

ECONOMIC ASSESSMENT OF ULTRA NARROW ROW COTTON PRODUCTION IN GEORGIA

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Abstract

University of Georgia research suggests that ultra narrow row cotton (UNRC) can produce yields comparable or superior to conventional yields. A total of 16 paired observations over 4 years and 8 locations were analyzed. UNRC yields were equal to or greater than conventional yields in 12 of 16 tests. UNRC may tend to be shorter in Stable, lower in Uniformity, lower in micronaire, and more likely to be discounted for bark. Such quality differences are not automatic, however. There were instances where quality of UNRC was equivalent to conventional production. Experience and research in Georgia shows that UNRC may not be cheaper to grow. Savings in machinery fixed and variable costs may be offset by other costs such as seed, defoliation, and plant growth regulator. Where yield, production practices, and input data was available, UNRC was more profitable than conventional cotton in 3 of 8 tests over 4 years at 3 locations. UNRC seems to have an economic advantage under dryland and marginal conditions.

Introduction

Ultra narrow row cotton (UNRC) has received interest by cotton producers, Extension specialists, and researchers in Georgia since 1998. Current acreage of UNRC in Georgia is unknown but is very small. Response of growers who have tried UNRC has been mixed. The biggest obstacles have been occasional quality differences and mill acceptance. Compared to conventional production, UNRC has been promoted as cost-saving and lower harvest investment required. The cost of a finger stripper is approximately half that of a spindle picker.

The objective of this study was to determine the economic feasibility and profit potential of UNRC in Georgia compared to conventional production practices.

Methodology

Data was collected from on-farm, Extension, and Experiment Station research over 4 years 1998-2001 comparing UNRC to conventional production. Data included yields, quality, production practices, and inputs. Where practices and inputs were available, cost of production was calculated for both conventional and UNRC. Input prices and machinery costs were developed from annual University of Georgia cotton enterprise budget estimates.

Results

Yield of Ultra Narrow Row Cotton vs. Conventional

Yield comparisons of UNRC compared to conventional production were available from replicated University of Georgia Cooperative Extension Service or Experiment Station trials and from county Extension Agent on-farm trials. Some of these on-farm trials were replicated, some were not. A total of 16 paired observations over 4 years and 8 locations were analyzed (Figure 1).

In 16 trials or observations where UNRC and conventional cotton were produced under the same conditions, UNRC averaged 917 pounds lint per acre. Conventional cotton averaged 900 pounds per acre. UNRC yields were equal to or greater than conventional yields in 12 of 16 tests.

UNRC appears to consistently yield better than conventional cotton in "lower yield" environments. In the tests, this was non-irrigated production and in drought conditions. The results were more mixed under better conditions (high yield non-irrigated production or irrigated production). Although, UNRC yields were equal to or better than conventional yields in 7 of 11 tests in the 900 lb yield range or better.

In summary, UGA studies and experience suggests that UNRC can produce yields comparable or superior to conventional yields.

Quality of Ultra Narrow Row Cotton

In addition to yield, quality has also been an issue. If considering or comparing the economic feasibility of UNRC compared to conventional practices, quality must also be considered as this affects the price received per pound of lint. In tests conducted by or in cooperation with the University of Georgia, quality or grade data were available for only 5 tests (Table 1). Comparisons with conventional cotton were available in 4 tests-- all conducted in 1998.

For Color grade, UNRC was equivalent to conventional cotton in 2 of 3 tests where data were available. For fiber length (Staple), UNRC was equivalent to conventional in 2 of 4 tests. For micronaire, UNRC was equivalent to conventional and all readings were in the acceptable no-discount range. Fiber strength for UNRC was lower than conventional in 2 tests and higher in 2 tests.

In 4 tests where comparisons were available, UNRC did have lower fiber length Uniformity as measured by the Uniformity Index (UI). Three of the 4 Uniformity readings were within the acceptable range, however, with no price discount compared to conventional cotton. In only one test where data was available, UNRC did receive more discounts for grass and bark than conventional cotton.

In summary, data comparing the quality of UNRC to conventional cotton is limited. The data, however, does not show any clear quality differences between UNRC and conventional cotton. Observations from only 4 tests in 1 year are difficult to conclude. UNRC may tend to be shorter in Staple, lower in Uniformity, lower in micronaire, and more likely to be discounted for bark. Such quality differences are not automatic, however. There were instances where quality of UNRC was equivalent to conventional production.

Production Practices and Costs

Data on production practices and input use was available for 8 tests over 4 years at 3 locations (Table 2). In most cases, UNRC was planted with a precision drill or vacuum planter in 10-inch rows. Conventional cotton was planted in either 36 or 38-inch rows. Conventional tillage for UNRC was similar to conventional cotton but excluding ripping/bedding. Seed type varied by year but was the same within the each test. Tests over the 4 year period were a mix of irrigated and non-irrigated production.

A comparison of some variable and fixed cost items is summarized in Table 3. Seed and technology fees are higher for UNRC. These costs assumed no adjustment in technology fees for higher seed/acre in UNRC. There was no difference in fertilizer use and application between UNRC and conventional cotton in these tests. On average, there was little difference in herbicide and insecticide costs per acre. There was no consistent pattern of higher or lower use due to production method. These costs tend to be more a function of seed type and tillage rather than row pattern. Use of Pix (plant growth regulator) and defoliate/harvest aid was consistently higher for UNRC compared to conventional cotton. Costs items not shown were the same for UNRC and conventional

UNRC shows consistently lower fuel and repair costs due primarily to use of a less expensive and lower horsepower stripper rather than a picker, not necessarily less trips over the field. Labor costs are about the same in either system. Any pre-harvest labor savings in UNRC appear offset by higher harvest time and labor. Pre-harvest fixed cost on machinery and equipment are slightly lower for UNRC. Harvest fixed cost lower due to use of stripper vs. picker.

Profitability

Because quality data were not available, the price received per pound of lint would be the same for purposes of this analysis. Therefore, profitability can be compared by simply calculating the cost of production per pound of lint for both UNRC and conventional cotton (Table 4)

For 1998, the average cost of production for 3 tests was 50.5 cents per pound for conventional compared to 52.2 cents per pound for UNRC. UNRC did, however, have lower costs of production per pound of lint in the 2 Plains tests. The results for Midville pulled the average cost per pound up for UNRC. UNRC did not prove more profitable than conventional at Tifton in 1999 and 2000. In 2001 at Tifton, the average cost per pound of lint was 38.4 cents for conventional compared to 45.4 for UNRC. This was due largely to much higher seed and technology fee per acre that was hard for UNRC to overcome. If technology fee is capped for UNRC production, this may make UNRC more likely to be profitable compared to conventional. UNRC did out-yield conventional cotton in 2 of the 3 tests.

UNRC is routinely discounted 2 to 3 cents per pound by gins and/or merchants regardless of grades and quality. All other things being equal, this means UNRC to be more profitable than conventional cotton must be at least 2-3 cents per pound cheaper to grow to overcome this discount plus any quality differences.

Summary and Conclusions

UNRC in Georgia can yield comparable or superior to conventional production. Lesser quality and associated price discounts are often a concern in UNRC. Limited data in Georgia suggests this may be a problem but is not automatic. Experience and research in Georgia shows that UNRC may not be cheaper to grow. Savings in machinery fixed and variable costs may be offset by other costs such as seed, defoliation, and plant growth regulator.

Because yields are comparable, profitability of UNRC compared to conventional practices may depend on individual management. If UNRC can be produced at variable costs comparable to or less than conventional production, UNRC can be more profitable if there are few or no quality differences.

Where yield, production practices, and input data was available, UNRC was more profitable than conventional cotton in 3 of 8 tests over 4 years at 3 locations. UNRC seems to have an economic advantage under dryland and marginal conditions.

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Table 1. Quality Comparisons of UNRC and Conventional Cotton in Georgia, 1998.

Location	Color		Staple		Micronaire		Strength		Uniformity		% Discounted Grass and Bark	
	Conv	UNRC	Conv	UNRC	Conv	UNRC	Conv	UNRC	Conv	UNRC	Conv	UNRC
Quitman County	42	52	35	34	4.7	4.3	26.1	25.7	81.8	81.2	25	85
Jenkins County		32		34		3.8		25.6		80.5		85
Plains	42	42	36	36	3.9	3.9	28.1	28.0	81.1	80.9		
Midville	41	41	33	33	4.2	4.1	27.0	27.1	80.2	79.6		
Tifton	n/a	n/a	37	36	4.3	4.4	26.2	27.0	83.8	82.3		

Table 2. Tests Included In UNRC vs. Conventional Production Cost Comparisons, Georgia.

Year	Location	Irrigation	Tillage	Seed
1998	Plains	Irrigated	Conventional	Conventional
1998	Plains	Non-irrigated	Conventional	Conventional
1998	Midville	Irrigated	Conventional	Bt
1999	Tifton	Non-irrigated	Conventional	Conventional
2000	Tifton	Non-irrigated	Conventional	BRR
2001	Tifton (3 tests)	Irrigated	Strip-Till/No-Till ¹	BRR

1/ Conventional cotton was strip-till, UNRC was no-till.

Table 3. Average of Selected Variable and Fixed Costs Per Acre for UNRC and Conventional Cotton, 8 Tests Over 4 Years (1998-2001) At 3 Locations (Tifton, Plains, and Midville).

	Conventional	UNRC	Difference
Seed	\$28.51	\$88.68	\$60.17
Fertilizer and Lime	\$50.88	\$50.88	0
Herbicides and Insecticides	\$61.90	\$62.80	\$0.90
Defoliant/Harvest Aid	\$12.78	\$19.05	\$6.27
Plant Growth Regulator	\$2.47	\$8.09	\$5.62
Fuel, Lube, and Repairs	\$43.37	\$33.68	-\$9.69
Labor	\$24.08	\$25.02	\$0.94
Machinery and Equipment Fixed Costs ¹ - Pre-Harvest	\$34.24	\$31.58	-\$2.66
Machinery and Equipment Fixed Costs ¹ - Harvest	\$53.95	\$28.15	-\$25.80

1/ Fixed Costs are depreciation, interest, taxes, and insurance on machinery and equipment.

Table 4. Yield and Cost Comparison of UNRC and Conventional Cotton, Georgia, 1998-2001.

	1998 ¹		1999		2000		2001 ²	
	Conv	UNRC	Conv	UNRC	Conv	UNRC	Conv	UNRC
Yield	923	879	335	374	886	957	1275	1237
Variable Costs								
Per Acre	\$338	\$361	\$282	\$298	\$291	\$424	\$339	\$439
Fixed Costs								
Per Acre	\$128	\$98	\$90	\$66	\$100	\$70	\$151	\$123
Total Cost								
Per Acre	\$466	\$459	\$372	\$364	\$391	\$494	\$489	\$562
Cost Per Lb								
Lint (Cents)	50.5	52.2	111.0	97.3	44.1	51.6	38.4	45.4

1/ Average of 3 tests at 2 locations. Table 2.

2/ Average of 3 tests at Tifton. Table 2.

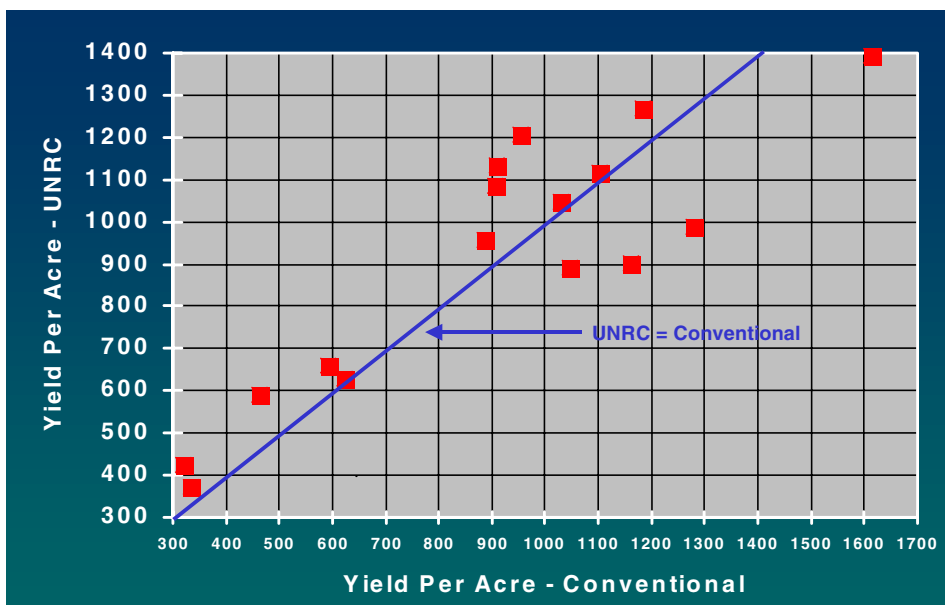


Figure 1. Comparison of Conventional and UNRC Yields 16 Paired Observations Over 4 Years, 1998-2001