good growing conditions despite the late planting date of April 14, 1999. Timely rainfall during June and July, coupled with average daytime temperatures resulted in good growth, pollination, and grain fill. Harvest proceeded on time. Weeds and diseases were not a problem this year.

Soil type	**Calloway Silt Loam**
Soil pH	**6.5**
Soil fertility	**P-H, K-M**
Fertilizer added	**Preplant – 0-26-26 @ 200 lb/A**
	Sidedress – N @ 180 lb/A
Herbicide application	**Preemergence – Atrazine @ 2.0 qt/A + Dual 8E @ 1.0 qt/A**
Planting date	**April 14**
Harvest date	**(Silage) July 29**
	(Grain) August 24

Rainfall Summary

	Inches
April	**3.01**
May	**1.63**
June	**3.85**
July	**2.48**
August	**1.05**
Total	**12.02**

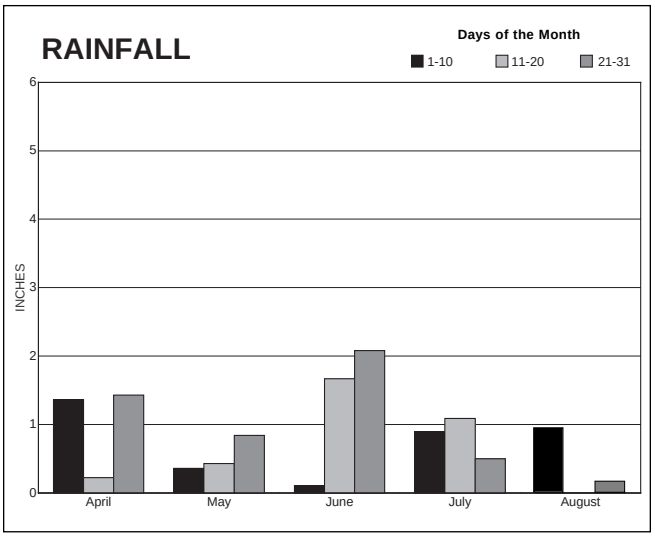

Table 7. Silage yield, grain yield, crude protein, and acid detergent fiber content of 10 corn hybrids grown at Raymond, Mississippi, 1999.

Hybrid	Brand	Silage yield[1]	Grain yield	Crude protein	Acid detergent fiber
		tons/A	*bu/A*	*pct*	*pct*
N83-N5	Novartis	22.9	187.2	9.1	30.4
TV 2930	Terral	20.8	163.2	9.4	31.0
RX 913	Asgrow	20.4	167.7	9.3	28.9
DK 714	DEKALB	20.3	184.6	8.7	29.6
859IT	SS	19.4	157.3	9.6	29.6
DK 697	DEKALB	18.7	176.8	9.2	29.3
897	SS	18.7	175.2	8.9	32.8
849IT	SS	18.6	198.2	9.8	30.9
RX 897	Asgrow	18.6	174.3	8.8	30.3
943	SS	17.9	185.4	8.9	29.0
Overall Mean		19.6	177.0	9.2	30.2
LSD (.10)		3.3	22.6	.6	4.1
CV (%)		13.9	10.6	5.9	11.3
R^2 (%)		35.8	37.5	41.2	22.6

[1]At 35 percent dry matter.

Table 8. Forage quality estimates for 10 corn hybrids grown at Raymond, 1999.[1]

Hybrid	Brand	NE lactation	NE gain	NE maintenance	TDN estimate
		MC/cwt	*MC/cwt*	*MC/cwt*	*pct*
N83-N5	Novartis	68.8	42.3	69.2	66.6
TV 2930	Terral	68.3	41.7	68.6	66.1
RX 913	Asgrow	69.8	43.5	70.6	67.5
DK 714	DEKALB	69.4	42.9	70.0	67.1
859IT	SS	69.4	43.0	70.0	67.1
DK 697	DEKALB	69.6	43.3	70.4	67.4
897	SS	66.8	40.0	66.7	64.9
849IT	SS	68.3	41.8	68.7	66.2
RX 897	Asgrow	68.8	42.3	69.3	66.6
943	SS	69.9	43.5	70.7	67.5
Overall Mean		68.9	42.4	69.4	66.7
LSD (.10)		3.2	3.8	4.2	2.9
CV (%)		3.9	7.3	5.0	3.6
R^2 (%)		22.8	22.5	22.6	22.7

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

Table 9. Phosphorus, calcium, potassium, and magnesium content of 10 corn hybrids grown at Raymond, Mississippi, 1999.

Hybrid	Brand	Percent silage mineral content			
		P	CA	K	MG
N83-N5	Novartis	.24	.31	.94	.24
TV 2930	Terral	.24	.35	1.07	.24
RX 913	Asgrow	.25	.31	1.00	.23
DK 714	DEKALB	.23	.34	.99	.24
859IT	SS	.25	.34	1.04	.25
DK 697	DEKALB	.24	.33	.97	.24
897	SS	.23	.34	1.05	.24
849IT	SS	.24	.38	1.10	.27
RX 897	Asgrow	.22	.33	.99	.23
943	SS	.23	.32	.91	.23
Overall Mean		.23	.34	1.01	.24
LSD (.10)		.02	.04	.12	.02
CV (%)		7.77	10.35	10.05	6.53
R^2 (%)		30.95	41.05	40.53	45.45

Table 10. Characteristics of hybrids in the Mississippi Corn Silage Trials, 1999.

Company	Hybrid	Planting rate (X 1000)	Days to maturity	Grain texture[1]	MDIV resistance[2]	MCDV resistance[2]
Monsanto P. O. Box 359 Marion, AR 72364 870-739-4431	RX 897 RX 913	24 24	115 117	– –	– –	– –
Monsanto 3100 Sycamore Rd. Dekalb, IL 60115 815-758-9323	DK714 DK697	28 28	– 119	– M	– –	– –
Novartis Seeds, Inc. 100 Sangria Drive Hattiesburg, MS 39401 601-264-2878	N83-N5	24	119	H	–	–
Southern States Coop P. O. Box 26234 6606 West Broad St. Richmond, VA 23260 804-281-1253	859IT 849IT 943 897	28 28 28 28	119 119 – –	M M – –	MR MR – –	MR MR – –
Terral Seed, Inc. P. O. Box 826 Lake Providence, LA 71254 318-559-2840	TV2930	24	118	M	R	R

[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.