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Cotton, Rice and Sunflower

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FIGURE 1. TEST SITE LOCATIONS.

- TEST LOCATION
- C COTTON TRIAL
- R RICE TRIAL
- S SUNFLOWER TRIAL

TABLE 1. RAINFALL AND TEMPERATURE DURING 1984.

LOCATION	MONTH	RAINFALL			TEMPERATURE		
		INCHES	DEPART. FROM NORMAL	RAINY DAYS	° F	DEPART. FROM NORMAL	90° OR ABOVE
COLUMBIA	APRIL	7.2	+3.4	11	52.5	-2.3	0
	MAY	3.5	-1.0	8	60.8	-3.3	0
	JUNE	5.5	+3.1	9	74.4	+1.5	3
	JULY	1.7	-1.8	1	75.5	-2.3	14
	AUGUST	1.1	-1.8	2	77.0	+1.0	19
CLARKTON*	APRIL	4.8	+0.4	10	56.9	-3.0	0
	MAY	9.9	+5.4	7	62.0	-7.6	0
	JUNE	3.5	-0.2	5	79.0	+1.7	16
	JULY	1.3	-2.1	6	77.5	-3.2	15
	AUGUST	2.5	-0.3	4	76.5	-2.5	5
SENATH*	APRIL	4.6	—	8	57.9	—	0
	MAY	9.9	—	7	65.7	—	1
	JUNE	1.2	—	4	79.6	—	23
	JULY	1.7	—	7	78.5	—	23
	AUGUST	2.2	—	3	78.0	—	20
PORTAGEVILLE	APRIL	4.8	+0.4	10	56.9	-3.0	0
	MAY	9.9	+5.4	7	62.0	-7.6	0
	JUNE	3.5	-0.2	5	79.0	+1.7	16
	JULY	1.3	-2.1	6	77.5	-3.2	15
	AUGUST	2.5	-0.3	4	76.5	-2.5	5

— DATA NOT AVAILABLE.

* CLARKTON (PORTAGEVILLE DATA), SENATH (KENNETT DATA).

PART I

COTTON - 1984

This report is a contribution of the Department of Agronomy, University of Missouri Agricultural Experiment Station, which reports on Research Project 363. The work was supported in part by funds from the Missouri Seed Improvement Association and fees from the companies submitting varieties for evaluation.

Cotton variety trials became part of the University of Missouri's crop performance testing program in 1978. These tests are conducted to provide a reliable, unbiased, up-to-date source of information for comparing varieties.

COMPARING VARIETIES

In each trial, the "top yielding varieties" have been identified. These varieties are those that did not yield significantly less than the highest yielding variety in the test. They are denoted in the tables by an asterisk (*) next to their yields. Thus, by going down a column, the highest yielding varieties in a trial can be readily identified. By going across, the relative performance of a variety during several years or at several locations can be evaluated. From the standpoint of yield, the most desirable varieties will be those which rank among the "top yielding" group (that is, have an asterisk) the greatest number of times.

Although yield usually receives first consideration, other agronomic characteristics may be equally important when selecting a cotton variety. For southeastern Missouri, maturity, seedling vigor, and reactions to diseases are among the additional characteristics that deserve careful consideration. Late maturing varieties can be injured by early fall frost, particularly when planting is delayed. High seed viability and good seedling vigor help insure uniform and adequate stands under occasionally adverse conditions. Several prevalent diseases can markedly reduce final yield of susceptible varieties. Thus, all the information presented in this report should be considered when selecting a variety.

The Missouri Agricultural Experiment Station does not make specific recommendations for varieties. It is suggested that the farmers growing a new variety for the first time consider the information contained in this report and then grow a small acreage to determine adaptability. This should be the practice for all new varieties regardless of origin.

EXPERIMENTAL PROCEDURES

Three locations were selected to represent the soil diversity in the cotton growing area of southeastern Missouri. These locations were the University of Missouri's Rhodes Farm near Clarkton (sandy soil), the Delta Research Center near Portageville (clay soil), and the David Andrews farm near Senath (loam soil). The Clarkton test was on a site infested with *Fusarium* wilt and root knot nematode. Locations of the sites are shown on Figure 1, Page 3.

Entries. All producers of cotton seed were eligible to enter varieties in the 1984 evaluation trials. Participation was voluntary and no control was exercised by the program over which or how many varieties were entered. However, to help finance the evaluation program, a fee of \$80 per location was charged for each entry entered by the seed producer. A total of 16 cotton varieties were compared in 1984.

Field Plot Design. The tests were arranged in a randomized block design with four replications. Plots consisted of four rows, 38 inches wide (30 inches

wide at Portageville) and 40 feet long. The two center rows were used for all yield and quality information.

Plot Management. The tests were planted and harvested with commercial equipment modified for small plot work. Details of the management practices followed at each location are given in Table 2, Page 8, and rainfall and temperature are given in Table 1, Page 4.

Data Recorded. Seedling vigor notes were taken soon after emergence to give a relative indication of survival capabilities of the young plants. Seedling vigor was rated on a scale of 1 to 5 with 1 indicative of high vigor and 5 indicative of low vigor. The total number of plants in the center two rows of each plot were counted and converted to number of plants per acre. At maturity, height, lodging, and yield were measured. Height was taken as the average distance in inches from the soil surface to the top of the plant. Lodging, which gives the degree of erectness, was scored on a scale of 1 to 5 with 1 indicating that all plants were erect (no lodging) and 5 indicating that 80 percent, or more, of the plants were lodged. Yield was measured in total pounds of lint per acre. This value was calculated by multiplying the gin percentage (lint percentage) by the total seed cotton yield. Fiber quality characteristics were determined for each variety utilizing lint cotton samples from two replications at each test location. These characteristics and their importance are described below. Their values were determined at Starlab, Inc., Knoxville, Tennessee.

- A. Micronaire: The micronaire test provides a combined measure of maturity and fineness of cotton fibers. Fiber maturity is a relative measure of the cell-wall development throughout the entire length of the cotton fiber. Immature fibers result in decreased rates of processing, dyeing problems, and the production of yarns and fabrics with low appearance grade. Fineness is a relative measure of either the diameter of individual cotton fibers or the weight per unit length. Fine cottons produce stronger yarns but require reduced rate of processing.

In the test, air is passed through a compressed sample of cotton fiber. The rate of flow through the sample follows a relationship between diameter or thickness of the textile fibers and the air resistance they provide. Finer fibers result in greater resistance and, therefore, a lesser air flow. Value recorded can be interpreted as follows:

4.9 and above = coarse fibers
3.5 to 4.8 = premium range
3.4 and below = fine and often immature

- B. Length: Long-fibered cottons are desirable because fiber length relates positively to yarn strength, spinning of finer yarns, and high speed processing. The 2.5 percent span length measures the length in inches spanned by 2.5 percent of the fibers. The 50 percent span length is another measurement of fiber quality. This measures the length in inches spanned by 50 percent of the fiber.
- C. Elongation: Cottons having high fiber elongation values have less end breakage during the weaving process than those with low values. The elongation figure is expressed in percent elongation at the breaking point. The following designations will aid in the interpretation of the elongation values.

Descriptive Designation	Fiber Elongation
	—Per cent—
Very low	5.3 and below
Low	5.4 - 6.2
Average	6.3 - 7.1
High	7.2 - 8.0
Very high	8.1 and above

- D. Strength: Yarn strength and ease of manufacturing are correlated positively with strong-fibered cottons. The following chart categorizes strength readings and aids in the interpretation of strength values.

Strength Rating	Fiber Elongation
	—grams/tex—
Very high	above 24.9
High	23.0 - 24.9
Average	21.0 - 22.9
Low	19.0 - 20.9
Very low	Below 19.0

RESULTS

Sixteen cotton varieties were evaluated at Clarkton on a sandy soil, at Portageville on a clay soil, and at Senath on a sandy loam soil in 1984.

Average yields (Table 3) for the three test locations ranged from 449 pounds of cotton per acre at Portageville to 1064 pounds of cotton per acre at Senath. Overall mean yield for all locations was 658 pounds per acre. Data on yield and fiber characteristics are summarized in Tables 4 - 5 (Clarkton), Tables 6 - 7 (Portageville), Tables 8-9 (Senath), and Tables 10-11 (Location Summary).

Clarkton: This trial was grown on a sandy soil with a high degree of Fusarium wilt and root-knot nematode. Irrigation was used to relieve drought stress on the sandy soils. Early season winds hampered seedling emergence.

Portageville: This trial was grown on a Sharkey clay soil. Because of prolonged cold, wet weather in May, this trial was erratic in seedling emergence. This test was irrigated.

Senath: The trial at this location was on a deep loam soil. There was a loss of plant population at this location due to blowing sand and cool weather, but little or no other adverse pressure. This location was irrigated to relieve any chance of drought stress.

TABLE 2. CULTURAL PRACTICES OF THE 1984 COTTON TRIALS.

LOCATION (COUNTY)	COOP- ERATOR	N-P ₂ O ₅ -K ₂ O	HERBICIDE	INSECT- TICIDE	DATE OF PLANT.	DATE OF HARVEST
CLARKTON (DUNKLIN)	JOE SCOTT*	43-18-36	TREFLAN	TERRA- CHLOR TSX	5-14	11-05
PORTAGE- VILLE (PEMISCOT)	JOE SCOTT*	49-18-36	COTORAN	TERRA- CHLOR TSX	5-24	11-09
SENATH (DUNKLIN)	DAVID ANDREWS	55-30-60	ZORIAL+ COTORAN	TERRA- CHLOR S-X	5-01	10-04

* EXPERIMENT STATION MANAGER.

TABLE 3. 1984 COTTON SUMMARY

LOCATION	YIELD (POUNDS/ACRE)		DATA TABLE
	RANGE	AVERAGE	
CLARKTON	379 - 553	460	4
PORTAGEVILLE	0 - 703	449	6
SENATH	954 - 1174	1064	8

TABLE 4. YIELD PERFORMANCE OF COTTON VARIETIES GROWN NEAR CLARKTON, MISSOURI DURING 1982-84.

PLANTED: 14 MAY 1984. HARVESTED: 5 NOVEMBER 1984.

BRAND/VARIETY	MAT- URITY DATE	STAND (PL/A)	LOD- STORM GING RES.		HGT. (IN)	LINT (%)	TOTAL LINT (LBS/ACRE)		
			(1-5)	(1-5)			1984	1983	1982
MO 78-344	7-18	47175	1	2	36	37.9	553**	--	--
COKER 310	7-16	29496	1	2	36	35.5	553*	436*	640**
COKER 3131	7-17	43825	2	2	33	37.2	538*	293*	566*
DELCOT 311	7-17	37123	1	2	33	37.7	526*	438*	599*
COKER 304	7-15	47308	1	2	30	36.1	504*	415*	565*
NORTHROP KING KNX2019	7-17	44706	1	3	36	34.2	487*	--	--
COKER 315	7-16	39945	1	2	33	37.0	458*	495**	559*
DELTAPINE 50	7-17	45279	1	3	32	34.1	449*	--	--
DELTAPINE NSL	7-16	40606	2	3	33	35.5	434*	--	--
COKER 208	7-17	40341	1	2	36	35.6	427*	--	--
DELTAPINE 61	7-18	36329	2	3	35	35.1	421*	--	--
DELCOT 390	7-17	44045	2	3	30	36.6	419*	--	--
DELTAPINE 90	7-17	52378	1	2	38	34.5	415*	357*	628*
NORTHROP KING KNX8136	7-19	44662	1	2	35	36.1	406*	--	--
BRYCOT 199	7-18	51364	1	3	35	35.7	394*	416*	--
DELTAPINE 102	7-17	41796	2	3	32	35.8	379*	--	--
TRIAL MEAN		42899	1	2	34	35.9	460	387	575
NSD .05							NS	NS	NS

-- DATA NOT AVAILABLE.

** HIGHEST YIELDING VARIETY IN THE TEST.

* VARIETY WHICH DID NOT YIELD SIGNIFICANTLY LESS THAN THE HIGHEST YIELDING VARIETY IN THE TEST.

NS NOT SIGNIFICANT AT THE 5% LEVEL.

TABLE 5. FIBER CHARACTERISTICS OF COTTON VARIETIES GROWN NEAR CLARKTON, MISSOURI DURING 1984.

PLANTED: 14 MAY 1984. HARVESTED: 5 NOVEMBER 1984.

BRAND/VARIETY	MICRO- NAIRE	STAPLE LENGTH		ELONGATION (%)	STRENGTH (G/TEX)
		(50%)	(2.5%)		
BRYCOT 199	3.90	0.53	1.15	9.88	20.6
COKER 208	3.65	0.50	1.09	7.38	21.9
COKER 304	3.40	0.53	1.17	7.88	22.4
COKER 310	3.50	0.53	1.17	7.38	22.4
COKER 3131	3.60	0.52	1.13	8.38	20.4
COKER 315	3.65	0.53	1.18	7.38	23.5
DELCOT 311	3.60	0.54	1.13	9.25	22.5
DELCOT 390	3.90	0.53	1.12	8.00	22.8
DELTAPINE NSL	3.70	0.54	1.13	9.38	20.3
DELTAPINE 102	3.90	0.52	1.10	10.1	19.6
DELTAPINE 50	3.75	0.51	1.14	9.75	19.8
DELTAPINE 61	3.85	0.54	1.18	8.38	21.4
DELTAPINE 90	3.65	0.54	1.15	7.13	24.5
MO 78-344	3.75	0.52	1.17	7.75	22.5
NORTHROP KING KNX2019	3.75	0.52	1.15	7.63	20.2
NORTHROP KING KNX8136	3.95	0.52	1.13	8.13	21.5
TRIAL MEAN	3.72	0.53	1.15	8.36	21.7
NSD .05	NS	NS	0.03	1.12	1.8

NS NOT SIGNIFICANT AT THE 5% LEVEL.

TABLE 6. YIELD PERFORMANCE OF COTTON VARIETIES GROWN NEAR PORTAGEVILLE, MISSOURI DURING 1980, 82, AND 84.
PLANTED: 24 MAY 1984. HARVESTED: 9 NOVEMBER 1984.

BRAND/VARIETY	STAND (PL/A)	LOD- STORM GING RES.		HGT. (IN)	LINT (%)	TOTAL LINT (LBS/ACRE)		
		(1-5)	(1-5)			1984	1982	1980
NORTHRUP KING KNX2019	50150	2	2	33	34.2	703**	--	--
DELTAPINE 90	53612	2	1	35	36.7	682*	649	--
COKER 310	40656	2	2	33	36.2	646*	658	548*
BRYCOT 199	56851	2	2	33	35.5	620*	--	--
COKER 208	38369	2	1	32	35.3	595*	528	--
NORTHRUP KING KNX8136	53054	2	2	32	36.4	577*	--	--
MO 78-344	47916	2	2	34	37.7	556*	--	--
DELCOT 390	53166	3	3	29	37.2	531*	802*	--
DELTAPINE 50	49926	3	2	31	32.6	510*	--	--
COKER 315	55399	2	2	31	36.8	481*	470	476*
COKER 3131	53166	2	2	31	36.4	464*	605	561**
COKER 304	55064	2	1	30	34.7	435	559	521*
DELTAPINE 61	39874	2	2	31	37.1	379	--	--
DELCOT 311	--	--	--	--	--	0	834**	525*
DELTAPINE NSL	--	--	--	--	--	0	551	--
DELTAPINE 102	--	--	--	--	--	0	--	--
TRIAL MEAN	49823	2	2	32	35.9	449	651	475
LSD .05						252	150	99

-- DATA NOT AVAILABLE.

** HIGHEST YIELDING VARIETY IN THE TEST.

* VARIETY WHICH DID NOT YIELD SIGNIFICANTLY LESS THAN THE HIGHEST YIELDING VARIETY IN THE TEST.

TABLE 7. FIBER CHARACTERISTICS OF COTTON VARIETIES GROWN NEAR PORTAGEVILLE, MISSOURI DURING 1984.
PLANTED: 24 MAY 1984. HARVESTED: 9 NOVEMBER 1984.

BRAND/VARIETY	MICRO- NAIRE	STAPLE LENGTH		ELONGATION (%)	STRENGTH (G/TEX)
		(50%)	(2.5%)		
BRYCOT 199	3.20	0.55	1.19	9.00	21.8
COKER 208	3.60	0.52	1.13	8.50	22.6
COKER 304	3.30	0.55	1.20	7.50	25.1
COKER 310	3.40	0.56	1.20	7.50	23.3
COKER 3131	3.40	0.55	1.17	8.25	22.6
COKER 315	3.40	0.57	1.22	8.88	23.7
DELCOT 390	3.50	0.55	1.17	8.25	24.3
DELTAPINE 50	3.50	0.55	1.17	9.75	20.3
DELTAPINE 61	3.25	0.54	1.18	9.50	22.8
DELTAPINE 90	3.40	0.56	1.17	8.00	24.3
MO 78-344	3.65	0.56	1.19	9.25	23.6
NORTHRUP KING KNX2019	3.65	0.54	1.17	7.25	23.1
NORTHRUP KING KNX8136	3.40	0.56	1.18	8.25	23.0
TRIAL MEAN	3.43	0.55	1.18	8.45	23.1
LSD .05	NS	0.02	NS	1.26	NS

NS NOT SIGNIFICANT AT THE 5% LEVEL.

TABLE 8. YIELD PERFORMANCE OF COTTON VARIETIES GROWN NEAR SENATH, MISSOURI DURING 1982-84.
PLANTED: 1 MAY 1984. HARVESTED: 4 OCTOBER 1984.

BRAND/VARIETY	MAT- URITY DATE	STAND (PL/A)	LOD- STORM GING RES.		HGT. (IN)	LINT (%)	TOTAL LINT (LB S/ACRE)		
			(1-5)	(1-5)			1984	1983	1982
DELTAPINE 50	7-12	38446	1	2	36	35.0	1174**	--	--
NORTHRUP KING KNX2019	7-12	34698	1	2	42	36.9	1157*	--	--
DELTAPINE 90	7-10	39372	1	2	40	37.7	1132*	670*	797*
COKER 315	7- 9	31259	1	2	34	40.6	1119*	643*	915*
MO 78-344	7-12	33860	1	2	35	37.4	1105*	--	--
NORTHRUP KING KNX8136	7-10	37520	1	2	34	37.0	1104*	--	--
COKER 208	7-12	32979	1	2	37	38.1	1099*	--	--
COKER 3131	7-13	26718	1	2	33	37.5	1094*	706*	848*
BRYCOT 199	7-11	32317	1	2	38	38.1	1088*	712*	--
DELTAPINE 102	7-12	39372	2	2	32	36.3	1034*	--	--
DELCOT 390	7-11	32405	1	2	35	37.8	1022*	--	--
DELTAPINE 61	7- 9	28085	1	2	34	38.2	1000*	--	--
DELCOT 311	7-13	30510	1	1	34	38.3	996*	639*	793*
COKER 310	7-11	27071	1	2	37	36.7	974*	605*	1031**
COKER 304	7-10	35095	1	2	33	36.0	964*	663*	896*
DELTAPINE NSL	7-11	34654	2	2	36	38.6	954*	--	--
TRIAL MEAN		33397	1	2	36	37.5	1064	658	843
LSD .05							NS	NS	NS

-- DATA NOT AVAILABLE.

** HIGHEST YIELDING VARIETY IN THE TEST.

* VARIETY WHICH DID NOT YIELD SIGNIFICANTLY LESS THAN THE HIGHEST YIELDING VARIETY IN THE TEST.

NS NOT SIGNIFICANT AT THE 5% LEVEL.

TABLE 9. FIBER CHARACTERISTICS OF COTTON VARIETIES GROWN NEAR SENATH, MISSOURI DURING 1984.
PLANTED: 1 MAY 1984. HARVESTED: 4 OCTOBER 1984.

BRAND/VARIETY	MICRO- NAIRE	STAPLE LENGTH		ELONGATION (%)	STRENGTH (G/TEX)
		(50%)	(2.5%)		
BRYCOT 199	3.65	0.55	1.19	9.38	22.1
COKER 208	3.65	0.54	1.16	7.13	21.7
COKER 304	3.00	0.55	1.22	7.88	24.3
COKER 310	3.15	0.55	1.21	7.13	24.7
COKER 3131	3.40	0.55	1.18	8.13	23.2
COKER 315	3.20	0.55	1.20	7.75	24.3
DELCOT 311	3.30	0.56	1.18	9.63	24.5
DELCOT 390	3.35	0.54	1.17	8.75	23.0
DELTAPINE NSL	3.75	0.54	1.16	9.38	21.8
DELTAPINE 102	3.70	0.53	1.13	9.00	21.0
DELTAPINE 50	3.75	0.55	1.19	9.00	21.3
DELTAPINE 61	3.60	0.55	1.17	8.25	22.9
DELTAPINE 90	3.70	0.54	1.18	7.75	25.2
MO 78-344	3.40	0.55	1.20	7.63	24.9
NORTHRUP KING KNX2019	3.80	0.54	1.21	7.38	22.9
NORTHRUP KING KNX8136	3.60	0.55	1.19	8.38	22.7
TRIAL MEAN	3.50	0.55	1.18	8.28	23.2
LSD .05	0.38	NS	0.03	1.06	1.1

NS NOT SIGNIFICANT AT THE 5% LEVEL.

TABLE 10. YIELD PERFORMANCE OF COTTON VARIETIES GROWN AT THREE SOUTHEAST MISSOURI LOCATIONS (CLARKTON, PORTAGEVILLE, AND SENATH) DURING 1984.

BRAND/VARIETY	1984 THREE LOCATION AVERAGE								
	STAND (PL/A)	LOD- STORM GING RES.		HGT. (IN)	LINT (%)	TOTAL LINT (LBS/ACRE)			MEAN
		(1-5)	(1-5)			CLARK.	PORT.	SENATH	
NORTHRUP KING KNX2019	43613	1	2	37	35.1	487*	703**	1157*	782**
DELTAPINE 90	48063	1	2	37	36.3	415*	682*	1132*	743*
MO 78-344	43244	1	2	35	37.7	553**	556*	1105*	738*
COKER 310	32408	1	2	35	36.1	553**	646*	974*	724*
DELTAPINE 50	45016	1	2	33	33.9	449*	510*	1174**	711*
COKER 208	38080	1	2	35	36.3	427*	595*	1099*	707*
BRYCOT 199	45858	1	3	35	36.4	394*	620*	1088*	701*
COKER 3131	41236	2	2	32	37.0	538*	464*	1094*	699*
NORTHRUP KING KNX8136	45358	1	2	34	36.5	406*	577*	1104*	696*
COKER 315	41717	1	2	32	38.1	458*	481*	1119*	686*
DELCOT 390	43038	2	3	31	37.2	419*	531*	1022*	657
COKER 304	45655	1	2	31	35.6	504*	435	964*	635
DELTAPINE 61	34763	1	2	33	36.8	421*	379	1000*	600
DELCOT 311#	33817	1	2	34	38.0	526*	0	996*	507
DELTAPINE 102#	40584	2	3	32	36.1	379*	0	1034*	471
DELTAPINE NSL#	37630	2	3	35	37.1	434*	0	954*	463
TRIAL MEAN	42034	1	2	34	36.5	460	449	1064	658
LSD .05						NS	252	NS	100

-- DATA NOT AVAILABLE.

** HIGHEST YIELDING VARIETY IN THE TEST.

* VARIETY WHICH DID NOT YIELD SIGNIFICANTLY LESS THAN THE HIGHEST YIELDING VARIETY IN THE TEST.

TWO LOCATION MEANS ONLY FOR ALL CHARACTERISTICS EXCEPT YIELD.

NS NOT SIGNIFICANT AT THE 5% LEVEL.

TABLE 11. SUMMARY PERFORMANCE OF COTTON VARIETIES GROWN AT THREE SOUTHEAST MISSOURI LOCATIONS (CLARKTON, PORTAGEVILLE, AND SENATH) DURING 1984.

BRAND/VARIETY	1984 THREE LOCATION AVERAGE				
	MICRO- NAIRE	STAPLE LENGTH		ELONGATION (%)	STRENGTH (G/TEX)
		(50%)	(2.5%)		
BRYCOT 199	3.58	0.54	1.18	9.43	21.5
COKER 203	3.63	0.52	1.13	7.67	22.1
COKER 304	3.23	0.54	1.20	7.75	23.9
COKER 310	3.35	0.55	1.19	7.34	23.5
COKER 3131	3.47	0.54	1.16	8.25	22.1
COKER 315	3.42	0.55	1.20	8.00	23.8
DELCOT 311#	3.45	0.55	1.16	9.44	23.5
DELCOT 390	3.58	0.54	1.15	8.33	23.4
DELTAPINE NSL#	3.73	0.54	1.15	9.38	21.1
DELTAPINE 102#	3.80	0.53	1.12	9.55	20.3
DELTAPINE 50	3.67	0.54	1.17	9.50	20.5
DELTAPINE 61	3.57	0.54	1.18	8.71	22.4
DELTAPINE 90	3.62	0.55	1.17	7.63	24.7
MO 78-344	3.60	0.54	1.19	8.21	23.7
NORTHRUP KING KNX2019	3.73	0.53	1.18	7.42	22.1
NORTHRUP KING KNX8136	3.65	0.53	1.17	8.25	22.4
TRIAL MEAN	3.55	0.54	1.17	8.36	22.7
LSD .05	NS	0.01	0.01	0.62	1.1

NS NOT SIGNIFICANT AT THE 5% LEVEL.

TWO LOCATION MEANS ONLY.

TABLE 12. NAMES OF COTTON ENTRIES EVALUATED IN 1984 AND THEIR SEED SOURCES.

BRAND	VARIETY	SEED SOURCE
BRYCOT	199	BRYCO, INC., BOX C, LEACHVILLE, AR 72438
COKER	208, 304, 310, 315, 3131	COKER'S PEDIGREED SEED CO., BOX 340, HARTSVILLE, SC 29550
DELCOT	311, 390, MO 78-344	ENTERED BY STATE RESEARCH STATION AND CENTERS
DELTAPINE	50, 61, 90, 102, NSL	DELTA & PINE LAND COMPANY, BOX 157, SCOTT, MS 38772
NORTHRUP KING	KNX8136, KNX2019	NORTHRUP KING COMPANY, P.O. DRAWER 272, LELAND, MS 38756

PART II

RICE

1984

This report is a contribution of the Department of Agronomy, University of Missouri Agricultural Experiment Station, which reports on Research Project 363. The work was supported in part by funds from Anheuser-Busch Companies, Inc. and from the Missouri Seed Improvement Association.

Rice variety tests became part of the University of Missouri's crop performance testing program in 1983. These tests are conducted to provide a reliable, unbiased, up-to-date source of information to compare varieties.

COMPARING VARIETIES

In each trial, the "top yielding varieties" have been identified. These varieties are those that did not yield significantly less than the highest yielding variety in the test. They are denoted in the tables by an asterisk (*) next to their yields. Thus, by going down a column, the highest yielding varieties in a trial can be readily identified. By going across, the relative performance of a variety during several years or at several locations can be evaluated. From the standpoint of yield, the most desirable varieties will be those among the "top yielding" varieties (that is, have an asterisk) the greatest number of times.

Although yield usually receives first consideration, other agronomic characteristics may be equally important when selecting a rice variety. In southeastern Missouri late maturing varieties may lead to unfavorable harvest conditions in late fall. High seed viability and good seedling vigor help insure uniform and adequate stands under occasionally adverse conditions. Thus, all the information presented in this report should be considered when selecting a variety.

The Missouri Agricultural Experiment Station does not make specific recommendations for varieties. It is suggested that farmers growing a new variety for the first time consider the information contained in this report and then grow a small acreage to determine adaptability. This should be the practice for all new varieties regardless of origin.

EXPERIMENTAL PROCEDURES

A location was selected to represent the soil in the rice growing area of southeastern Missouri on the Delta Research Center near Portageville. Three rice performance tests were planted there.

Entries. All three tests were conducted in cooperation with the rice producing states of Arkansas, Louisiana, Texas, Mississippi and California. Only public varieties were evaluated.

Field Plot Design. Individual entries were planted in six-row plots with four replications. Arrangement of plots within the field followed a randomized block design. Each plot had a row length of 16 feet and a between-row spacing of 7.5 inches. The two center rows were used for all yield and quality information.

Cultural Practices. The 1984 rice tests were planted on May 25. A cone-type drill planter was used to plant all plots. Although crusting delayed emergence, most plots emerged 10 days after planting. Eighteen days after emergence, the rice tests were flooded. Water depth was maintained at 2-3 inches throughout the season.

All plots received a pre-plant application of 120 pounds of nitrogen in the form of sulfur coated urea and 10 pounds of nitrogen in the form of ammonium nitrate at internode elongation.

Preplant herbicides used were Stam, for control of broadleaves and some grasses, and Prowl for residual control of aquatic grasses.

Plot Management. The tests were planted with commercial equipment modified for small plot work and were hand weeded to achieve optimum weed control.

Data Recorded. Rainfall and temperature data were noted throughout the season (Table 1). Maturity date notes were taken at 50% heading for each variety. At harvest, height, lodging, and yield were measured. Height was taken as the average distance in inches from the soil surface to the top of the plant. Lodging was scored as a percentage of those plants leaning more than 30 degrees from verticle. Yield was measured in total pounds of rice per acre and reported at 12 percent moisture.

RESULTS

Thirty-one rice varieties were evaluated at southeastern Missouri during 1984. Yields for the three tests ranged from 4428 to 11,170 pounds of rice per acre. Performance of experimental lines was very encouraging, providing tentative hope that high yielding, early maturing varieties can be selected for the Missouri bootheel.

TABLE 13. YIELD PERFORMANCE OF SHORT SEASON RICE VARIETIES GROWN ON THE DELTA RESEARCH CENTER NEAR PORTAGEVILLE IN 1983-84. PLANTED: 25 MAY 1984. HARVESTED: 3 OCTOBER 1984.

BRAND/VARIETY	MAT- URITY DATE	PLANT HGT. (IN)	LODGING SCORE (%)	MOIST- TURE (%)	YIELD (LB/A)	
					1984	1983
L202	8-15	33	0.0	16.7	8378**	--
RU8101116	8-20	38	0.0	17.1	7455*	7314*
M201	8-14	33	0.0	17.8	6782	6707
TEBONNET	8-16	45	0.0	17.4	6608	7343*
S201	8-23	35	0.0	19.3	6518	7011
LEBONNET	8-22	41	2.5	17.2	6490	6576
MARS	8-23	41	1.3	20.5	6167	7081
NEWREX	8-17	41	1.3	16.9	5889	6818
RU8301102	8-15	43	3.8	16.2	5727	--
LABELLE#	8-14	45	1.3	15.3	5092	6519
BOND	8-15	41	0.0	16.1	4428	6781
TRIAL MEAN		40	9.3	17.2	6149	6993
LSD .05					1194	584

-- DATA NOT AVAILABLE.

** HIGHEST YIELDING VARIETY.

* VARIETY WHICH DID NOT YIELD SIGNIFICANTLY LESS THAN THE HIGHEST YIELDING VARIETY IN THE TEST.

CHECK VARIETY.

TABLE 14. YIELD PERFORMANCE OF MEDIUM SEASON RICE VARIETIES GROWN ON THE DELTA RESEARCH CENTER NEAR PORTAGEVILLE IN 1983-84. PLANTED: 25 MAY 1984. HARVESTED: 9 NOVEMBER 1984.

BRAND/VARIETY	MAT- URITY DATE	PLANT HGT. (IN)	LODGING SCORE (%)	MOIST- TURE (%)	YIELD (LB/A)	
					1984	1983
RU8101136	8-22	38	5.0	10.3	11170**	7599**
MARS	8-27	42	80.0	10.0	9582*	7118*
RU8201034	8-23	40	25.0	10.1	9046	7360*
RU8101148	8-25	40	20.0	10.3	8360	--
STG80L6928	8-27	42	0.0	9.9	7656	--
RU8302048	8-28	34	0.0	10.3	7329	--
NEWBONNET	8-30	40	0.0	10.0	6681	--
LEMONT	8-26	31	0.0	10.0	6387	--
STG80L7944	8-30	42	0.0	10.3	6285	--
M302	8-24	41	11.3	9.9	6244	--
LEAH	8-27	34	0.0	10.1	5931	--
LEBONNET#	8-25	40	42.5	10.5	5314	6300
TRIAL MEAN		39	15.3	10.2	7499	6573
LSD .05					1936	705

-- DATA NOT AVAILABLE.

** HIGHEST YIELDING VARIETY.

* VARIETY WHICH DID NOT YIELD SIGNIFICANTLY LESS THAN THE HIGHEST YIELDING VARIETY IN THE TEST.

CHECK VARIETY.

TABLE 15. YIELD PERFORMANCE OF LONG SEASON RICE VARIETIES GROWN ON THE DELTA RESEARCH CENTER NEAR PORTAGEVILLE IN 1983-84. PLANTED: 25 MAY 1984. HARVESTED: 15 NOVEMBER 1984.

BRAND/VARIETY	MAT- URITY DATE	PLANT HGT. (IN)	LODGING SCORE (%)	MOIST- TURE (%)	YIELD (LB/A)	
					1984	1983
RU8102066	8-29	38	0.0	12.1	8192**	--
LEMONT	8-27	30	0.0	12.0	7987*	--
RU8003050	8-26	34	0.0	12.4	7881*	--
NEUBONNET	8-30	37	0.0	12.3	7823*	--
NORTAI	9- 1	38	7.5	12.4	7738*	--
STG80L3642	9- 2	34	0.0	12.7	7060*	--
STG803645	9- 1	39	0.0	11.8	6982*	--
STG80L3673	9- 1	39	2.5	12.2	6733*	--
RUS101178	9- 2	42	11.3	11.6	5913	--
STG808962	9- 7	41	1.3	11.3	5487	--
STARBONNET#	9- 7	41	1.3	12.2	5359	--
RU8201064	9- 1	42	11.3	11.0	4627	--
TRIAL MEAN		38	3.9	12.0	6815	
LSD .05					1557	

-- DATA NOT AVAILABLE.

** HIGHEST YIELDING VARIETY.

* VARIETY WHICH DID NOT YIELD SIGNIFICANTLY LESS THAN THE HIGHEST YIELDING VARIETY IN THE TEST.

CHECK VARIETY.

PART III

SUNFLOWER - 1984

EXPERIMENTAL PROCEDURES - 1984

Sunflower performance trials were planted at one location in 1984 (Figure 1, Page 3). This test was complimented with management studies designed to provide local information regarding cultural practices for the crop.

Entries. All producers of hybrid seed were eligible to enter hybrids in the evaluation plots. Participation was voluntary and no control was exercised by the program over which, or how many, hybrids were entered. However, to help finance the evaluation program, a fee of sixty dollars was charged for each entry entered by the seed producer. A total of 11 sunflower hybrids were entered in the 1984 evaluation program.

Field Plot Design. The test was arranged in a randomized complete block design with four replications. Plots consisted of four rows, 30 inches wide and 24 feet long. Only the center two rows were harvested for yield.

Cultural Practices. The test was planted with commercial equipment modified for small plot work. Fertilizer applied in 1984 was 150 lbs. of nitrogen, 110 lbs. of P₂O₅, and 200 lbs. of K₂O. Sunflower hybrids were planted on May 9 at a population of 22,300 seeds per acre, and hand harvested on August 27. Amiben was the herbicide used and Ambush was applied to reduce head moth damage.

Data Recorded. Bloom date was recorded when 50% of the plants in a plot had open heads. The other agronomic characteristics were evaluated at harvest. Population was determined by counting all plants in the two harvest rows of each plot. Those plants inclined more than 30 degrees from vertical were counted as lodged. Yield was measured in number of pounds per acre at a moisture content of 13 percent. An electronic moisture tester was used for all moisture readings.

RESULTS

Three companies entered a total of 11 sunflower hybrids in 1984. Names and addresses for the companies and hybrids are given in Table 17, Page 20.

Yields at Columbia ranged from 1163 to 2031 pounds per acre. Increased confidence can be placed in results from more than one year since they represent results from a larger sample of conditions. Birds, insects, and diseases were not problems during 1984.

TABLE 16. PERFORMANCE OF SUNFLOWER HYBRIDS EVALUATED NEAR COLUMBIA
ON THE AGRONOMY RESEARCH CENTER DURING 1982-84.
PLANTED: 16 MAY 1984. HARVESTED: 27 AUGUST 1984.

BRAND/HYBRID	50% BLOOM (DATE)	POPU- LATION (PL/A)	LOD- GING (%)	MOIS- TURE (%)	YIELD (LB/A)		
					1984	1983	1982
TRIUMPH 570A	7-20	9393	3.8	16.7	2031**	--	--
INTERSTATE 3001	7-16	8712	3.8	14.0	1912	--	--
TRIUMPH 549	7-16	8440	3.8	13.7	1884	2189	2361
SEEDTEC 317	7-19	8712	3.8	20.5	1782	--	--
INTERSTATE 7116	7-18	8576	3.8	18.4	1775	2214*	3354**
TRIUMPH 560	7-19	7351	1.3	10.1	1705	--	--
SEEDTEC S349	7-20	7623	2.5	16.4	1702	2327**	3032*
TRIUMPH 448	7-17	7215	0.0	10.4	1696	1778	2781*
INTERSTATE 7780	7-14	7895	3.8	21.5	1597	2024*	--
INTERSTATE 7775-S	7-19	6514	3.8	9.0	1557	2159*	3061*
ESTANZUELA YATAY	7-25	6534	1.3	32.7	1163	1709	--
TRIAL MEAN	7-18	7884	2.7	17.3	1693	1940	2714
LSD .05					NS	348	593

-- DATA NOT AVAILABLE.

** HIGHEST YIELDING HYBRID IN THE TEST.

* HYBRID WHICH DID NOT YIELD SIGNIFICANTLY LESS THAN THE HIGHEST
YIELDING HYBRID IN THE TEST.

NS NOT SIGNIFICANT AT THE 5% LEVEL.

TABLE 17. SOURCE OF COMMERCIAL SUNFLOWER SEED ENTERED IN THE 1984 MISSOURI YIELD TRIALS.

BRAND	HYBRID	COMPANY ADDRESS
INTERSTATE	3001, 7116, 7775-S, 7780	INTERSTATE SEED CO., BOX 470, FARGO, ND 58107
SEEDTEC	317, S349	SEEDTEC INT. INC., BOX 2210, WOODLAND, CA 95695
TRIUMPH	448, 549, 560, 570A	TRIUMPH SEED CO. INC., BOX 1050, RALLS, TX 79357
	ESTANZUELA YATAY	AGRICULTURAL EXPERIMENT STATION, ESTANZUELA, URUGUAY