
UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2002

**SAMPLE COSTS TO PRODUCE
COTTON**



SACRAMENTO VALLEY

California Upland Cotton with Partial Government Program Participation

Douglas J. Munier	UC Cooperative Extension Farm Advisor, Glenn County
Rachael F. Long	UC Cooperative Extension Farm Advisor, Yolo County
Karen M. Klonsky	UC Cooperative Extension Specialist, Department of Agricultural and Resource Economics, UC Davis
Jeffrey J. Shimada	Staff Research Associate, Agricultural Issues Center, Department of Agricultural and Resource Economics, UC Davis
Richard L. De Moura	Staff Research Associate, Department of Agricultural and Resource Economics, UC Davis
Cooperator:	John Gilbert, Adams Grain Company, Arbuckle, CA

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION
SAMPLE COSTS TO PRODUCE CALIFORNIA UPLAND COTTON
SACRAMENTO VALLEY-2002

CONTENTS

INTRODUCTION2
ASSUMPTIONS.....3
Production Operating Costs3
Cash Overhead Costs6
Non-Cash Overhead Costs7
REFERENCES.....8
Table 1. COST PER ACRE TO PRODUCE COTTON10
Table 2. COSTS AND RETURNS PER ACRE TO PRODUCE COTTON.....12
Table 3. MONTHLY CASH COSTS14
Table 4. RANGING ANALYSIS15
Table 5. WHOLE FARM EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS17
Table 6. HOURLY EQUIPMENT COSTS19

INTRODUCTION

Sample costs for California Upland cotton production in the Sacramento Valley are presented in this study. This study is intended as a guide only, and can be used to make production decisions, determine potential returns, prepare budgets and evaluate production loans. Practices described are based on production procedures considered typical for growing conditions in the Sacramento Valley region. Sample costs given for labor, materials, equipment and contract services are based on current figures. Some costs and practices detailed in this study may not be applicable to your situation. A blank *Your Cost* column is provided to enter your actual costs on Tables 1 and 2.

For an explanation of calculations used for the study refer to the attached Assumptions or call the Department of Agricultural and Resource Economics, University of California- Davis, (530) 752-3589 or the farm advisor in the county of interest.

Sample cost and return studies for many commodities are available and can be requested through the Department of Agricultural and Resource Economics, UC Davis. Current studies can be downloaded from the department website at <http://coststudies.ucdavis.edu> or obtained from selected county UC Cooperative Extension offices.

The University of California Cooperative Extension in compliance with the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, and the Rehabilitation Act of 1973 does not discriminate on the basis of race, creed, religion, color, national origins, or mental or physical handicaps in any of its programs or activities, or with respect to any of its employment practices or procedures. The University of California does not discriminate on the basis of age, ancestry, sexual orientation, marital status, citizenship, medical condition (as defined in section 12926 of the California Government Code) or because the individuals are disabled or Vietnam era veterans. Inquiries regarding this policy may be directed to the Personnel Studies and Affirmative Action Manager, Agriculture and Natural Resources, 2120 University Avenue, University of California, Berkeley, California 94720, (510) 644-4270.

University of California and the United States Department of Agriculture, Federal Crop Insurance Program cooperating.

ASSUMPTIONS

The following assumptions refer to Tables 1 to 6 and pertain to sample costs for producing California upland cotton in the Sacramento Valley region. This study also assumes the grower will partially participate in the government crop programs under the Farm Security and Rural Investment Act of 2002. The costs figures are based on typical cultural practices used by farmers in the Sacramento Valley and are not University of California recommendations. All costs in this study are presented on an annual, per acre basis. Some farming practices described may not be required or used during every production year while other operations may be needed.

The use of trade names in this report does not constitute an endorsement or recommendation by the University of California nor is any criticism implied by omission of other similar products.

Farm. The hypothetical farm consists of 1,200 non-contiguous acres in the Sacramento Valley region of which 100 acres are planted to cotton. The cotton is farmed on a crop share basis with the landowner. Other crops grown in rotation with cotton include wheat, processing tomatoes, alfalfa, and corn. The grower owns 1,100 acres and rents the planted cotton acreage.

Production Operating Costs

Cultural practices. Cultural practices for the production of 30-inch row cotton in the Sacramento Valley vary. Seasonal pest pressures, water availability and government regulations can cause differences in cultural inputs. Land preparation operations prior to making beds include: deep ripping, discing, and triplaning. Contact your local farm advisor for advice on production practices.

Planting. California Upland cotton in the Sacramento Valley is planted 12 to 18 pounds per acre. In this study a seeding rate of 15 pounds per acre is used. Early maturing varieties are recommended for the Sacramento Valley in order for adequate yields to be reached and harvested before early fall rains.

Irrigation. Water cost is a combination of district and pumped water. Price per acre-foot for water will vary in this region depending on the particular irrigation district or various well characteristics and other irrigation factors. In this study, water cost \$25.20 per acre-foot. Based on current information, it is estimated that cotton in this region uses 3 acre-feet of water.

Fertilization. Nitrogen is the primary nutrient applied to cotton throughout the growing season. A total of 150 pounds of N per acre is used in this study. Aqua ammonia (20-0-0) is applied preplant in January at 90 pounds of N per acre. The remaining nitrogen is sidedressed using UN-32 at 60 pounds of N per acre.

Pest Management. The pesticides, rates, and cultural practices mentioned in this cost study are listed in the *UC IPM Pest Management Guidelines-Cotton* and *Integrated Pest Management For Cotton in the Western Region of the United States*. **Pesticides mentioned in this study are not recommendations, but those commonly used in the region.** For information and pesticide use permits, contact the local county Agricultural Commissioner's office. For information on other pesticides available, pest identification, monitoring, and management, visit the UC IPM website at www.ipm.ucdavis.edu.

Pest Control Adviser (PCA). Written recommendations are required for many pesticides and are made by licensed pest control advisors. In addition the PCA will monitor the field for agronomic problems including pests and nutrition. Growers may hire private PCA's or receive the service as part of a service agreement with an agricultural chemical and fertilizer company.

Weeds. A mix of materials and cultural practices are used to manage weeds in cotton. Beginning in February a pre-emergent herbicide, Trifluralin, is applied and incorporated to control early season weeds. Mechanical cultivations begin in May and continue through June. Three cultivations, using both rolling and sled cultivators, are made to control weeds. Staple, a post-emergence herbicide is band sprayed over the top of the plants to control weeds within the plant row. The field is hand hoed in May.

Insect and Disease. Cotton pests include lygus (*Lygus hesperus*), several species of worms (*Heliothis spp.* and *Spodoptera spp.*), thrips (*Frankliniella occidentalis* and *Caliothrips fasciatus*) and various spider mites (*Tetranychus spp.*). In this study, Temik is applied during planting for thrip control. Comite for spider mites is applied in May. During the month of July, lygus are controlled with an insecticide application using Provado. Leverage insecticide is applied in a second application if necessary. In this study, all insecticides and miticides are applied by ground application.

Growth Regulator & Defoliation. In July, a growth regulator, Pix, is applied. Growth regulators cause the plant to switch from vegetative growth toward boll maturation. This leads to more boll uniformity and helps mechanical harvest. Ginstar and Prep, defoliants, are applied in September and a second defoliation is made in October using Starfire and Defol (sodium chlorate). Defoliation eases mechanical picking and diminishes staining of bolls by leaves while reducing the amount of trash collected with the cotton. Proper timing and rates of growth regulators and defoliants are essential for good yields and efficient harvesting.

Harvest. It is assumed that a custom operator harvests the cotton crop. The cotton is dumped from the harvester directly into the module builder. It presses the loose seed cotton into a dense and economical unit for transport to the gin. Custom harvesting rates in the Sacramento Valley ranged from \$115 to \$125 per acre. In this study, we use \$115 per acre.

Growers may choose to own cotton pickers and module builders, or hire a custom harvester to perform the harvest. Many factors are important in deciding which harvesting option a grower uses. These factors and appropriate method of analysis are discussed in “*Acquiring alfalfa hay harvest equipment: A financial analysis of alternatives*”. Though this report specifically addresses hay harvesting the same principles and methodology can be used with cotton harvesting.

Yields. The crop yield used in this study is based on 1,250 pounds of lint and 2,300 pounds of seed per acre.

Returns. An estimated price of a \$0.65 per pound of lint and \$0.07 per pound (\$140 per ton) of seed is used to calculate returns. Also, a Marketing Loan and Loan Deficiency Payment of \$0.15 per pound of lint are included in the revenue. Returns shown will vary and the yields and prices used in this cost study are an estimate based on current markets. For simplicity in the ranging analysis in Table 4, we include the price plus marketing loan benefit together and a range of \$0.70 to \$1.00 per pound where variation in the price and marketing loan benefit tend to offset one another, but not perfectly so there remains variation in the sum of the two revenue flows.

Revenue from federal government programs. A typical cotton farm may receive revenue from three major payment programs under the Farm Security and Rural Investment Act of 2002 (FSRI).

Direct Payments in the FSRI Act pay a predetermined amount per unit of established crop-specific farm program base, but do not require growing the program crop or any other crop. Since these payments are essentially unrelated to cotton production itself, this revenue is not appropriately associated with costs and is not included in the “cotton” revenue in Table 2.

Counter-Cyclical Payment program payments are designed to payout the difference between the legislated target price for the commodity and the national average market price for that marketing year. However, as with the direct payment program, these counter-cyclical payments are made on the basis of historical base and do not require any program crop production. Therefore it is inappropriate to associate these payments with the production of cotton and they are not included in the “cotton” revenue presented in Table 2.

Marketing Loan and Loan Deficiency Payment programs make payments to farmers equal to the difference between the loan rate and the loan repayment rate for each pound of cotton received. Because these payments are tied directly to cotton production, they are included as a part of the revenue from cotton farming in Table 2. The loan rate for cotton is scheduled to be \$0.52 per pound for the next six years. The loan program in essence pays the grower the difference between this loan rate and the applicable adjusted world price (AWP). Based on past price relationships, the assumed cotton price of \$0.65 used for the analysis below is consistent with a marketing loan benefit of about \$0.15 per pound. Therefore, for the hypothetical farm in this study the revenue is \$.80 per pound of production.

Ginning. The ginning cost used in this study is \$5.35 per cwt. The gin normally keeps the seed, but gives the grower a credit, which covers most of the ginning costs. The grower’s seed credit in this study is \$140 per ton or \$0.07 per pound.

Labor. Hourly wages for workers are \$7.75 for machine operators and \$6.75 per hour for non-machine labor. Adding 34% for the employers share of state and federal payroll taxes, and other possible benefits gives the labor rates shown of \$10.39 per hour for machine labor and \$9.05 per hour for non-machine labor. Labor for operations involving machinery are 20% higher than the operation time given in Table 1 to account for the extra labor involved in equipment set up, moving, maintenance, work breaks, and repair.

Pickup. The grower uses the pickup for business and personal use. The assumed business use is 12,000 miles per year for the farm.

Assessments. Cotton is assessed several fees by several organizations. The USDA levies a fee for High Volume Instrumentation (HVI) classing. This determines the classification cotton is graded for marketing purposes. Growers are mandated with a \$1.45 per bale fee.

Cotton Incorporated was created by a federal marketing order and is overseen by the Cotton Board. Cotton Inc. provides funds for industry research and promotion. Growers pay \$1.00 per bale + .50% of the sales price.

The California State Department of Food and Agriculture (CDFA) manages and enforces the Pink Bollworm Project. This program, which through detection and legislated postharvest practices, controls pink bollworm in the San Joaquin Valley and other cotton growing districts in the state. The Pink Bollworm Project maintains several control districts to administer the program. Currently there is no district in the Sacramento Valley, but one may be created if cotton acreage becomes large enough to warrant it. Under the project, growers are assessed a fee only if cotton is ginned within a project district. For example, if cotton grown in the Sacramento Valley is processed in the San Joaquin Valley a fee is collected; if it is ginned out of state no assessment is charged. CDFA has a current charge of \$2.00 per bale.

The National Cotton Council, a voluntary organization, collects an assessment to provide lobbying, advocacy, and public relations for the cotton industry at the national level. The current rate paid by growers is \$0.45 per bale.

Regionally, the California Cotton Growers Association assists California cotton growers in advocating their position in the legislature and charges \$0.15 per bale. Participation in this organization is voluntary.

Equipment Operating Costs. Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by the American Society of Agricultural Engineers (ASAE). Fuel and lubrication costs are also determined by ASAE equations based on maximum PTO horsepower, and fuel type. Prices for on-farm delivery of diesel and gasoline are \$1.26 and \$1.51 per gallon, respectively. The fuel, lube, and repair cost per acre for each operation in Table 2 is determined by multiplying the total hourly operating cost in Table 6 for each piece of equipment used for the selected operation by the hours per acre. Tractor time is 10% higher than implement time for a given operation to account for setup, travel and down time.

Interest on operating capital. Interest on operating capital is based on cash production costs and is calculated monthly until harvest at a nominal rate of 7.40% per year. A nominal interest rate is the typical market cost of borrowed funds. The interest cost of post harvest operations is discounted back to the last harvest month using a negative interest charge.

Risk. The risks associated with crop production should not be minimized. While this study makes every effort to model a production system based on typical, real world practices, it cannot fully represent financial, agronomic and market risks, which affect the profitability and economic viability.

Cash Overhead Costs

Cash overhead consists of various cash expenses paid out during the year that are assigned to the whole farm and not to a particular operation. These costs include property taxes, interest on operating capital, office expense, liability and property insurance, equipment repairs, and management.

Property Taxes. Counties charge a base property tax rate of 1% on the assessed value of the property. In some counties special assessment districts exist and charge additional taxes on property including equipment, buildings, and improvements. For this study, county taxes are calculated as 1% of the average value of the property. Average value equals new cost plus salvage value divided by 2 on a per acre basis.

Insurance. Insurance for farm investments varies depending on the assets included and the amount of coverage. Property insurance provides coverage for property loss and is charged at 0.660% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$1,216 for the entire farm.

Crop Insurance. This is insurance to protect the grower in case of crop failure due to environmental factors.

Office Expense. Office and business expenses are estimated at \$15 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, shop, and office utilities, and miscellaneous administrative charges.

Share Rent. The land is leased under a crop share agreement with the landowner receiving 12% of the gross proceeds that includes 12% of all government subsidy payments for the crop year. The agreement includes the use of the irrigation system on the property.

Investment Repairs. Annual maintenance is calculated as 2% of the purchase price.

Non-Cash Overhead Costs

Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments.

Capital Recovery Costs. Capital recovery cost is the annual depreciation and interest costs for a capital investment. It is the amount of money required each year to recover the difference between the purchase price and salvage value (unrecovered capital). It is equivalent to the annual payment on a loan for the investment with the down payment equal to the discounted salvage value. This is a more complex method of calculating ownership costs than straight-line depreciation and opportunity costs, but more accurately represents the annual costs of ownership because it takes the time value of money into account (Boehlje and Eidman). The formula for the calculation of the annual capital recovery costs is $((\text{Purchase Price} - \text{Salvage Value}) \times \text{Capital Recovery Factor}) + (\text{Salvage Value} \times \text{Interest Rate})$.

Salvage Value. Salvage value is an estimate of the remaining value of an investment at the end of its useful life. For farm machinery (tractors and implements) the remaining value is a percentage of the new cost of the investment (Boehlje and Eidman). The percent remaining value is calculated from equations developed by the American Society of Agricultural Engineers (ASAE) based on equipment type and years of life. The life in years is estimated by dividing the wear out life, as given by ASAE, by the annual hours of use in this operation. For other investments including irrigation systems, buildings, and miscellaneous equipment, the value at the end of its useful life is zero. The salvage value for equipment and investments are shown in Table 5.

Capital Recovery Factor. Capital recovery factor is the amortization factor or annual payment whose present value at compound interest is 1. The amortization factor is a table that corresponds to the interest rate used and the life of the machine.

Interest Rate. The interest rate of 6.41% used to calculate capital recovery cost is the USDA-ERS's ten-year average of California's agricultural sector long-run rate of return to production assets from current income. It is used to reflect the long-term realized rate of return to these specialized resources that can only be used effectively in the agriculture sector. In other words, the next best alternative use for these resources is in another agricultural enterprises.

Land. The grower owns 1,100 acres of row crop land valued at \$3,000 per acre. The site for the cotton in this study is leased land enrolled in the government subsidy program.

Building. The buildings are metal buildings erected on a cement slab and approximately cover 2,400 square feet.

Tools. This includes shop tools, hand tools, and miscellaneous field tools.

Fuel Tanks. Diesel and gasoline fuel tanks with electric pumps are set up in a cement containment pad that meets federal, state, and county regulations.

Tool Carrier, Trailer Low-bed, Truck Tractor. The tool carrier is used to move the farm implements. The truck tractor and low-bed are used on the farm to move self-propelled equipment (tractors, etc.).

Equipment. Farm equipment is purchased new or used, but the study shows the current purchase price for new equipment. The new purchase price is adjusted to 60% to indicate a mix of new and used equipment. Annual ownership costs for equipment and other investments are shown in Table 6. Equipment costs are composed of three parts: non-cash overhead, cash overhead, and operating costs. Both of the overhead factors have been discussed in previous sections. The operating costs consist of repairs, fuel, and lubrication and are discussed under operating costs.

Table Values. Due to rounding, the totals may be slightly different from the sum of the components.

References

- Blank, Steve, Karen Klonsky, Kim Norris, and Steve Orloff. 1992. *Acquiring Alfalfa Hay Equipment: A Financial Analysis of Alternatives*. Giannini Information Series No. 92-1. Univ. of California. Oakland, CA.
- Boehlje, Michael D., and Vernon R. Eidman. 1984. *Farm Management*. John Wiley and Sons. New York, NY.
- Flint, Mary Louise (ed.). 1984. *Integrated Pest Management for Cotton in the Western Region of the United States*. Pub. 3305. Statewide IPM Project. Univ. of California. Oakland, CA.
- Goodall, Peter B. 1990. *What Alternatives Do We Have for Non-Chemical Control of Pests*. p. 41-45. In Summary Proceedings Western Cotton Production Conference. Fresno, CA. Aug. 6-7, 1990. Southwest Five-States Cotton Growers Association.
- Grimes, Donald W. and Kamal M. El-Zik. 1982. *Water Management for Cotton*. Bul. 1904. Coop. Ext. Univ. of California. Oakland, CA.
- Kearney, Tom, Tom Kerby, Karen Klonsky, Mike Murray, and Pete Livingston. 1993. *Sample Costs to Produce Cotton in the Sacramento Valley: Non-Acala Upland Variety & Non-Government Program Participation*.
- Kerby, Tom A., Mark Keeley, and Stephanie Johnson. 1987. *Growth and Development of Acala Cotton*. Bul. 1921. Agric. Exp. Stn. Univ. of California. Oakland, CA.
- Kerby, Tom. 1988. *Managing Short Season Cotton*. p. 46-49. In Summary Proceedings Western Cotton Production Conference. Las Cruces, NM. Aug. 9-11, 1988. Southwest Five-States Cotton Growers Association.
- Kerby, Tom. 1990. *Status and Future of 30-inch Cotton in the West*. p. 78-82. In Summary Proceedings Western Cotton Production Conference. Fresno, CA. Aug. 6-7, 1990. Southwest Five-States Cotton Growers Association.
- Mouser, Buel. 1979. *Cotton Variety Testing in Butte County, California; A Three-Year Study of Yield, Quality, and Early Maturing Characteristics of Several Cotton Varieties*. Masters thesis. California State Univ., Chico. Unpubl.
- Munier, Doug, Steve Wright, Bob Hutmacher, and Larry Godfrey. 2001. *Sacramento Valley Cotton Production Guide*. Glenn County Cooperative Extension, Orland, CA.
- Sevacherian, Vahram, and Kamal M. El-Zik. 1983. *A Slide Rule for Cotton Crop and Insect Management*. Leaflet 21361. Coop. Ext. Univ. of California. Oakland, CA.
- Statewide IPM Project. 1990. *UC Pest Management Guidelines, Cotton*. In M. L. Flint (ed.) UC IPM Pest Management Guidelines. Pub. 3339. IPM Education and Publ. Univ. of California, Div. of Agric. and Natural Resources. Oakland, CA.
- Vargas, Ron. 1989. *Difficult to Manage Weeds in California Cotton*. p. 70. In Summary Proceedings Western Cotton Production Conference. Altus OK. Aug. 8-9, 1989. Southwest Five-States Cotton Growers Association.
- Williams, Earl. 2002. CEO, California Cotton Ginners Association, Fresno, CA 93727.

UC COOPERATIVE EXTENSION
Table 1. COSTS PER ACRE TO PRODUCE COTTON
 SACRAMENTO VALLEY 2002

Operation	Operation Time (Hrs/A)	Cash and Labor Cost per Acre				Total Cost	Your Cost
		Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent		
Cultural:							
Deep Rip	0.49	8	13	0	0	21	
Primary discing-2X	0.13	2	4	0	0	6	
Triplane-2X	0.30	5	9	0	0	13	
Make Beds	0.09	1	2	0	0	3	
Weed Control-Fallow Beds	0.13	2	2	7	0	11	
Fertilizer-Preplant	0.14	2	2	23	0	27	
Incorporate Herbicide	0.14	2	3	4	0	8	
Plant/Cap/Insecticide	0.20	3	3	38	0	44	
Uncap Beds	0.09	1	2	0	0	3	
Cultivate	0.41	6	6	0	0	12	
Hand Weeding	0.00	0	0	0	25	25	
Weed Control-Over the Top Spray	0.13	2	2	18	0	22	
Insect Control-Miticide	0.13	2	2	24	0	28	
Make Ditch	0.15	2	4	0	0	6	
Irrigate	5.25	49	0	76	0	125	
Close Ditch	0.13	2	2	0	0	4	
Insect Control-Insecticide	0.26	4	4	40	0	48	
Fertilizer-Sidedress	0.14	2	2	16	0	20	
Growth Regulator	0.13	2	2	8	0	11	
Defoliate Cotton	0.26	4	3	40	0	48	
Pickup Truck Use	0.24	4	1	0	0	5	
TOTAL CULTURAL COSTS	8.94	107	66	293	25	491	
Harvest:							
Picking & Module Making	0.00	0	0	0	115	115	
Haul Cotton to Gin	0.00	0	0	0	35	35	
Gin Cotton	0.00	0	0	0	107	107	
TOTAL HARVEST COSTS	0.00	0	0	0	257	257	
Post-Harvest:							
Chop Stalks	0.07	1	1	0	0	3	
Disc Field-1X	0.14	2	4	0	0	6	
TOTAL POST-HARVEST COSTS	0.21	3	5	0	0	8	
Assessment:							
Assessment Fees	0.00	0	0	12	0	12	
TOTAL ASSESSMENT COSTS	0.00	0	0	12	0	12	
Interest on operating capital @ 7.40%						20	
TOTAL OPERATING COSTS/ACRE		110	71	305	282	788	
TOTAL OPERATING COSTS/LB						0.63	
CASH OVERHEAD:							
Liability Insurance						1	
Office Expense						15	
Share Rent @ 12% Gross						133	
Crop Insurance						10	
Property Taxes						2	
Property Insurance						2	
Investment Repairs						3	
TOTAL CASH OVERHEAD COSTS						166	
TOTAL CASH COSTS/ACRE						955	
TOTAL CASH COSTS/LB						0.76	

Table 1- continued

	Operation Time (Hrs/A)		Total Cost	Your Cost
Non-Cash Overhead:	Per producing	Annual Cost		
	Acre	Capital Recovery		
Shop Building	50	4	4	
Shop Tools	11	1	1	
Fuel Tanks & Pumps	17	1	1	
Fuel Wagon	2	0	0	
Siphon Tubes	8	1	1	
Tool Carrier	13	1	1	
Trailer-Lowbed	6	1	1	
Truck Tractor Used	21	2	2	
Equipment	263	31	31	
TOTAL NON-CASH OVERHEAD COSTS	389	42	42	
TOTAL COSTS/ACRE			996	
TOTAL COSTS/LB			0.80	

UC COOPERATIVE EXTENSION
Table 2. COSTS AND RETURNS PER ACRE TO PRODUCE COTTON
 SACRAMENTO VALLEY - 2002

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	You Cost
GROSS RETURNS					
Cotton	1,250.00	lb	0.65	813	
FSA-ML/LDP	912.90	lb	0.15	137	
Seed	2,300.00	lb	0.07	161	
Total Gross Income				1,111	
OPERATING COSTS					
Herbicide:					
Roundup-Ultra	1.50	pint	4.50	7	
Trifluralin 4	1.00	pint	3.50	4	
Staple	0.38	fl oz	48.23	18	
Insecticide:					
Temik	4.00	lb	4.32	17	
Provado	3.75	fl oz	4.28	16	
Miticide:					
Zephyr	4.00	fl oz	6.00	24	
Comite	2.00	pint	12.14	24	
Growth Regulator:					
Pix	0.50	pint	15.16	8	
Defoliant:					
Ginstar	8.00	fl oz	1.83	15	
Prep	2.00	pint	6.24	12	
Starfire	1.00	pint	5.78	6	
Defol 6	0.75	gal	10.00	8	
Fertilizer:					
20-0-0	90.00	lb N	0.26	23	
UN 32	60.00	lb N	0.26	16	
Seed:					
Seed	15.00	lb	1.40	21	
Irrigation:					
Water	36.00	ac in	2.48	89	
Contract:					
Hand Weeding	1.00	acre	25.00	25	
Custom:					
Picking/Module Building	1.00	acre	115.00	115	
Haul Cotton to Gin	1.00	acre	35.00	35	
Gin Cotton	1.00	acre	107.00	107	
Assessments:					
USDA Classing Fee	2.50	bale	1.30	3	
Pink Bollworm Project	2.50	bale	2.00	5	
Cotton Inc.	2.50	bale	1.00	3	
CA Cotton Growers	2.50	bale	0.15	0	
National Cotton Council	2.50	bale	0.45	1	
Labor (machine)	4.68	hrs	13.07	61	
Labor (non-machine)	5.25	hrs	9.38	49	
Fuel - Gas	0.48	gal	1.51	1	
Fuel - Diesel	35.22	gal	1.26	44	
Lube				7	
Machinery Repair				19	
Interest on Operating Capital @ 7.40%				20	
TOTAL OPERATING COSTS/ACRE				788	
TOTAL OPERATING COSTS/LB				0.63	
NET RETURNS ABOVE OPERATING COSTS				322	

Table 2 – continued

	Value or Cost /Acre	Your Cost
CASH OVERHEAD COSTS:		
Liability Insurance	1	
Office Expense	15	
Share Rent @ 12% gross	133	
Crop Insurance	10	
Property Taxes	2	
Property Insurance	2	
Investment Repairs	3	
TOTAL CASH OVERHEAD COSTS/ACRE	166	
TOTAL CASH COSTS/ACRE	955	
TOTAL CASH COSTS/LB	0.76	
NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY)		
Shop Building	4	
Shop Tools	1	
Fuel Tanks & Pumps	1	
Fuel Wagon	0	
Siphon Tubes	1	
Tool Carrier	1	
Trailer-Lowbed	1	
Truck Tractor Used	2	
Equipment	31	
TOTAL NON-CASH OVERHEAD COSTS/ACRE	42	
TOTAL COSTS/ACRE	996	
TOTAL COSTS/LB	0.80	
NET RETURNS ABOVE TOTAL COST/ACRE	114	

UC COOPERATIVE EXTENSION
Table 3. MONTHLY CASH COSTS PER ACRE TO PRODUCE COTTON
 SACRAMENTO VALLEY 2002

Beginning OCT 01	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	TOTAL
Ending OCT 02	01	01	01	02	02	02	02	02	02	02	02	02	02	
Cultural:														
Deep Rip	21													21
Primary discing-2X	6													6
Triplane-2X	13													13
Make Beds	3													3
Weed Control-Fallow Beds				11										11
Fertilizer-Preplant					27									19
Incorporate Herbicide					8									8
Plant/Cap/Insecticide							44							44
Uncap Beds							3							3
Cultivate							4	4	4					12
Hand Weeding								25						25
Weed Control-Over-The-Top								22						22
Insect Control-Miticide									28					28
Make Ditch									3	3				6
Irrigate									42	42	42			125
Close Ditch									2			2		4
Insect Control-Insecticide								28	20					48
Fertilizer-Sidedress									20					20
Growth Regulator										11				11
Defoliate Cotton												31	17	48
Pickup Truck Use	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL CULTURAL COSTS	44	0	0	11	35	0	52	80	119	57	42	33	17	491
Harvest:														
Picking & Module Building													115	115
Haul Cotton to Gin													35	35
Gin Cotton													107	107
TOTAL HARVEST COSTS													257	257
Post-Harvest:														
Chop Stalks													3	3
Disc Field-1X													6	6
TOTAL POST-HARVEST COSTS													8	8
Assessment:														
Assessment Fees													12	12
TOTAL ASSESSMENT COSTS													12	12
Interest on operating Capital	0	0	0	0	1	1	1	2	2	3	3	3	5	20
TOTAL OPERATING COSTS/ACRE	44	1	1	11	36	1	53	81	121	59	45	36	300	788
TOTAL OPERATING COSTS/LB	0.04	0.00	0.00	0.01	0.03	0.00	0.01	0.06	0.10	0.05	0.04	0.03	0.24	0.63
OVERHEAD:														
Liability Insurance				1										1
Office Expense	1	1	1	1	1	1	1	1	1	1	1	1	1	15
Share Rent @12% gross													133	133
Crop Insurance													10	10
Property Taxes				1						1				3
Property Insurance	1							1						2
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0	0	3
TOTAL CASH OVERHEAD COSTS	2	1	1	4	1	1	2	1	1	3	1	1	145	166
TOTAL CASH COSTS/ACRE	47	2	2	15	37	2	55	83	122	62	46	37	445	955
TOTAL CASH COSTS/LB	0.04	0.00	0.00	0.01	0.02	0.00	0.06	0.07	0.10	0.05	0.04	0.03	0.36	0.76

UC COOPERATIVE EXTENSION
Table 4. RANGING ANALYSIS
 SACRAMENTO VALLEY 2002
 COSTS PER ACRE AT VARYING YIELD TO PRODUCE COTTON

	YIELD (lbs lint/acre)						
	875	1,000	1,125	1,250	1,375	1,500	1,625
OPERATING COSTS/ACRE:							
Cultural Cost	491	491	491	491	491	491	491
Harvest Cost	257	257	257	257	257	257	257
Post-harvest Cost	8	8	8	8	8	8	8
Assessment Cost	12	12	12	12	12	12	12
Interest on operating capital	20	20	20	20	20	20	20
TOTAL OPERATING COSTS/ACRE	788	788	788	788	788	788	788
TOTAL OPERATING COSTS/Lint lb	0.90	0.79	0.70	0.63	0.57	0.53	0.49
CASH OVERHEAD COSTS/ACRE	166	166	166	166	166	166	166
TOTAL CASH COSTS/ACRE	955	955	955	955	955	955	955
TOTAL CASH COSTS/Lint lb	1.09	0.95	0.85	0.76	0.69	0.64	0.59
NON-CASH OVERHEAD COSTS/ACRE	42	42	42	42	42	42	42
TOTAL COSTS/ACRE	996	996	996	996	996	996	996
TOTAL COSTS/Lint lb	1.14	1.00	0.89	0.80	0.72	0.66	0.61

Bold = Yields used in study

Table 4 – continued

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR COTTON

PRICE (\$/unit)			YIELD (lbs/acre)						
Lint			875	1,000	1,125	1,250	1,375	1,500	1,625
	FSA*		913	913	913	913	913	913	913
		Seed	1,610	1,840	2,070	2,300	2,530	2,760	2,990
0.55	0.15	0.07	-98	0	99	197	596	394	493
0.60	0.15	0.07	-55	50	155	260	365	469	574
0.65	0.15	0.07	-11	100	211	322	433	544	655
0.70	0.15	0.07	33	150	267	385	502	619	737
0.75	0.15	0.07	77	200	324	447	571	694	818
0.80	0.15	0.07	120	250	380	510	640	769	899
0.85	0.15	0.07	164	300	436	572	708	844	980

*Marketing Loan/Loan Deficiency Payment

NET RETURNS PER ACRE ABOVE CASH COSTS FOR COTTON

PRICE (\$/unit)			YIELD (lb/acre)						
Lint			875	1,000	1,125	1,250	1,375	1,500	1,625
	FSA*		913	913	913	913	913	913	913
		Seed	1,610	1,840	2,070	2,300	2,530	2,760	2,990
0.55	0.15	0.07	-265	-166	-68	31	129	228	326
0.60	0.15	0.07	-221	-116	-11	93	198	303	408
0.65	0.15	0.07	-177	-66	45	156	267	378	489
0.70	0.15	0.07	-134	-16	101	218	336	453	570
0.75	0.15	0.07	-90	34	157	281	404	528	651
0.80	0.15	0.07	-46	84	214	343	473	603	733
0.85	0.15	0.07	-2	134	270	406	542	678	814

*Marketing Loan/Loan Deficiency Payment

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR COTTON

PRICE (\$/unit)			YIELD (lb/acre)						
Lint			875	1,000	1,125	1,250	1,375	1,500	1,625
	FSA*		913	913	913	913	913	913	913
		Seed	1,610	1,840	2,070	2,300	2,530	2,760	2,990
0.55	0.15	0.07	-307	-208	-110	-11	88	186	285
0.60	0.15	0.07	-263	-2169	-53	51	156	261	366
0.65	0.15	0.07	-219	-108	3	114	225	336	447
0.70	0.15	0.07	-175	-58	59	176	294	411	528
0.75	0.15	0.07	-132	-8	115	239	363	486	610
0.80	0.15	0.07	-88	42	172	301	431	561	691
0.85	0.15	0.07	-44	92	228	364	500	636	772

*Marketing Loan/Loan Deficiency Payment

UC COOPERATIVE EXTENSION
**Table 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT,
AND BUSINESS OVERHEAD COSTS**
SACRAMENTO VALLEY 2002

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Cash Overhead			Total
					Capital Recovery	Insur- ance	Taxes	
02	105 hp 2wd Tractor	62,000	10	18,314	7,225	265	402	7,892
02	105 hp 4wd Tractor	75,000	10	22,154	8,740	321	486	9,547
02	150 hp 4wd Tractor	110,000	10	32,492	12,819	470	712	14,002
02	230 hp track-type	154,000	10	45,489	17,947	658	997	19,602
02	Cultivator-Rolling	6,384	12	884	728	24	36	788
02	Cultivator-Sled	4,634	12	642	528	17	26	572
02	Disc-Offset 26'	40,433	12	5,600	4,608	152	230	4,990
02	Disc-Stubble 16'	12,944	12	1,793	1,475	49	74	1,597
02	Ditcher - 8'	7,800	15	749	794	28	43	865
02	Insecticide Box	1,920	10	340	241	7	11	259
02	Lister - 6 row	5,312	15	510	540	19	29	589
02	Mower-Flail 20'	14,445	15	1,387	1,470	52	79	1,601
02	Pickup Truck _ Ton	17,655	7	6,697	2,421	80	122	2,623
02	Planter -6 row	11,559	10	2,044	1,449	45	68	1,562
02	Rear Blade - 10'	2,581	18	172	240	9	14	263
02	Saddle Tank 300 gal #1	3,218	10	569	403	13	19	435
02	Saddle Tank 300 gal #2	3,218	10	569	403	13	19	435
02	Spray boom- 15'	362	10	64	45	1	2	49
02	Sprayer - 200 gal	3,876	10	685	486	15	23	524
02	Subsoiler - 16'	7,200	10	1,273	903	28	42	973
02	Triplane - 16'	20,109	12	2,785	2,292	76	114	2,482
02	Uncapper - 6 row	6,373	15	612	648	23	35	706
TOTAL		571,023		145,824	66,405	2,366	3,584	72,355
60% of New Cost*		342,614		87,494	39,843	1,419	2,151	43,413

* Used to reflect a mix of new and used equipment.

Table 5 – continued

ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead			Total
					Insur- ance	Taxes	Repairs	
INVESTMENT								
Fuel Tanks & Pumps	19,835	20	1,984	1,736	72	109	397	2,314
Fuel Wagon	1,975	10	198	259	7	11	40	317
Shop Building	60,000	20		4456	198	300	1,200	6,154
Shop Tools	13,072	20	1,307	1,144	47	72	131	1,394
Siphon Tubes	10,000	15	250	1,047	34	51	200	1,332
Tool Carrier	15,118	15	1,512	1,536	55	83	756	2,430
Trailer-Lowbed	7,695	15	769	782	28	42	154	1,006
Truck Tractor Used	25,000	15	4,885	2,440	99	149	500	3,188
TOTAL INVESTMENT	152,695		10,905	13,399	540	818	3,378	18,135

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/		Price/ Unit	Total Cost
	Farm	Unit		
Crop Insurance	100	acre	10.49	1,049
Liability Insurance	1200	acre	1.01	1,212
Office Expense	1200	acre	15.00	18,000
Share Rent @12% Gross	100	acre	133.32	13,332

UC COOPERATIVE EXTENSION
Table 6. HOURLY EQUIPMENT COSTS
 SACRAMENTO VALLEY 2002

Yr	Description	COSTS PER HOUR							Total Costs/Hr.
		Actual Hours Used	Cash Overhead			Operating			
			Capital Recovery	Insur- ance	Taxes	Repairs	Fuel & Lube	Total Oper.	
02	105 hp 2wd Tractor	1,199.80	3.61	0.13	0.20	2.81	8.83	11.64	15.58
02	105 hp 4wd Tractor	1,600.40	3.28	0.12	0.18	1.94	8.83	10.77	14.35
02	150 hp 4wd Tractor	1,600.50	4.81	0.18	0.27	2.84	12.61	15.45	20.70
02	230 hp track-type	1,600.80	6.73	0.25	0.37	3.98	19.34	23.32	30.67
02	Cultivator-Rolling	159.80	2.73	0.09	0.14	1.23	0.00	1.23	4.19
02	Cultivator-Sled	160.20	1.98	0.07	0.10	0.89	0.00	0.89	3.04
02	Disc-Offset 26'	160.20	17.26	0.57	0.86	6.23	0.00	6.23	24.92
02	Disc-Stubble 16'	159.50	5.55	0.18	0.28	2.00	0.00	2.00	8.01
02	Ditcher - 8'	131.00	3.63	0.13	0.20	1.18	0.00	1.18	5.14
02	Insecticide Box	119.60	1.21	0.04	0.06	0.74	0.00	0.74	2.04
02	Lister - 6 row	130.20	2.49	0.09	0.13	1.04	0.00	1.04	3.75
02	Mower-Flail 20'	130.40	6.76	0.24	0.36	6.30	0.00	6.30	13.67
02	Pickup Truck 1/2 Ton	285.00	5.10	0.17	0.26	1.29	3.47	4.76	10.28
02	Planter -6 row	199.60	4.36	0.13	0.20	2.35	0.00	2.35	7.04
02	Rear Blade - 10'	160.00	0.90	0.03	0.05	0.37	0.00	0.37	1.36
02	Saddle Tank 300 gal #1	1,499.60	0.16	0.01	0.01	0.00	0.00	0.00	0.17
02	Saddle Tank 300 gal #2	1,499.80	0.16	0.01	0.01	0.00	0.00	0.00	0.17
02	Spray boom- 15'	150.80	0.18	0.01	0.01	0.10	0.00	0.10	0.29
02	Sprayer - 200 gal	163.00	1.79	0.06	0.08	1.03	0.00	1.03	2.96
02	Subsoiler - 16'	199.60	2.71	0.08	0.13	1.62	0.00	1.62	4.54
02	Triplane - 16'	250.40	5.49	0.18	0.27	3.03	0.00	3.03	8.98
02	Uncapper - 6 row	130.20	2.99	0.11	0.16	1.24	0.00	1.24	4.50