

MANAGEMENT MARKETING MEMO

Department of Agricultural and Applied Economics, Clemson University, Clemson, SC, 29634-0355

MMM 463

January 5 2008

2008 Estimated Costs and Returns for Irrigated Cotton?

Todd D. Davis
Extension Economist

The commodity markets have been bidding for acreage due to the demand for corn and soybeans for biofuels. The bidding for acreage has also benefited cotton producers through higher prices. Currently, the major decision for producers is to evaluate the crop enterprise mix for 2008. This memo discusses the estimated costs and returns for producing irrigated cotton, how production costs have increased since 2002, and how price and yield variability affects profitability.

Costs and Returns for 2008

Table 1. 2008 Irrigated Cotton Estimated Costs and Returns (\$/Acre)^{1/}.

	<u>Unit</u>	<u>Quantity</u>	<u>Price or Cost/Unit</u>	<u>Total Per Acre</u>
Gross Receipts				
Cotton Lint ^{2/}	lbs.	1000	\$0.7327	\$732.70
Cotton Seed	lbs.	1670	\$0.0925	<u>\$154.48</u>
Total Receipts				\$887.18
Variable Costs				
Seed (certified)	lbs.	10	\$8.00	\$80.00
Fertilizer				
Nitrogen	lbs.	100	\$0.59	\$59.00
Phosphate	lbs.	60	\$0.52	\$31.20
Potash	lbs.	60	\$0.26	\$15.60
Boron	lbs.	0.5	\$0.75	\$0.38
Sulfur	lbs.	10	\$0.51	\$5.10
Lime (prorated)	ton	0.33	\$52.50	\$17.33
Herbicides	acre	1	\$30.95	\$30.95
Insecticides	acre	1	\$43.88	\$43.88
Growth Reg & Defoliant	acre	1	\$17.49	\$17.49
Scouting	acre	1	\$8.50	\$8.50
Irrigation Machinery and Labor	acre	1	\$55.15	\$55.15
Aerial Application	appl	3	\$6.50	\$19.50
Ginning	lbs.	1000	\$0.12	\$120.00
Hauling	acre	1	\$6.50	\$6.50
Check-off fee	acre	1	\$5.50	\$5.50
Boll Weevil Eradication	bale	2.08	\$1.92	\$3.99
Crop Insurance	acre	1	\$20.00	\$20.00
Tractor/Machinery	acre	1	\$78.56	\$78.56
Labor	hrs	5.69	\$6.50	\$36.99
Interest on Operating Capital	dol.	200.45	9.00%	<u>\$18.04</u>
Total Variable Costs				\$673.65
Return over Variable Costs				\$213.53

^{1/} Detailed enterprise budgets for agronomic crops are available at: <http://cherokee.agecon.clemson.edu/budgets.htm> or from your local Clemson University Cooperative Extension office.

^{2/} Cotton price based on December 2008 Cotton Futures price on January 4, 2008 with a harvest-time basis of -\$0.03/lb.

The estimated Return over Variable (production) costs for irrigated cotton for 2008, based on Clemson University Enterprise budgets, is described in Table 1. Total production costs are estimated to be \$674/acre with fertilizer/lime costs accounting for 19% of the total cost per acre (Table 1). In addition, pesticides/defoliant, seed, ginning, and machinery/irrigation expenses account for 14%, 12%, 18%, and 20%, respectively, of the total cost per acre (Table 1).

The harvest cash price, based on the value of the December 2008 Cotton Futures contract of \$0.7627/lb. and adjusted by an estimated harvest-time basis of -\$0.030, is estimated to be \$0.7327 per pound (Table 1). Given the revenue and cost estimates, the Return over Variable cost for irrigated cotton is estimated to be \$213 per acre (Table 1).

Understanding the Increase in Production Costs

For long-term profitability, producers must continue to control costs. The production costs for irrigated cotton from 2002 to 2008, based on Clemson University Extension enterprise budgets, are reported in Table 2.

Table 2. Budgeted Production Costs from 2002 – 2008 for Irrigated Cotton with an Estimated Yield of 1000 Pounds/Acre.

Variable Costs	<u>2008</u>	<u>2006-2007</u>	<u>2005</u>	<u>2004</u>	<u>2003</u>	<u>2002</u>
Seed (certified)	\$80.00	\$78.40	\$61.10	\$52.00	\$43.60	\$48.30
Fertilizer						
Nitrogen	\$59.00	\$58.21	\$48.36	\$42.84	\$40.15	\$33.13
Phosphate	\$31.20	\$22.07	\$19.87	\$17.87	\$16.47	\$15.33
Potash	\$15.60	\$14.46	\$13.28	\$9.93	\$8.85	\$9.15
Boron	\$0.38	\$0.38	\$0.38	\$0.29	\$0.35	\$0.35
Sulfur	\$5.10	\$5.10	\$4.50	\$4.00	\$4.00	\$4.00
Lime (prorated)	\$17.33	\$11.22	\$10.46	\$9.50	\$9.04	\$8.94
Herbicides	\$30.95	\$39.66	\$36.28	\$35.93	\$39.40	\$39.77
Insecticides	\$43.88	\$59.55	\$53.95	\$53.28	\$55.45	\$55.14
Growth Reg & Defoliant	\$17.49	\$19.36	\$22.68	\$23.58	\$22.58	\$24.61
Scouting	\$8.50	\$8.50	\$8.50	\$8.00	\$8.00	\$8.00
Irrigation Machinery and Labor	\$55.15	\$48.16	\$28.50	\$24.92	\$24.92	\$24.87
Aerial Application	\$19.50	\$16.50	\$13.50	\$13.50	\$10.50	\$10.50
Ginning	\$120.00	\$120.00	\$130.00	\$100.00	\$130.00	\$100.00
Hauling	\$6.50	\$6.00	\$6.00	\$5.00	\$5.00	\$5.00
Check-off fee	\$5.50	\$5.50	\$5.50	\$5.50	\$9.50	\$9.50
Boll Weevil Eradication	\$3.99	\$5.32	\$4.00	\$4.00	\$3.13	\$3.13
Crop Insurance	\$20.00	\$18.00	\$16.00	\$15.00	\$15.00	\$15.00
Tractor/Machinery	\$78.56	\$69.36	\$64.04	\$59.33	\$54.81	\$55.52
Labor	\$36.99	\$36.99	\$34.14	\$34.14	\$34.14	\$36.18
Interest on Operating Capital	<u>\$18.04</u>	<u>\$18.04</u>	<u>\$15.24</u>	<u>\$13.63</u>	<u>\$13.41</u>	<u>\$13.10</u>
Total Variable Costs	\$673.65	\$660.77	\$596.27	\$532.24	\$548.30	\$519.53
Increase from Previous Year (\$/acre)	\$12.88	\$64.50	\$64.03	-\$16.05	\$28.77	

Variable costs have increased \$154/acre since 2002 with 50% of the increase occurring since 2005 (Table 2). As you would expect, the largest increase has been for fertilizer which has increased \$57 per acre since 2002 (Table 2). The increased cost of fertilizer and lime accounts for 37% of the cost increase since 2002. Seed expense has increased \$31/acre since 2002 while ginning costs have increased \$20/acre since 2002 (Table 2). In addition, the cost of operating machinery and irrigation equipment has increased \$53/acre since 2002 reflecting the higher cost of fuel and oil (Table 2).

This cost information will help managers understand which cost items have increased the most and, in turn, which items to focus on when monitoring costs. It is important to remember that it is important to cut the non-necessary expenses and to use inputs in a way to get the biggest return for the cost of the input. Therefore, sound management practices should be

used when managing costs. For example, soil tests can be used to determine fertilization rates and increased scouting for weeds and insects can be used to monitor pesticide costs.

How Risky is Irrigated Cotton in 2008?

Another question managers should consider when evaluating a crop enterprise is the risk of not covering variable costs. The Total Variable Costs for irrigated cotton are estimated to be \$674/acre (Table 1). At an expected yield of 1000 lbs./acre, the break-even price for irrigated cotton is \$0.5192 per pound. At this break-even price, there will be just enough revenue to pay for the variable costs listed in Table 1. However, the break-even price does not pay for the cost of rented land or provide a return to fixed costs and management.

Table 3 describes the Return over Variable Cost for alternative prices and yields. Managers can use Table 3 to evaluate the risk of not covering variable costs of producing irrigated cotton based on their own price and yield expectations. For example, at the price of \$0.76/lb., there would be revenue available to pay for all production expenses with yields of 800 lbs./acre or greater (Table 3). Similarly, at a yield of 800 lbs./acre, all variable costs will be covered with prices of \$0.70/lb. or greater (Table 3).

Table 3. Return over Variable Cost for Various Prices and Yields for Irrigated Cotton (1000 lbs./acre Expected Yield) ^{1/}.

Harvest Yield	Harvest Cash Price						
	\$0.68	\$0.70	\$0.72	\$0.74	\$0.76	\$0.78	\$0.80
500	(\$256)	(\$246)	(\$236)	(\$226)	(\$216)	(\$206)	(\$196)
600	(\$173)	(\$161)	(\$149)	(\$137)	(\$125)	(\$113)	(\$101)
700	(\$90)	(\$76)	(\$62)	(\$48)	(\$34)	(\$20)	(\$6)
800	(\$6)	\$10	\$26	\$42	\$58	\$74	\$90
900	\$77	\$95	\$113	\$131	\$149	\$167	\$185
1000	\$161	\$181	\$201	\$221	\$241	\$261	\$281
1100	\$244	\$266	\$288	\$310	\$332	\$354	\$376

^{1/}Total Variable Costs are estimated to be \$674 per acre.

Where do I go for Help in Making this Decision?

Clemson University Extension has developed budgets for the major agronomic crops to help you evaluate their profitability for your farm business. The budgets are to be used as a guide and it is very important that you adjust these budgets to reflect your own costs, management practices, and productivity. You can download the enterprise budgets from the internet at <http://cherokee.agecon.clemson.edu/budgets.htm>. Your local extension office will be able to help you download these budgets and can help you understand how to use these budgets to make decisions for your farm business.