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Cotton Research Verification Program
2020 Annual Report

Cotton Incorporated

Arkansas ROW CROP VERIFICATION

DIVISION OF AGRICULTURE RESEARCH & EXTENSION University of Arkansas System

Cotton Research Verification Sustainability Program: 2020 Economic Report

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Abstract

The University of Arkansas System Division of Agriculture's Cotton Research Verification Sustainability Program (CRVSP) works with producers to grow cotton more efficiently with the objective of improving profitability. The average return to total specified costs in 2020 is $122.17. The verification field low was -$53.08 in the Desha South field and the high was $288.44 in the Clay FS/NC field. Total operating expenses averaged $0.42/ lb lint and total expenses averaged $0.53/ lb lint. For cotton to continue being a viable commodity, profitability must be improved.

Introduction

The University of Arkansas, System Division of Agriculture has been conducting the Cotton Research Verification Program (CRVP) since 1980. This is an interdisciplinary effort, in which best recommendation practices and production technologies are applied in a timely manner to a specific farm field. Since the inception of the CRVP in 1980, there have been 331 irrigated fields entered into the program. The success of the cotton program spawned verification programs in rice, soybeans, wheat and corn in Arkansas and other Mid-South states. In 2014, the CRVP became known as the Cotton Research Verification Sustainability Program (CRVSP). The CRVSP expands beyond that of the traditional verification programs by measuring the producers' environmental footprint for each field and evaluating the connection between profitability and sustainability.

Procedures

The 2020 CRVSP was composed of 12 fields in four counties Desha (6), Clay (2) St. Francis (2), and BCI US Trust Protocol Field (2). Each field was entered into the Field to Market Fieldprint Calculator. Two fields, Shop and Weaver, entered the sixth year, two fields, Clay and St. Francis, entered the second year, and the USTP/BCI field entered the first year, respectively, of a modified no-till with cover crop production system. Increasing both efficiency and profitability will continue to be a main part of the program.

The CRVSP has worked along with the University of Arkansas, System Division of Agriculture's Discovery Farms Program in Southeast Arkansas for 4 of the 12 fields for the last 6 years in the program. Discovery Farms' focus is to monitor edge-of-field water quality. Fields were watered in two sets on Discovery Farm Fields. The split-field arrangement provides the opportunity to compare two production strategies. The farmer standard tillage was compared to a no-till system with cereal rye cover crop. The fields at St. Francis and Clay counties were not watered in two sets to allow for that unique comparison, and the USTP/ BCI fields were dryland. In fall of 2019, all no-till cover fields had Elbon cereal rye broadcasted with a target seeding rate of 56 pounds per acre with exception to USTP/ BCI field. The USTP/BCI no-till cover field is the only one within study that had a cover crop blend which consisted of: 25 pounds per acre of both cereal rye and black oats, and 2 pounds per acre of hairy vetch. Irrigated fields were either furrow or pivot irrigated. The diversity of the fields in the program reflects cotton production in Arkansas. Field records were maintained, and economic analysis were conducted at seasons end to determine net return per acre for each field in the program.

Results and Discussion

The majority of cotton in Arkansas was planted in May. Tarnished plant bug (TPB) numbers slightly decreased this year in the CRVSP fields which were treated an average of 3.33 times compared to 3.57 times in 2019. Tarnished plant bug pressure was similar across all locations as all fields were sprayed 3 to 5 times during the growing season except for the BCI Trust Protocol field which received no plant bug treatments. Each field had an average of 1.58 burndowns and 1.83 herbicide applications for the 2020 season. The average number of treatments for moth/worms was .83. The average costs for herbicides and insecticides were $71.97 and $63.23 respectively. Pest control represents a big expense and can impact yields greatly.

Records of field operations on each field provided the basis for estimating expenses. Production data from the 12 fields were applied to determine costs and returns above operating costs, as well as total specified costs. Operating costs and total costs per pound indicate the commodity price needed to meet each cost type. Costs in this report do not include land costs, management, or other expenses and fees not associated with production. Budget summaries for cotton are presented in Table 1. Price received for cotton of $0.62/lb is the estimated Arkansas annual average for the 2020 production year. Average cotton yield for these verification fields was 1302 lb lint/ac, 102 lb lint/ac greater than the state average.

The average operating cost for cotton in Table 1 was $537.46/ac. Table 1 indicates the chemicals averaged $183.27/ac and were 34% of operating expenses. Seed and associated technology fees averaged $117.34/ac, or 22% of operating expenses and

included 5 fields with a cover crop. Fertilizer and nutrient costs averaged 15% of operating expenses and were $82.36/acre.

Verification fields average yield was 1302 lb lint/acre, which is 102 lb lint/ac increase when compared to both the 2020 enterprise budget and the statewide average yield. Average operating costs were $0.42/lb lint compared to the yearly enterprise budget operating costs of $0.53 lb/lint. Operating costs ranged from a low of $376.23 in the USTP/BCI FS/NC field to a high of $726.30 in the Desha North field. Returns to operating averaged $269.87/ac across verification fields which is an increase of $161.71 to that of the enterprise budget. The range was from a low of $113.10 in the Desha South field to a high of $450.75 in the Clay FS/NC field. Average fixed costs were $147.70 which led to average total costs of $685.17/ ac. The average return to total specified costs are $122.17, compared to -$68.77 on the enterprise budget. The verification field low was -$53.08 in the Desha South field and the high was $288.44 in the Clay FS/NC field. Total operating expense averaged $0.42/ lb lint, compared to $0.53/lb lint in the enterprise budget. Total expenses averaged $0.53/ lb lint, compared to $0.68/lb lint in the enterprise budget. While the enterprise budget slightly over-estimated expenses and slightly under-estimated revenue, it still serves as a valuable planning tool for producers. For cotton to continue being a viable commodity, profitability must be improved.

Practical Applications

The CRVSP has become a vital tool in the educational efforts of the University of Arkansas System Division of Agriculture. It continues to serve a broad base of clientele including cotton growers, consultants, researchers, and county extension agents. The

program strives to meet its goals and provide timely information to the Arkansas Cotton Community.

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Table 1. Summary of revenue and expenses per acre for 12 fields in the 2020 Cotton Research Verification Sustainability Program compared to the online 2020 enterprise budget.

	Field													
Revenue/Expenses	**Clay NT/C**	**Clay FS/NC**	**Weaver NT/C**	**Weaver FS/NC**	**Shop NT/C**	**Shop FS/NC**	**St. Francis NT/C**	**St. Francis FS/NC**	**USTP/ BCI NT/C**	**USTP/ BCI FS/NC**	**Desha North**	**Desha South**	**12 Field Verification Average**	**2020 Enterprise Budget**
Revenue														
Yield (lb)	1542	1547	1288	1328	1266	1441	1438	1172	962	905	1384	1353	1302.16	1200
Price ($/lb)	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Tot. Crop Rev.	**956.04**	**959.14**	**798.56**	**823.36**	**784.92**	**893.42**	**891.70**	**726.42**	**596.44**	**561.10**	**858.08**	**838.86**	**807.34**	**744.00**
Cottonseed Value	**230.53**	**231.28**	**192.56**	**198.54**	**189.27**	**215.43**	**215.01**	**175.16**	**143.82**	**135.30**	**206.91**	**202.27**	**194.67**	**179.88**
Expenses														
Seed	138.96	118.80	114.96	94.80	114.96	94.80	133.35	113.19	155.40	132.00	98.40	98.40	117.34	114.00
Fertilizer & Nutrients	81.69	81.69	77.20	77.20	77.20	77.20	97.97	97.97	66.77	66.77	93.31	93.31	82.36	85.06
Herbicides	34.27	34.27	42.10	102.69	42.10	102.69	77.35	77.35	66.16	66.16	109.25	109.25	71.97	112.72
Insecticides	99.47	99.47	69.34	62.64	69.34	62.64	54.12	54.12	0.00	0.00	93.79	93.79	63.23	100.93
Other Chemicals	30.37	30.37	22.33	22.33	22.33	22.33	29.82	29.82	22.42	22.42	161.17	161.17	48.07	25.72
Custom Applications	0.00	0.00	48.00	56.00	48.00	56.00	54.00	46.50	0.00	0.00	31.00	31.00	30.88	16.00
Other Inputs	29.57	29.65	25.34	26.00	24.97	27.89	23.96	19.52	10.68	10.05	26.94	26.42	23.42	10.51
Diesel Fuel	17.03	17.17	15.94	16.35	15.94	16.35	13.37	13.37	15.30	15.44	16.87	16.87	15.83	46.08
Irrigation Energy Costs	24.54	24.54	16.83	15.50	17.07	16.83	9.00	7.50	0.00	0.00	17.72	17.72	13.94	35.43
Input Costs	**455.90**	**435.96**	**432.04**	**473.51**	**431.91**	**476.73**	**492.94**	**459.34**	**336.73**	**312.84**	**648.45**	**647.93**	**467.02**	**546.45**
Fee's	21.41	21.41	21.41	21.41	21.41	21.41	21.41	21.41	21.41	21.41	21.41	21.41	21.41	21.41
Repairs and Maintenance[1]	29.01	28.94	26.50	26.16	26.52	26.27	27.21	26.78	25.70	25.63	28.71	28.71	27.18	31.39
Labor, Field Act.	8.62	8.49	8.12	8.08	8.12	8.10	5.44	5.37	6.41	6.28	8.29	8.29	7.47	20.23
Production Exp.	**514.94**	**494.80**	**488.07**	**529.16**	**487.96**	**532.51**	**547.00**	**512.90**	**390.25**	**366.16**	**706.86**	**706.34**	**523.08**	**619.48**
Interest	14.16	13.61	13.42	14.55	13.42	14.64	15.04	14.10	10.73	10.07	19.44	19.42	14.38	16.36
Post Harvest Exp.	230.53	231.28	192.56	198.54	189.27	215.43	215.01	175.17	143.82	135.30	206.91	202.27	194.67	179.88
Operating Exp.	**529.10**	**508.41**	**501.49**	**543.71**	**501.38**	**547.15**	**562.04**	**527.00**	**400.98**	**376.23**	**726.30**	**725.76**	**537.46**	**635.84**
Returns to Op. Exp.	**426.94**	**450.75**	**297.07**	**279.65**	**283.54**	**346.27**	**329.66**	**199.42**	**195.46**	**184.87**	**131.78**	**113.10**	**269.87**	**108.16**
Cap. Recovery and Fixed Costs	161.11	162.31	135.47	134.07	135.57	134.62	154.28	150.90	135.27	136.47	166.18	166.18	147.70	176.93
Tot. Specified exp.[2]	**690.20**	**670.70**	**636.96**	**677.79**	**636.95**	**681.77**	**716.33**	**677.91**	**536.27**	**512.70**	**892.48**	**891.94**	**685.17**	**812.77**
Returns to Spec. Exp.	**265.84**	**288.44**	**161.60**	**145.57**	**147.97**	**211.65**	**175.37**	**48.51**	**60.17**	**48.40**	**-34.40**	**-53.08**	**122.17**	**-68.77**
Operating Exp./lb	0.34	0.33	0.39	0.41	0.40	0.38	0.39	0.45	0.42	0.42	0.52	0.54	0.42	.53
Total Expenses/lb	0.45	0.43	0.49	0.51	0.50	0.47	0.50	0.58	0.56	0.57	0.64	0.66	0.53	.68

[1] Includes employee labor allocated to repairs and maintenance.

[2] Does not include land costs, management, or other expenses and fees not associated with production.

[3] Abbreviations: C=Cover, NC= No Cover.