

## **COST COMPARISON OF UNR VERSUS CONVENTIONAL ROW COTTON: A PRELIMINARY ANALYSIS**

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### **Abstract**

Many cotton producers have experimented with Ultra Narrow Row (UNR) cotton production because of its potential for reducing costs and increasing yields. The preliminary results of this study indicated that total costs were not reduced for UNR cotton production compared to conventional cotton production in the Southern High Plains of Texas. The total production costs for UNR and conventional cotton were about \$0.73 and \$0.72 per lint pound, respectively. This information implies that the total cost required to produce UNR and conventional cotton was similar.

### **Introduction**

Texas cotton producers continue to be challenged by volatile cotton prices, uncertain changes in government commodity support programs, and increasing input costs. Because producers have no control or influence on any of these economic conditions, producers' ability to identify alternative methods of raising profits is increasing in importance. Cotton producers in many regions have experimented with Ultra Narrow Row (UNR) cotton production, which is a non-conventional production practice that has the potential of increasing revenues and reducing costs. UNR cotton production is currently under scrutiny by producers and researchers in cotton producing regions.

Consistent evidence of improvement in production costs and yields from UNR cotton production over conventional row cotton is not available. Wilson et al. (1999) found that UNR cotton production costs were slightly lower than conventional cotton in two of three tests conducted in Georgia. Specifically, the UNR variable cost was considerably larger, while the fixed cost was less than conventional cotton. In contrast, a three-year study completed in Arkansas found that production costs associated with UNR cotton were consistently higher than conventional row cotton, while UNR cotton yields were higher than conventional row cotton two of three years (Vories et al., 1999). The conventional cotton in both of these studies was harvested with a cotton picker. Therefore, fixed costs can be reduced by producing UNR cotton due to the investment cost for a finger stripper being much less than a conventional picker harvester.

Cotton in the Southern High Plains of Texas is typically harvested using stripper-harvesting methods. Many producers in the Southern High Plains own a stripper harvester. Therefore, to modify their harvesting systems to harvest UNR cotton, the only requirement would be to invest in a finger header instead of an entire machine. This implies that producers in the Southern High Plains of Texas that produce UNR cotton may not be experiencing some of the reductions in fixed costs that are being experienced in other cotton producing regions. Currently, empirical evidence regarding how costs of UNR cotton production compares with conventional cotton production is not available for the Southern High Plains of Texas. Therefore, the objective of this study is to compare costs associated with UNR and conventional cotton.

## **Methods and Procedures**

Producers in the Southern High Plains of Texas that produce UNR cotton were identified and contacted regarding this study. Production and financial information for the 2000 crop year were collected from the producers via personal communication. The data obtained was then allocated and analyzed at the enterprise level. The enterprise analysis was conducted using the Standardized Performance Analysis - Multiple Enterprises (SPA-ME) program (Johnson and McGrann, 2000).

The SPA-ME program analyzes whole farm financial performance, as well as the individual crop enterprises within the farming operation. This analysis was accomplished by reconciling the whole farm financial statements that were provided by the producers. The reconciled financial statements were then allocated to the different crop enterprises of the production operation. The cost output derived from the SPA-ME program was divided into specific variable and fixed costs. These specified variable and fixed costs were used to compare the UNR and conventional cotton production costs.

At this point of this study, production cost data associated with the 2000 crop year was only available for two UNR cotton production operations. Production cost data for the 2000 crop year was not yet available for conventional cotton operations. However, cost data associated with conventional cotton was available for the 1995 to 1999 crop years. Thus, the average of these five years was used in this study. For the purpose of this study, it was assumed that the production cost for conventional cotton for the 2000 crop year did not change drastically from the average of the costs from the 1995 to 1999 crop years. A preliminary comparison of production costs for UNR and conventional cotton was made using the 2000 crop year UNR production cost data and the five-year average conventional cotton production cost data.

## **Results**

### **Variable Cost**

Results of the preliminary analysis indicated that the average variable cost associated with UNR cotton was slightly higher than the conventional average variable cost. The UNR variable cost of \$0.58 per lint pound was approximately \$0.04 per lint pound higher than the conventional variable cost. This difference was derived from certain variable costs associated with UNR cotton production being higher than those for conventional cotton production, including seed, irrigation, fuel, growth regulators, and fertilizer. Table 1 illustrates that much of the difference in the variable cost between the two production techniques was composed of seed and irrigation expenses. UNR cotton production required \$0.12 and \$0.07 per lint pound more of seed and irrigation, respectively, than conventional cotton production. The seed required to plant UNR cotton is considerably higher than conventional cotton. Recently, the Southern High Plains of Texas has been experiencing a drought. Thus, producers (both UNR and conventional cotton producers) have relied heavily on irrigation for crop moisture, which explains the high irrigation costs. Since the drought affected both UNR and conventional cotton producers, the irrigation costs associated with conventional cotton production should also be high for the 2000 crop year. Therefore, the difference between the UNR and conventional irrigation costs might not be as large, which could alter the results of this preliminary study. The fuel, growth regulators, and fertilizer costs required for UNR cotton production were each \$0.02 per lint pound higher than for conventional cotton production. All producers experienced high fuel costs during the 2000 crop year. Therefore, the difference in the UNR and conventional fuel costs might also be minimal, which could also alter these results.

### **Fixed Cost**

The fixed cost associated with UNR cotton production was about \$0.15 per lint pound, which is about \$0.03 per lint pound less than the fixed cost for conventional cotton. The depreciation expense and operator labor and management expense required for conventional cotton production were about \$0.02 and \$0.01 per lint pound, respectively, more than that required for the production of UNR cotton (Table 2).

### **Total Cost**

Preliminary results imply that the total production cost associated with UNR cotton was about \$0.73 per lint pound, while conventional cotton total production costs were \$0.72 per lint pound. The difference in the total cost of producing UNR versus conventional cotton was about \$0.01 per lint pound. These results are consistent with Wilson et al. (1999) in that the UNR variable costs were higher and the fixed costs were lower than those associated with conventional cotton. In this case, the production of UNR cotton did not reduce costs as most producers hoped. About the same amount of capital was required to produce UNR and conventional cotton. These results may change considerably after 2000 conventional cotton production data is obtained.

### **Conclusion**

Many producers in the Southern High Plains of Texas have experimented with producing UNR cotton because of its potential of reducing costs and increasing yields. An enterprise analysis of actual production and financial information was conducted to determine whether total costs were reduced as a result of producing UNR cotton. The preliminary results of this study indicate that producing UNR cotton did not reduce costs. The total production cost for UNR and conventional cotton were about \$0.73 and \$0.72 per lint pound, respectively. This implies that the total cost required to produce UNR was slightly higher than producing conventional cotton. These preliminary results may change as more observations are added to the UNR production cost data and conventional cotton production cost data are obtained for the 2000 crop year.

### **Acknowledgements**

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Table 1. Average Variable Costs Associated with UNR and Conventional Cotton Production.

	<b>UNR</b>	<b>Conventional</b>
	<b>\$/Lint Pound</b>	
<b>Cash Operating Expenses</b>		
Chemicals		
Herbicide	\$0.02	\$0.07
Insecticide	\$0.00	\$0.03
Growth Regulator	\$0.03	\$0.01
Other	\$0.01	\$0.01
Fertilizer	\$0.09	\$0.07
Gasoline, Fuel, & Oil	\$0.04	\$0.02
Seed & Plants	\$0.13	\$0.01
Repairs & Maintenance	\$0.01	\$0.03
Hired Labor & Management	\$0.01	\$0.04
Irrigation	\$0.11	\$0.04
Other Operating Expenses	\$0.13	\$0.22
<b>Total Cash Operating Expenses</b>	<b>\$0.58</b>	<b>\$0.54</b>

Table 2. Average Fixed and Total Costs Associated with UNR and Conventional Cotton Production.

	<b>UNR</b>	<b>Conventional</b>
	<b>\$/Lint Pound</b>	
Total Interest Expense	\$0.03	\$0.03
Depreciation Expense	\$0.05	\$0.07
Operator Labor & Management	\$0.07	\$0.08
<b>Total Overhead Expenses</b>	<b>\$0.15</b>	<b>\$0.18</b>
<b>Total Enterprise Expenses</b>	<b>\$0.73</b>	<b>\$0.72</b>