



## **2001 COTTON RESEARCH VERIFICATION PROGRAM DEMONSTRATIONS**

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### **INTRODUCTION**

The University of Arkansas Cooperative Extension Service and Agricultural Experiment Station have been conducting the Cotton Research Verification Program (CRVP) since 1980. This is an interdisciplinary effort in which recommended production technology is applied in a timely manner to a specific farm field.

### **BACKGROUND INFORMATION**

General field information regarding location, acres per field, planting date, variety, yield and soil type is included in Table 1. The northernmost field was in Mississippi County and the most southern was in Desha County. This spread allowed the CRVP program to monitor the highly variable crop and environmental conditions throughout Arkansas in 2001. Field size ranged from approximately 37 acres in Jefferson County (Bonds) to 80 acres in Desha county (Walt). The average field size was about 54 acres for these six irrigated fields. The most diverse soils were those in the Mississippi and Poinsett county fields. Blowing sand from the fine sandy loam portions of the Poinsett County field caused seedling damage, but replanting was not conducted.

### **RESEARCH DESCRIPTION**

There were six fields enrolled in the 2001 CRVP demonstrations. All were irrigated. Two of the fields had center-pivot irrigation and four were furrow-irrigated. The fields were located from Desha (Walt) in the southern part of the state to Mississippi (Chandler) in the northeast part of the state.

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## RESULTS AND DISCUSSION

Since the inception of the CRVP in 1980, there have been 185 irrigated fields in the program. Average field size for the 2001 CRVP ranged from 37.5 acres (Jefferson-Bonds) to 80 acres (Desha-Walt). The yield of the six irrigated fields in the 2001 CRVP demonstrations had a weighted average of 939 pounds of lint per acre. The 2001 Arkansas state average is 823 pounds of lint per acre.

There were more nitrogen application problems during the 2001 CRVP demonstrations than normal and subsequently more N deficiency than normal. Four of the six fields showed N deficiency at some point during the season with most damage noted in mid- to late-season. The Jefferson-Bonds field had the lowest N levels during late season, but was the highest yielding.

Small boll shed was heavy throughout the state and more noticeable in fields where N deficiency was seen. Small boll shed was also noted in the two fields that did not indicate N stress through petiole analysis.

Bollworm/tobacco budworm pressure was relatively low in CRVP fields. This may have been due to the fact that five of the six fields had a cotton cultivar with the *Bt* gene. One field had an outbreak of armyworm and cotton bollworm during late season. Plant bugs and stink bugs were noted in all fields. Some pressure was extremely heavy at times. In other fields pressure was very erratic throughout the season. All six fields were planted to Roundup Ready varieties.

Yield and quality factors are the most commonly reported results cotton producers have been taught to examine. In 2001, there was a statewide problem with high micronaire cotton. This impacted directly on price received by producers who were already hurt by incredibly low cotton prices that resembled prices of decades ago. The weighted average yield for all six fields was computed to be 939 pounds per acre with a high of almost 1147 pounds lint per acre and a low of 767 pounds lint per acre (Table 1).

### Fiber Quality

Color grade information is presented in Table 2. Of the 689 total bales from all fields, 84% graded white with 80% grading 41 and better. Almost 63% of the bales graded 31 and better.

Short staple and high micronaire was a cause of concern throughout the state in 2001. Approximately 95% of all CRVP bales measured greater than a 34 staple length (Table 3).

High micronaire bales—measuring greater than 5.0—were evident in just over 34% of all bales (Table 4). Of the high micronaire bales, approximately 31% came from the three fields that used the PM 1218 BG/RR variety. This variety was the most widely used variety in the state during 2001.

Strength (Table 5) was good in most fields with over 97% of all bales averaging greater than 25.5 g/tex. About 3% of all bales fell into the premium range for strength with measurements of 29.5 g/tex and higher.

**Economics**

Table 6 shows the average breakeven prices needed above specified expenses. Direct expenses listed in Table 6 are those expenditures that would generally require annual cash outlays and would be included on an annual operating loan application. Direct expenses for the six irrigated CRVP fields ranged from \$287.05 per acre for Poinsett county to \$421.36 per acre for Desha county and averaged \$337.55 per acre. Direct expenses per pound of lint ranged from \$0.28 in Mississippi county to \$0.48 in Desha county and averaged \$0.36 per pound.

The fixed expenses category in Table 6 is the cost of owning and using farm equipment. Fixed expenses for the six irrigated fields ranged from \$76.29 per acre for Lee County to \$111.77 per acre for Mississippi County and averaged \$93.34 per acre. High fixed expenses can be the result of numerous trips across the field, twice-over picking, and/or center-pivot irrigation.

Total specified expenses are calculated to give the true picture of expenses. Not included in the total specified expenses in Table 6 are charges for land, risk, overhead, and management. Total specified expenses per acre for the six irrigated fields ranged from \$379.80 for Lee County to \$500.56 for Desha County. Total specified expenses per pound of lint ranged from \$0.36 to \$0.60 and averaged \$0.46 for the six fields.

Table 6 presents the cost of production per pound of lint after 25% of the yield is given to the landlord. (This is not meant to imply that this arrangement is normal or that it should be used in place of existing arrangements. It is simply a consistent measure to be used across all trials.) These break-even prices ranged from \$0.48 per pound in Jefferson County to \$0.80 per pound in Phillips County. The average cost of production for the six fields was \$0.61 per pound.

**SUMMARY**

A close look at the overall yields and quality factors of the 2001 CRVP fields indicates above average quality although yields were lower than expected in mid-season of each field. Small boll shed affected final yields in all fields. Although four of the six fields were N deficient at some point in the growing season, N deficiency alone did not necessarily cause the small boll sheds.

Quality factors of whiteness grade, staple, length, micronaire, and strength were above average and most CRVP cooperators' grade sheets indicated above loan-price quality existed.

Low commodity prices, however, were noted in much of the country and prices fell throughout the production and harvest season. Four of the six fields showed some profit potential above total specified costs plus rent where a 58-cent season average price was used. Total cost of production averaged 61 cents per pound of lint across all fields. This economic information indicated that there is a need for higher prices for cotton to enable producers to remain viable for the next crop year.

**Table 1. Irrigated field information, 2001 CRVP demonstrations.**

County-farmer	Acres	Variety	Date of planting	Yield (lint/acre)	Soil series
Desha-Walt	80.0	PM1218 BG/RR	30 April	875	Sharkey and Desha clays
Jefferson-Bonds	37.5	DP 451 B/RR	28 April	1147	Hebert and Rilla silt loams
Lee-McClendon	38.0	PM1218 BG/RR	10 May	879	Jeannerette silt loam; Marvell fine sandy loam; Zachary soils, frequently flooded
Mississippi-Chandler	75.0	ST 4793 R	5 May	1086	Dundee silt loam, Jeannerette silt loam, Sharkey silty clay loam, Sharkey-Steele complex, Steele loamy sand, Tiptonville and Dubbs silt loam
Phillips-Hargraves	56.0	ST 4892 BR	14 May	767	Convent silt loam
Poinsett-Baker	74.0	PM1218 BG/RR	2 May	917	Beulah fine sandy loam, Mhoon silt loam, Dundee silt loam

**Table 2. Color grades of fields, 2001 CRVP demonstrations.**

County	Grade								
	21	31	32	41	42	43	51	52	53
Desha	1	122	0	19	0	0	0	0	0
Jefferson	1	88	0	0	0	0	0	0	0
Lee	0	24	3	32	6	0	0	1	0
Mississippi	2	162	0	4	0	0	0	0	0
Phillips	0	0	6	1	74	5	0	0	0
Poinsett	0	34	0	62	9	0	29	3	1
<b>Total</b>	<b>4</b>	<b>430</b>	<b>9</b>	<b>118</b>	<b>89</b>	<b>5</b>	<b>29</b>	<b>4</b>	<b>1</b>

**Table 3. Average staple length, all bales, 2001 CRVP demonstrations.**

County	Staple					
	32	33	34	35	36	37
Desha	0	29	81	31	1	0
Jefferson	0	0	1	16	58	14
Lee	2	0	63	1	0	0
Mississippi	0	0	0	52	115	1
Phillips	0	1	17	46	21	1
Poinsett			70	68	0	0
Total	2	30	232	214	195	16

**Table 4. Average micronaire values, all bales, 2001 CRVP demonstrations.**

County	Micronaire		
	<3.5	3.5-4.9	>5.0
Desha	0	69	73
Jefferson	0	89	0
Lee	0	24	42
Mississippi	0	156	12
Phillips	1	74	11
Poinsett	0	39	99
Total	1	451	237

**Table 5. Average strength, all bales, 2001 CRVP demonstrations.**

County	Strength						
	<25.5	25.5-26.4	26.5-27.4	27.5-28.4	28.5-29.4	29.5-30.4	30.5-32.4
Desha	8	23	42	46	17	5	1
Jefferson	8	14	24	25	17	1	0
Lee	2	0	13	51	0	0	0
Mississippi	0	0	0	125	43	0	0
Phillips	1	6	17	29	21	9	3
Poinsett	0	24	52	62	0	0	0
<b>Total</b>	<b>19</b>	<b>67</b>	<b>148</b>	<b>338</b>	<b>98</b>	<b>15</b>	<b>4</b>

**Table 6. Economic returns per acre: 2001 Cotton Research Verification Program.**

	Desha	Jefferson	Lee	Mississippi	Phillips	Poinsett	Weighted average
Acres	80.0	37.5	38.0	75.0	56.0	74.0	360.5
Per acre yield	874.5	1146.8	878.60	1,086	766.80	917.00	939.25
Loan value	0.58	0.58	0.58	0.58	0.58	0.58	0.58
Sales	\$507.21	\$665.14	\$509.59	\$629.88	\$444.74	\$531.86	\$544.77
Total direct exp.	\$421.36	\$338.60	\$303.51	\$299.16	\$358.35	\$287.05	\$337.55
Returns over dir. exp.	\$85.85	\$326.54	\$206.08	\$330.72	\$86.39	\$244.81	\$207.22
Total specified exp.	\$500.56	\$415.51	\$379.80	\$410.93	\$458.80	\$388.71	\$430.89
Returns over total exp.	\$6.65	\$249.63	\$129.79	\$218.95	(\$14.06) <sup>z</sup>	\$143.15	\$113.88
Rent (25% share)	\$126.80	\$166.29	\$127.40	\$157.47	\$111.19	\$132.97	\$136.19
Returns over total exp. and rent	(\$120.15)	\$83.35	\$2.39	\$61.48	(\$125.24)	\$10.19	(\$22.32)

<sup>z</sup> Parentheses indicate negative value.