ECONOMICS OF COTTON PRODUCTION
SAN JOAQUIN VALLEY - 1986

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THE WORLD COTTON SITUATION

In a word the outlook for cotton in 1986 is dismal, and though the 1985 Farm Bill will be very beneficial for most growers, the world still faces an enormous carryover of cotton. Figures 1 illustrates the magnitude of the problem.

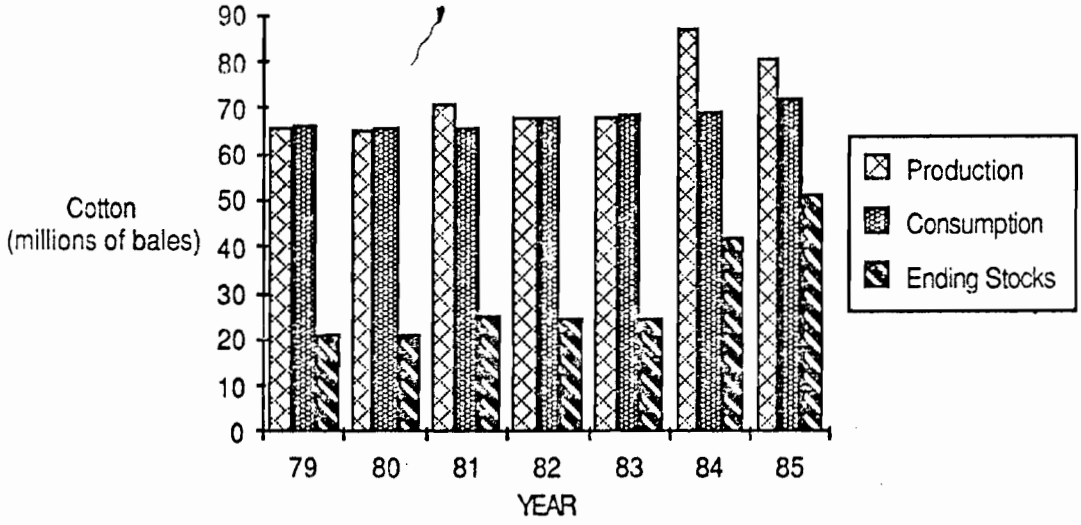

Figure 1. The world cotton situation for 1979 through 1985

World cotton production has gone from annual levels of 65 to 70 million bales to between 80 and 85 million bales in the last few years (figure 2). Increases in consumption have not kept pace with production and this has lead to increases in ending stocks. The Peoples Republic of China has been the major contributor to expansion of stocks in recent years and now hold approximately 50% of the world stocks. There is some question about the quality of the cotton in China but the large world supplies put downward pressure on prices.

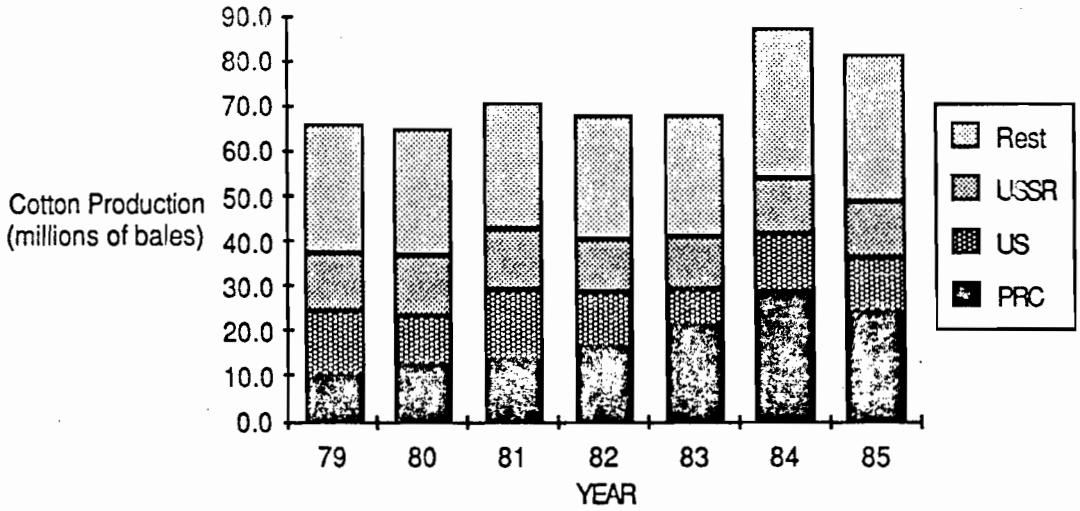

Figure 2. World cotton production from 1979 through 1985.

The ending stocks situation in the United States is not in line with demand. Typically U.S. ending stocks have been in the 2 to 4 million bale range but by August 1986 they are expected to be nearly 9 million bales, (figure 3). This compares to a total offtake (domestic consumption plus exports), of 8.8 million bales. This means that by August we could potentially have more cotton in storage than we consumed during the entire 85/86 cotton year.

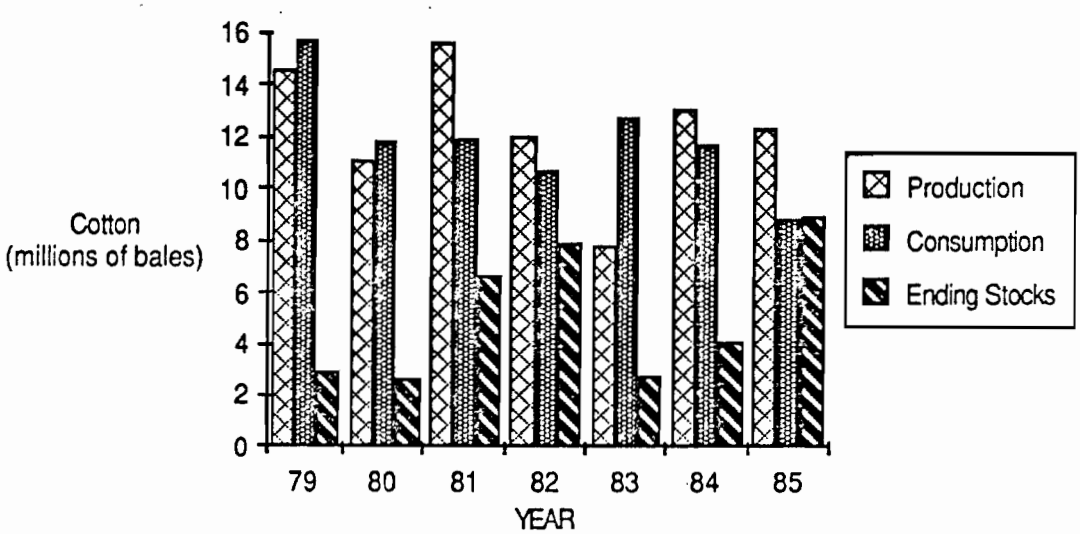

Figure 3. The United States cotton situation for 1979 through 1985

The major reason for the large increase in ending stocks during 85/86 will be declines in U.S. exports, which are projected to fall from 6.2 million bales in 84/85 to 2.8 million bales in 85/86. The effect of the 85 farm bill on exports is unknown at this time, but certain provisions are encouraging.

California production is estimated at 3.15 million bales on 1.34 million acres, giving an average yield of 1,128 pounds per acre. This has not been exceeded since 1964 when yields were 1,134 pounds per acre. This year farm yields in excess of 1300 pounds per acre were common, and many fields averaged near 4 bales per acre.

Exceptional yields in California were financially very beneficial. Figure 4 illustrates the relationship between per unit cost of production ($ per pound) and yield levels or levels of input. This type of information is called sensitivity analysis, and it indicates which factors of production have the largest impact on costs. The steeper the slope the more sensitive the cost of production is to the selected factor. The chart indicates that high yields are the most effective way of reducing cost per unit of production. The second most influential factor is cost of water, but the magnitude is much less. All the other factors considered had only minor influences on cost, but their influence on yield may be substantial, and this would affect the per unit cost of production.

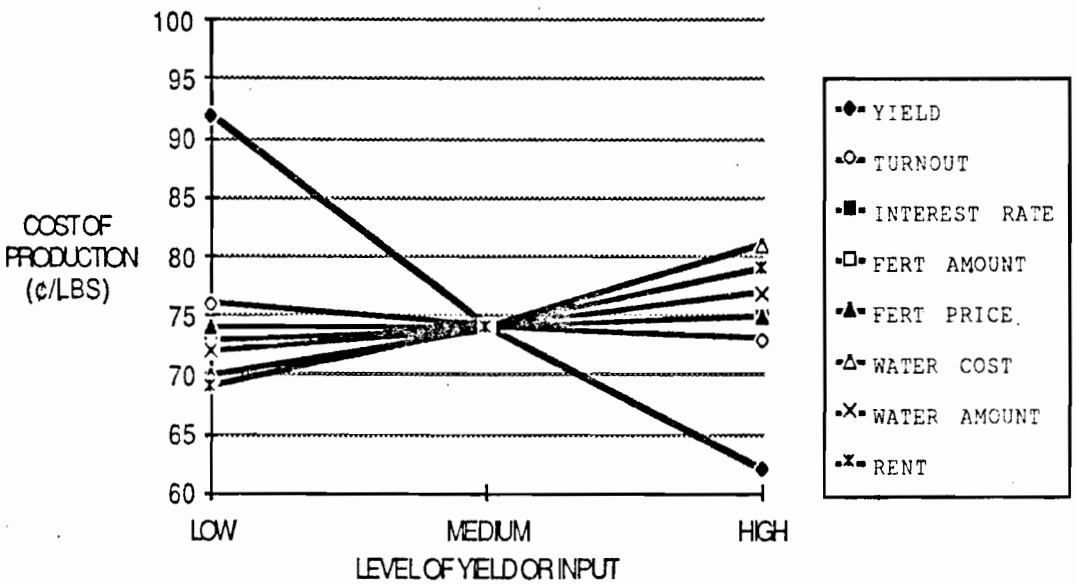

Figure 4. Sensitivity analysis of unit cost of production to three levels of input for yield and various other factors of production.

THE 1985 FARM BILL: COTTON HIGHLIGHTS

The 1985 Farm Bill will have a major impact on cotton production in California and throughout the U.S. With current low prices, which are substantially below the cost of production, nearly all growers will participate in the program. Highlights of the program and some of the anticipated effects are as follows:

1) Acreage Reduction Program
   There will be a 25% unpaid diversion program for participating growers.

2) Loan Price
   For 1986 the loan price will be $.55 per pound

3) Target Price
For 1986 the target price will be $.81 per pound

4) Deficiency Payment
The difference between the average U.S. price and the target price. (In 1986 the average U.S. price will probably be the loan price, so the payment will be $.26 per pound)

5) Deficiency Payment Basis (Tentative)
1) actual planted acres if above 92% of permitted acres

2) 92% of permitted acres if planted acres are between 92% and 50% of permitted

3) actual planted acres if planted acres are less than 50% of permitted.

6) Market Enhancement Program (to be implemented if the Secretary of Agriculture deems U.S. cotton uncompetitive in the world market.)

1) Marketing Loan Original loan can be repaid at the lower of the original loan or the world market price, as determined periodically by the Secretary of Agriculture; or

2) Findley Amendment USDA can announce a 1-time per year loan repayment rate of up to 20% off original loan level.

7) Advance Deficiency Payment
Growers will be eligible for 50% of expected deficiency payment at sign up time

The market enhancement program should have an impact on the ability of U.S. cotton to compete in the world market place. Major provisions of this section have not yet been announced but it should help U.S. cotton sales and insure returns to growers greater than the world price of cotton.

COST OF PRODUCTION WORKSHEET

This sample cost sheet is a GUIDE ONLY. It should assist growers in determining production costs and aid in analyzing cost and procedures which may increase efficiency. The figures shown are based on good management practices and do not represent industry averages. Production costs vary greatly throughout the valley. Tractor size, tillage operations, applications, material, and rates will differ for various growers.

The cost data sheet was developed on a MacIntosh microcomputer using the spread sheet program EXCEL. A copy of the program can be obtained by contacting Lowell Zelinski in Fresno County. The spreadsheet can be supplied in the following formats: Macintosh with Excel, Jazz, or Multiplan, IBM with LOTUS 123, Supercalc 1,2, or 3, or Multiplan, and CP/M (many formats esp. Kaypro 2,4, or 10 or CompuPro (Visan) 8 in) using Supercalc 1 or 2 or Multiplan. If none of the previous formats are compatible with your computer (i.e. you have a Apple II or a Commodore 64) than a listing of the template can be provided. From the listing, someone with a microcomputer could reconstruct the template. Then, by substituting their costs, they could customize the cost sheet for their operation.

Yield

Yield is the most important variable affecting both cost of lint per pound and profit per acre. The cost of production per pound of lint is greatly reduced as the yield of lint per acre increases.

Fertility

Fertilizer costs will vary throughout the Valley depending on soil conditions, material used, and timing and method of application. One application of NH_3 is reflected in this cost sheet. Applications of Urea (water run) or Manure are optional.

Irrigation

Sample cost for water is based on $20/acre foot. This cost will vary depending on irrigation district, portion of water supplied from wells, depth of pumping, time of day the water is pumped, and type of irrigation system.

Irrigation labor costs will vary with number of irrigations per season, hourly wage rates, type of irrigation system, and other factors. Laser leveling of furrow irrigated fields can also have a significant impact on irrigation cost

Pest Management

Insect management costs will vary with location, year, and degree of control expected. This cost sheet includes one mite spray, and one mid-season insect spray. A systemic insecticide treatment at planting is not included.

Weed control cost will vary greatly depending on methods used, and the magnitude of the weed problem. The cost sheet includes one preplant application of a dinitroanaline herbicide, one hand weeding operation, three cultivations, and a layby application of a herbicide.

Nematode control is occasionally required on medium to coarse textured soils and therefore, it is included as an option.

Land Cost

Land cost is related to rental cost rather than interest on market value. Rents will vary considerably throughout the valley, and will be affected by such factors as water availability and price, yield history, soil quality and length of time covered by the rental agreement.

Price Received

The estimated price received by growers assumes that they participate in the 1986 cotton program. A base of 400 acres and a total of 300 planted acres was used in the calculations. It was assumed that there was only one partnership (i.e. $50,000 was the maximum ARP

payment), and that the grower sold his cotton for $0.48/lb. The ASCS yield was 1000 lbs/ac and actual yields was estimated to be 1100 lbs of lint/ac.

COTTON CASH FLOW BUDGET

Banks are now requiring a monthly cash flow budget in order to finance farming operations. Cash flow budgets are used to forecast the actual cash surplus or deficit for the budget season. Therefore, a sample cash flow worksheet for cotton production is included and may be modified for your operation. In a cash flow budget, cash costs are projected on a monthly basis, and non-cash costs are excluded.

This cash flow budget is also computerized and may be obtained by contacting Lowell Zelinski in Fresno County.

SAMPLE COST TO PRODUCE COTTON
SAN JOAQUIN VALLEY - 1985

COST DATA ENTRY SECTION		
I. FACTOR	COST	UNIT
A. Labor		
Field	$5.00	$/hr
Equipment Operator	$6.00	$/hr
B. Equipment		
80 HP Tractor	$10.00	$/hr
130 HP Tractor	$15.00	$/hr
C. Yield	1100	lbs/ac
D. Gin Turnout	33	%
E. Estimated Lint Price	$0.70	$/lbs
F. Seed to Lint Ratio	1.7	
G. Interest Rate	11.5	%
H. Credit for Seed	$100.00	$/ton

ACTIVITY	UNIT COST	UNIT	RATE	UNIT	COST / ACRE	COST/ POUND
II. PREHARVEST COST						
A. Land Preparation						
Labor	$6.00	$/hr	3	hr	$18.00	
130 HP Tractor	$15.00	$/hr	1	hr	$15.00	
80 HP Tractor	$10.00	$/hr	2	hr	$20.00	
B. Nematode Control						
(if needed)	$66.00	$/ac	0	ac	$0.00	
C. Preplant Herbicide						
Material	$5.25	$/ac	1	ac	$5.25	
Application	$6.00	$/ac	1	ac	$6.00	
Incorporation						
Labor	$6.00	$/hr	0.5	hr	$3.00	
80 HP Tractor	$10.00	$/hr	0.5	hr	$5.00	
D. Planting						
Seed	$0.60	$/lb	14	lbs	$8.40	
Labor	$6.00	$/hr	0.3	hr	$1.80	
80 HP Tractor	$10.00	$/hr	0.3	hr	$3.00	
E. Fertilize						
Material (NH3)	$0.17	$/lb	100	lbs/ac	$17.00	
Application (Custom)	$7.00	$/ac	1	ac	$7.00	
Manure (Chicken)						
Includes Appl.	$25.00	$/ton	0	tons/ac	$0.00	
Urea (Water Run)	$0.27	$/lbs	0	lbs/ac	$0.00	
F. Irrigation						
Water Charge	$20.00	$/acft	3	acft	$60.00	
Labor (1 pre & 5 postplant)	$5.00	$/hr	6	hr	$30.00	
G. Postplant Weed Control						
Hand Weeding	$4.00	$/hr	5	hr	$20.00	
Cultivation						
Labor	$6.00	$/hr	1.5	hr	$9.00	
80 HP Tractor	$10.00	$/hr	1.5	hr	$15.00	
Material	$16.00	$/ac	1	ac	$16.00	
Application	$6.00	$/ac	1	ac	$6.00	
H. Mite Control						
Material	$10.00	$/ac	1	ac	$10.00	
Application	$6.00	$/ac	1	ac	$6.00	
I. Insect Control						
Material	$8.00	$/ac	1	ac	$8.00	
Application	$5.00	$/ac	1	ac	$5.00	

ACTIVITY	UNIT COST	UNIT	RATE	UNIT	COST / ACRE	COST/ POUND
J. Defoliation						
Material	$7.00	$/ac	2	ac	$14.00	
Application	$5.00	$/ac	2	ac	$10.00	
K. Land Rent	$100.00	$/ac	1	ac	$100.00	
L. Non-tractor Repair	$20.00	$/ac	1	ac	$20.00	
M. Misc. Labor						
Labor	$6.00	$/hr	1	hr	$6.00	
80 HP Tractor	$10.00	$/hr	1	hr	$10.00	
N. Office Expense	$10.00	$/ac	1	ac	$10.00	
O. Interest on Prod. Loan						
(Prod. Cost/2) * I.R.	11.5	%	$232.23	$/ac	$26.71	
TOTAL PREHARVEST COST					$491.16	$0.45
III. HARVEST COST						
A. Picking & Hauling						
1st Pick (90%)	$3.20	$/cwt	30.00	cwt SC	$96.00	
2nd Pick (10%)	$3.35	$/cwt	3.33	cwt SC	$11.16	
B. Ginning: (bags,ties,etc)	$3.20	$/cwt	33.33	cwt SC	$106.66	
TOTAL HARVEST COST					$213.82	$0.19
IV. MISCELLANEOUS COST						
A. CI Promotion $1/bale &	$1.00	$/bale	2.29	bale	$2.29	
.6% of value	$770.00	$/ac	0.6	%	$4.62	
B. Pink Bollworm Fund	$1.75	$/bale	2.29	bale	$4.01	
C. National Cotton Council	$0.45	$/bale	2.29	bale	$1.03	
D. Western Cotton Growers	$0.03	$/bale	2.29	bale	$0.07	
E. Classing Cost	$1.10	$/bale	2.29	bale	$2.52	
TOTAL MISCELLANEOUS COST					$14.54	$0.01
TOTAL CASH COST					$719.52	$0.65
V. DEPRECIATION						
A. Irrigation System	$300.00	$/ac	16	years	$18.75	
B. 80 HP Tractor	$2.58	$/hr	5.25	hr/ac	$13.55	
C. 130 HP Tractor	$4.75	$/hr	1	hr/ac	$4.75	
D. Other Equipment	$100.00	$/ac	10	years	$10.00	
VI. INTEREST ON INVESTMENT						
A. Irrigation System	$160.00	$/ac	11.5	%/$	$18.40	
B. 80 HP Tractor	$1.94	$/hr	5.25	hr/ac	$10.19	
C. 130 HP Tractor	$3.56	$/hr	1	hr/ac	$3.56	
D. Other Equipment	$50.00	$/ac	11.5	%/$	$5.75	
TOTAL NON-CASH COST					$84.95	$0.08
TOTAL CASH COSTS					$719.52	$0.65
TOTAL COST OF PRODUCTION					$804.47	$0.73
NET CASH COST					$626.02	
NET COST OF PRODUCTION					$710.97	$0.65
RETURNS OVER CASH COSTS					$143.98	
RETURNS OVER TOTAL COSTS					$59.03	$0.05

COTTON CASH FLOW BUDGET				ACRES =	400									
Lowell J. Zelinski	Farm Advisor - Fresno County			INCOME	LINT	SEED								
November-1985				AVG. YIELD	1100	0.935								
				EST. PRICE	$0.70	$100								
COTTON														
Operation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YEARLY TOTALS	
													Per acre	Total acres
VARIABLE COSTS														
Pre-Harvest														
Land Preparation	$24	$24	$5										$53	$21,200
Planting				$13									$13	$5,200
Fertilization					$24								$24	$9,600
Weed Control	$20				$20	$22							$62	$24,800
Cultivation				$8	$16								$24	$9,600
Insect Control						$16	$13						$29	$11,600
Irrigation	$25					$20	$30	$15					$90	$36,000
Defoliation										$24			$24	$9,600
Plow down											$16		$16	$6,400
Miscellaneous						$10		$10	$10		$15		$45	$18,000
Interest on Prod. Loan												$27	$27	$10,800
Preharvest Costs/ac	$69	$24	$5	$21	$60	$68	$43	$25	$10	$24	$31	$27	$407	
Total Preharvest Cost	$27,600	$9,600	$2,000	$8,400	$24,000	$27,200	$17,200	$10,000	$4,000	$9,600	$12,400	$10,800		$162,800
Harvest														
1st pick										$96			$96	$38,400
2nd pick											$11		$11	$4,400
Ginning											$107		$107	$42,800
Harvest Cost/ac	$0	$0	$0	$0	$0	$0	$0	$0	$0	$96	$118	$0	$214	
Total Harvest Cost	$0	$0	$0	$0	$0	$0	$0	$0	$0	$38,400	$47,200	$0		$85,600
Variable Cost/acre	$69	$24	$5	$21	$60	$68	$43	$25	$10	$120	$149	$27	$621	
Total Variable Costs	$27,600	$9,600	$2,000	$8,400	$24,000	$27,200	$17,200	$10,000	$4,000	$48,000	$59,600	$10,800		$248,400
FIXED COSTS														
Land Cost (rent)	$100												$100	$40,000
Fixed Cost/acre	$100	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$100	
Total Fixed Cost	$40,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0		$40,000
All Costs/ac	$169	$24	$5	$21	$60	$68	$43	$25	$10	$120	$149	$27	$721	
Total All Cost	$67,600	$9,600	$2,000	$8,400	$24,000	$27,200	$17,200	$10,000	$4,000	$48,000	$59,600	$10,800		$288,400
Gross Returns													$864	$345,400
Net Returns													$143	$57,000