
1998

UNIVERSITY OF CALIFORNIA - COOPERATIVE EXTENSION

SAMPLE COSTS TO PRODUCE

BABY LIMA

~Beans~



SAN JOAQUIN VALLEY

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INTRODUCTION

The detailed costs to produce baby lima beans in the San Joaquin Valley of California are presented in this study. The hypothetical farm used in this report consists of 1,200 acres of which 200 acres are in baby lima bean production.

The practices described in this cost study are considered typical for this baby lima beans in the San Joaquin Valley. Sample costs given for labor, materials, equipment and contract services are based on 1998 prices. A blank *Your Cost* column is also provided to enter your actual costs on Table 2. Costs Per Acre To Produce Baby Lima Beans and Table 3. Costs And Returns Per Acre To Produce Baby Lima Beans. Costs and practices detailed in this study may not be applicable to your situation. This study is only intended as a guide and can be used in making production decisions, determining potential returns, preparing budgets and evaluating production loans.

This study consists of General Assumptions for Producing Baby Lima Beans and seven tables.

Table 1.	Costs Per Acre To Produce Baby Lima Beans
Table 2.	Costs And Returns Per Acre To Produce Baby Lima Beans
Table 3.	Monthly Cash Costs Per Acre To Produce Baby Lima Beans
Table 4.	Annual Equipment, Investment And Business Overhead
Table 5.	Hourly Equipment Costs
Table 6.	Ranging Analysis
Table 7.	Cost And Returns/Breakeven Analysis

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

A companion cost of production study for bush-type, large lima beans in the San Joaquin Valley is available and entitled, "1998 Sample Costs To Produce Large Lima Beans, San Joaquin Valley". For those interested in this and other studies, they can be requested through the Department of Agricultural Economics, U.C. Davis, (530) 752-3589 or (530) 752-1515, or from selected county Cooperative Extension offices. There is a nominal charge.

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**SAMPLE COSTS TO PRODUCE
BABY LIMA BEANS
San Joaquin Valley - 1998**

ASSUMPTIONS

The following is a description of some general assumptions pertaining to sample costs to produce baby lima beans in San Joaquin Valley. Practices described are not recommendations by the University of California, but rather represent production procedures considered typical of a well managed farm for the San Joaquin Valley. Costs and practices detailed in this study may not be applicable to all situations. Cultural practices for the production of lima bean vary by grower and region; variations can be significant. The practices and inputs used in this cost study serve only as a sample or guide. These costs are represented on an annual, per acre basis. *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.*

Land and Share Rent. This report is based on a 1,200 acre field and row crop farm of which 200 acres are producing baby lima beans and 1,000 acres are planted to alfalfa hay, field corn, sugar beets, and wheat. Other rotational crops that might be planted include safflower, sunflowers, and processing tomatoes.

Land in this study is leased on a share-rent basis with the land owner receiving 22% of the gross returns from the baby lima beans. The land rented includes developed wells and irrigation system. The grower owns a shop and an equipment yard to fix and store equipment.

Cultural Practices and Material Inputs

Land Preparation. Primary tillage which includes subsoiling, disking, land leveling, and listing beds is performed from October through April. All operations are done on 100% of the acres unless otherwise noted.

All of the acreage is subsoiled twice to open the soil structure and breakup any hardpan. This is followed by land leveling accomplished in two passes with a triplane. The ground is disced three times, once with a stubble disc and twice with a finishing disc, in preparation for listing the seedbeds. Beds are listed on a contract basis.

Stand Establishment. Stand establishment consists of several practices. In May a pre-irrigation is made. When the field is dry enough to support equipment, rolling cultivators or harrows are used to break the crust, kill germinating weed, incorporate herbicides followed by planting.

Planting baby lima beans begins in May and is completed in June. Seeds are placed two to four inches deep into moist soil and begin to emerge in seven to ten days depending on soil temperature. There are several different varieties planted in California. Plant types of vine or bush limas are available depending on the variety chosen.

Irrigation. Baby lima beans are furrow irrigated with one pre-irrigation and three during the season. A total of 30 acre-inches of water is applied.

Fertilization. Starter fertilizer is banded below the seed line during bed listing at the rate of 20 gallons per acre of 4-10-10 plus 0.5 gallons of zinc. If needed, one hundred pounds of actual nitrogen per acre can be applied with the starter fertilizer or sidedressed once the beans have begun growing.

Weed Management. Both chemical and cultural practices are used for weed control in this study. Herbicides are applied preplant and mechanically mixed in the soil with two passes of a harrow. Two mechanical cultivations are the usual practice once the beans have germinated and before row closure in June or July.

Insect and Disease Management. The two major insect pests are spider mites and lygus bugs. In some years corn ear worms and army worms are serious pests damaging developing pods.

A spider mite treatment of Kelthane® is made by ground application in June. A treatment for lygus bug by air during the bloom period in August is made with Dimethoate. Control for lygus is made in made in September. Half of the acreage is treated for worms using Lannate®. An aerial applied worm treatment is sprayed over half the acreage after pod development in September.

Disease damage is caused by rhizoctona and pythium root rot and prevented through seed treatment chemicals and good cultural practices. The seed treatment chemicals are included in the price of the seed.

The pesticides and rates, and cultural practices mentioned in this cost study are a few of those that are listed in the UC IPM Pest Management Guidelines, Dry Beans. Written recommendations are required for many pesticides and are made by licensed pest control advisors. For information and pesticide use permits, contact the local county Agricultural Commissioner's office.

Harvest. Once the beans are mature they are cut below ground level with a set of tractor-mounted knives. Six or eight rows are cut in one pass. One to two days later, depending on bean moisture, the cut beans are raked into windrows. Each windrow consists of six to eight rows moved into a single windrow. If windrowed beans are rained on an additional raking maybe used to turn and dry the lower portion of the windrow.

Lima beans are harvested using specially designed bean threshers equipped with two or three slow-turning cylinders. Beans are ready for harvest when they reach 12% moisture. This study and much of the industry contracts bean harvest on a custom basis.

Cutting and windrowing costs \$20 per acre and threshing/harvesting costs \$1.65 per hundredweight (cwt). Other postharvest bean costs include cleaning at the warehouse and storage for a charge of \$3.10 per cwt. Insurance, while the beans are stored costs \$0.10 per cwt.

Growers may choose to own harvesting equipment, purchased either new or used, or hire a custom harvester to perform the harvest. Many factors are important in deciding which harvesting option a grower uses. These considerations and appropriate method of analysis are discussed in "*Acquiring alfalfa hay harvest equipment: A financial analysis of alternatives*".

Yields. The crop yield used in this study is 30 cwt per acre at 12% moisture.

Returns. A selling price of a \$30 per cwt is used to estimate income from the sale of baby lima beans.

Risk. Risks associated with lima bean production are not assigned a production cost. While this study makes an 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 of lima bean production.

Labor. Basic hourly wages for workers are \$8.34 and \$6.66 per hour for machine operators and non-machine (irrigators) workers respectively. Adding 34% for SDI, FICA, insurance and other benefits raises the total labor costs to \$11.17 per hour for machine operators and \$8.93 per hour for non-machine labor. The labor for operations involving machinery are 20% higher than the operation time to account for the additional time involved in equipment set up, moving, maintenance and repair. Any returns above total costs are considered returns to investment.

Cash Overhead. 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, and investment repairs.

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.

Interest On Operating Capital. Interest on operating capital is based on cash operating costs and is calculated monthly until harvest at a nominal rate of 10% per year. A nominal interest rate is the going market cost of borrowed funds.

Insurance. Insurance for farm investments vary depending on the assets included and the amount of coverage. Property insurance provides coverage for property loss and is charged at 0.713% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$706 for the entire farm or \$3.53 per acre.

Office Expense: Office and business expenses are estimated at \$10 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road maintenance, etc. Cash overhead costs are found in Tables 1, 2, 3 and 4.

Non-cash Overhead. Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments. Although farm equipment used for this crop may be purchased new or used, this 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 (Equipment and Investments) are shown in Tables 1-4. They represent the capital recovery cost for investments on an annual per acre basis.

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). Put another way, it is equivalent to the annual payment on a loan for the investment with the downpayment 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 calculation for the annual capital recovery costs is as follows. The calculation for the annual capital recovery costs is as follows.

$$\frac{\text{Purchase Price} - \text{Salvage Value}}{\text{Capital Recovery Factor}} + \frac{\text{Salvage Value} \times \text{Interest Rate}}$$

Salvage Value. Salvage value is an estimate of the remaining market value of an investment at the end of its useful life. It is calculated differently for different investments. For farm machinery (e.g., tractors and implements) the remaining value is a percentage of the new cost of the investment. Salvage value is calculated as

$$\text{New Price} \times \% \text{Remaining Value}$$

Salvage value for other investments including irrigation systems, buildings, and miscellaneous equipment is zero. The salvage value for land is equal to the purchase price because land does not depreciate. Salvage value for investments can vary. The purchase price and salvage value for certain equipment and investments are shown in Table 4.

Capital Recovery Factor. Capital recovery factor is the amortization factor or annual payment whose present value at compound interest is 1. It is the function of the interest rate and years of life of the equipment.

Interest Rate. The interest rate of 7.81% used to calculate capital recovery cost is the United States Department of Agriculture-Economic Reporting Service's (USDA-ERS) ten year average of California's agricultural sector long-run real 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 agricultural sector, not including inflation. In other words, the next best alternative use for these resources is in another agricultural enterprise.

Equipment Costs. 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.

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 hp, and type of fuel used. The fuel and repair cost per acre for each operation in Table 1 is determined by multiplying the total hourly operating cost in Table 5 for each piece of equipment used for the cultural practice by the number of hours per acre for that operation. Tractor time is 10% higher than implement time for a given operation to account for setup, travel and down time. Prices for on-farm delivery of diesel and gasoline are \$0.78 and \$1.22 per gallon, respectively.

Acknowledgment. Appreciation is expressed to lima bean growers Keith Robertson and Myron Yamasaki, and other cooperators who provided support and information for this study.

REFERENCES

- American Society of Agricultural Engineers. 1994. *American Society of Agricultural Engineers Standards Yearbook*. Russell H. Hahn and Evelyn E. Rosentreter (ed.) St. Joseph, Missouri. 41st edition.
- Blank, Steve, Karen Klonsky, Kim Norris, and Steve Orloff. 1992. *Acquiring alfalfa hay equipment: A financial analysis of alternatives*. University of California. Oakland, California. Giannini Information Series No. 92-1.
- Boelje, Michael D., and Vernon R. Eidman. 1984. *Farm Management*. John Wiley and Sons. New York, New York
- Integrated Pest Management Education and Publications. 1990. *U.C. Pest Management Guidelines, Dry Beans*. In M. L. Flint (ed.) UC IPM pest management guidelines. University of California. Division of Agriculture and Natural Resources. Oakland, California. Publication 3339.
- Smith, Jerry D., W. H. Isom, H. Agamalian, W. Bendixen, V. Burton, M. Canevari, M. Murray, and M. Vilchez. 1989. *Common Dry Bean Production In California*. Cooperative Extension. University of California. Division of Agriculture and Natural Resources. Oakland, California. Publication 21468.

For information concerning the above mentioned University of California publications contact UC DANR Communications Services (1-800-994-8849) or your local county Cooperative Extension office.

Table 1.

U.C. COOPERATIVE EXTENSION
 COSTS PER ACRE TO PRODUCE BABY LIMA BEANS
 SAN JOAQUIN VALLEY - 1998

Labor Rate: \$11.17/hr. machine labor Interest Rate: 10.46%
 \$8.93/hr. non-machine labor Yield per Acre: 30.0 Cwt

Operation	Cash and Labor Costs per Acre						Total	Your
Operation	Time (Hrs/A)	Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Cost	
Cultural:								
Subsoil	0.25	3	5	0	0	8		
Landplane 2X	0.25	3	3	0	0	6		
Disc Stubble	0.25	3	5	0	0	8		
Finish Disc 2X	0.40	5	8	0	0	13		
List Beds	0.00	0	0	0	13	13		
Fertilize - Preplant	0.17	2	3	19	3	26		
Make Drain	0.12	2	2	0	0	4		
Pre-irrigation	0.50	4	0	15	0	19		
Close Drains	0.12	2	1	0	0	3		
Harrow Beds	0.20	3	2	0	0	4		
Weed Control - Preplant Herbicides	0.20	3	2	36	0	40		
Incorporate Herbicide 2X	0.40	5	3	0	0	8		
Plant Beans	0.25	8	3	54	0	65		
Irrigate 3X	4.80	43	0	60	0	103		
Cultivate 2X	0.40	5	4	0	0	9		
Insect Control - Mites	0.33	4	3	17	0	25		
Insect Control - Lygus	0.00	0	0	6	9	15		
Insect Control - Aphid 50% Of Acreage	0.00	0	0	13	5	18		
Pickup Truck Use	0.24	6	2	0	0	8		
TOTAL CULTURAL COSTS	8.88	103	43	220	29	395		
Harvest:								
Cut & Rake Beans - Custom	0.00	0	0	0	20	20		
Thresh Beans - Custom	0.00	0	0	0	54	54		
Clean, Bag, Store & Insure	<u>0.00</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>96</u>	<u>96</u>		
TOTAL HARVEST COSTS	0.00	0	0	0	170	170		
Interest on operating capital @ 10.46%						18		
TOTAL OPERATING COSTS/ACRE		103	43	220	199	583		
CASH OVERHEAD:								
Liability Insurance						1		
Office Expense						10		
Land Rent						199		
Property Taxes						2		
Property Insurance						2		
Investment Repairs						<u>2</u>		
TOTAL CASH OVERHEAD COSTS						215		
TOTAL CASH COSTS/ACRE						799		

U.C. COOPERATIVE EXTENSION

Table 1. Continued

NON-CASH OVERHEAD:			
Investment	Per producing Acre	-- Annual Cost -- Capital Recovery	Total Cost
-----	-----	-----	-----
Fuel Tanks	14	1	1
Fuel Wagon	2	0	0
Shop Building	55	5	5
Shop Tools	11	1	1
Siphon Tubes	3	0	0
Tool Carrier	13	1	1
Equipment	260	34	34
TOTAL NON-CASH OVERHEAD COSTS	357	43	43
-----			-----
TOTAL COSTS/ACRE			842

Table 2.

U.C. COOPERATIVE EXTENSION
 COSTS AND RETURNS PER ACRE TO PRODUCE BABY LIMA BEANS
 SAN JOAQUIN VALLEY - 1998

Labor Rate: \$11.17/hr. machine labor Interest Rate: 10.46%
 \$8.93/hr. non-machine labor

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
=====					
GROSS RETURNS					
Baby Lima Beans	30.00	Cwt	30.00	<u>900</u>	
TOTAL GROSS RETURNS FOR BABY LIMA BEANS					900

OPERATING COSTS					
Custom:					
List Beds	1.00	Acre	13.00	13	
Air Application	1.50	Acre	9.00	14	
Cut & Rake	1.00	Acre	20.00	20	
Thresh Beans	33.00	Cwt	1.65	54	
Clean, Store & Insure	30.00	Cwt	3.20	96	
Rent:					
Fertilizer Injector	1.00	Acre	2.50	3	
Fertilizer:					
4-10-10	20.00	Gal	0.738	15	
Zinc	0.50	Gal	8.00	4	
Water:					
Irrigation	30.00	AcIn	2.50	75	
Herbicide:					
Dual 8E	2.50	Pint	11.96	30	
Treflan Pro 5	1.00	Pint	5.77	6	
Seed: Baby Lima Bean	70.00	Lb	0.77	54	
Miticide:					
Kelthane MF	2.00	Pint	8.65	17	
Insecticide:					
Dimethoate 267	1.50	Pint	4.10	6	
Lannate 90 SP	0.50	Lb	26.10	13	
Labor (machine)	4.58	hrs	11.17	51	
Labor (non-machine)	5.80	hrs	8.93	52	
Fuel - Gas	1.07	gal	1.22	1	
Fuel - Diesel	25.83	gal	0.78	20	
Lube				3	
Machinery repair				18	
Interest on operating capital @ 10.46%				<u>18</u>	
TOTAL OPERATING COSTS/ACRE					583

NET RETURNS ABOVE OPERATING COSTS					317

U.C. COOPERATIVE EXTENSION

Table 2. Continued

CASH OVERHEAD COSTS:	
Liability Insurance	1
Office Expense	10
Land Rent	199
Property Taxes	2
Property Insurance	2
Investment Repairs	2

TOTAL CASH OVERHEAD COSTS/ACRE	215

TOTAL CASH COSTS/ACRE	799

NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY - 7.91 % Interest Rate):	
Fuel Tanks	1
Fuel Wagon	0
Shop Building	5
Shop Tools	1
Siphon Tubes	0
Tool Carrier	1
Equipment	34

TOTAL NON-CASH OVERHEAD COSTS/ACRE	43

TOTAL COSTS/ACRE	842

NET RETURNS ABOVE TOTAL COSTS	58
=====	

U.C. COOPERATIVE EXTENSION

MONTHLY CASH COSTS PER ACRE TO PRODUCE BABY LIMA BEANS

SAN JOAQUIN VALLEY - 1998

Table 3.

Beginning OCT 97 Ending NOV 98	OCT 97	NOV 97	DEC 97	JAN 98	FEB 98	MAR 98	APR 98	MAY 98	JUN 98	JUL 98	AUG 98	SEP 98	OCT 98	NOV 98	TOTAL
Cultural:															
Subsoil	8														8
Landplane 2X	6														6
Disc Stubble							8								8
Finish Disc 2X							13								13
List Beds							13								13
Fertilize - Preplant							26								26
Make Drain							2		2	1					4
Pre-irrigation								19							19
Close Drains								1	0			1			3
Harrow Beds								4							4
Weed Control - Preplant								40							40
Herbicides															
Incorporate Herbicide 2X								8							8
Plant Beans									65						65
Irrigate 3X									31	41	31				103
Cultivate 2X									5	5					9
Insect Control - Mites									25						25
Insect Control - Lygus										15					15
Insect Control - Aphid 50%Of											18				18
Acreage															
Pickup Truck Use	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>8</u>
TOTAL CULTURAL COSTS	15	1	1	1	1	1	62	74	127	62	49	2	1	1	395
Harvest:															
Cut & Rake Beans - Custom														20	20
Thresh Beans - Custom														54	54
Clean, Bag, Store & Insure														<u>96</u>	<u>96</u>
TOTAL HARVEST COSTS														74	170
Interest on oper. Capital	0	0	0	0	0	0	1	1	2	3	3	3	4	-1	18
TOTAL OPERATING COSTS/ACRE	15	1	1	1	1	1	63	75	129	65	52	5	79	96	583

U.C. COOPERATIVE EXTENSION

Table 3. Continued

Beginning OCT 97 Ending NOV 98	OCT 97	NOV 97	DEC 97	JAN 98	FEB 98	MAR 98	APR 98	MAY 98	JUN 98	JUL 98	AUG 98	SEP 98	OCT 98	NOV 98	TOTAL
OVERHEAD:															
Liability Insurance				1											1
Office Expense	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10
Land Rent														199	199
Property Taxes				1						1					2
Property Insurance				1						1					2
Investment Repairs	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>2</u>
TOTAL CASH OVERHEAD COSTS	1	1	1	4	1	1	1	1	1	3	1	1	1	199	215
TOTAL CASH COSTS/ACRE	16	2	2	4	2	2	64	76	130	68	53	6	80	295	799

U.C. COOPERATIVE EXTENSION

Table 4. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
SAN JOAQUIN VALLEY - 1998

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	----- Cash Overhead -----			Total
						Insur- ance	Taxes		
98	200 HP Crawler	174818	10	51638	22233	807	1132		24173
98	90 HP 2WD Tractor	61134	10	18058	7775	282	396		8453
98	Cult - 6 Row	9059	10	1602	1227	38	53		1318
98	Disc - Finish 18'	16410	12	2273	2035	67	93		2195
98	Disc - Stubble 16'	13203	12	1829	1637	54	75		1766
98	Ditcher - V	4505	12	624	559	18	26		603
98	Ditcher V	4474	15	430	501	17	25		543
98	Harrow - Spiketooth 14'	907	12	126	112	4	5		121
98	Pickup Truck - 1/2 Ton	14719	5	6597	2539	76	107		2722
98	Pickup Truck - 3/4 Ton	17628	7	6687	2610	87	122		2818
98	Planter - 6 Row	15015	10	2655	2034	63	88		2185
98	Rear Blade - 8'	2541	18	169	263	10	14		286
98	Saddle Tank - 300 Gal	3218	10	569	436	14	19		468
98	Spray Boom - 20'	482	10	85	65	2	3		70
98	Subsoiler - 16'	14000	10	2476	1896	59	82		2037
98	Triplane - 16'	18769	12	2600	2328	76	107		2511
TOTAL		370882		98418	48250	1673	2347		52269
60% of New Cost *		222529		59051	28950	1004	1408		31362

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

ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	Salvage Value	Capital Recovery	----- Cash Overhead -----			Total
					Insur- ance	Taxes	Repairs	
INVESTMENT								
Fuel Tanks	16377	20	1638	1608	64	90	50	1812
Fuel Wagon	1969	10	197	277	8	11	52	347
Shop Building	66423	25	6642	6028	260	365	1328	7982
Shop Tools	12916	20	1292	1268	51	71	258	1648
Siphon Tubes	3690	20	369	362	14	20	92	489
Tool Carrier	15010	15	1501	1677	59	83	300	2119
TOTAL INVESTMENT	116385		11639	11221	456	640	2079	14397

Table 4. Continued

U.C. COOPERATIVE EXTENSION
ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Land Rent (25% Of Gross Returns)	200.00	Acre	198.75	39750
Liability Insurance	1200.00	Acre	0.87	1044
Office Expense	1200.00	Acre	10.00	12000

Table 5.

HOURLY EQUIPMENT COSTS
SAN JOAQUIN VALLEY - 1998

Yr Description	Actual Hours Used	COSTS PER HOUR						Total Oper.	Total Costs/Hr.
		Capital Recovery	- Cash Overhead - Insur- ance	Taxes	Repairs	Operating Fuel & Lube			
98 200 HP Crawler	1544.1	8.64	0.31	0.44	4.42	10.41	14.83	24.22	
98 90 HP 2WD Tractor	1272.7	3.67	0.13	0.19	2.70	4.05	6.75	10.74	
98 Cult - 6 Row	200.0	3.68	0.11	0.16	1.83	0.00	1.83	5.78	
98 Disc - Finish 18'	166.0	7.36	0.24	0.34	2.54	0.00	2.54	10.47	
98 Disc - Stubble 16'	166.0	5.92	0.19	0.27	2.04	0.00	2.04	8.42	
98 Ditcher - V	166.0	2.02	0.07	0.09	1.19	0.00	1.19	3.37	
98 Ditcher V	166.0	1.81	0.06	0.09	1.36	0.00	1.36	3.32	
98 Harrow - Spiketooth 14'	166.0	0.41	0.01	0.02	0.10	0.00	0.10	0.54	
98 Pickup Truck - 1/2 Ton	285.5	5.34	0.16	0.22	0.95	3.51	4.46	10.18	
98 Pickup Truck - 3/4 Ton	285.5	5.49	0.18	0.26	1.28	2.81	4.09	10.01	
98 Planter - 6 Row	150.0	8.13	0.25	0.35	3.92	0.00	3.92	12.66	
98 Rear Blade - 8'	166.0	0.95	0.03	0.05	0.37	0.00	0.37	1.40	
98 Saddle Tank - 300 Gal	216.7	1.21	0.04	0.05	0.85	0.00	0.85	2.15	
98 Spray Boom - 20'	216.7	0.18	0.01	0.01	0.13	0.00	0.13	0.32	
98 Subsoiler - 16'	150.0	7.58	0.23	0.33	3.11	0.00	3.11	11.26	
98 Triplane - 16'	250.0	5.59	0.18	0.26	2.80	0.00	2.80	8.82	

Table 6.

U.C. COOPERATIVE EXTENSION
 RANGING ANALYSIS
 SAN JOAQUIN VALLEY - 1998

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE BABY LIMA BEANS

	YIELD (CWT/ACRE)						
	15	20	25	30	35	40	45
OPERATING COSTS/ACRE:							
Cultural Cost	395	395	395	395	395	395	395
Harvest Cost	95	120	145	170	196	221	246
Interest on operating capital	19	19	18	18	18	18	18
TOTAL OPERATING COSTS/ACRE	508	533	558	583	608	634	659
TOTAL OPERATING COSTS/CWT	34	27	22	19.45	17.39	15.84	14.63
CASH OVERHEAD COSTS/ACRE	215	215	215	215	215	215	215
TOTAL CASH COSTS/ACRE	723	748	774	799	824	849	874
TOTAL CASH COSTS/CWT	48	37	31	27	24	21	19.41
NON-CASH OVERHEAD COSTS/ACRE	43	43	43	43	43	43	43
TOTAL COSTS/ACRE	767	792	817	842	867	892	917
TOTAL COSTS/CWT	51	40	33	28	25	22	20

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR BABY LIMA BEANS

PRICE (DOLLARS/CWT)	YIELD (CWT/ACRE)						
	15	20	25	30	35	40	45
Baby Lima							
21.00	-193	-113	-33	47	127	206	286
24.00	-148	-53	42	137	232	326	421
27.00	-103	7	117	227	337	446	556
30.00	-58	67	192	317	442	566	691
33.00	-13	127	267	407	547	686	826
36.00	32	187	342	497	652	806	961
39.00	77	247	417	587	757	926	1096

Table 6. Continued

NET RETURNS PER ACRE ABOVE CASH COSTS FOR BABY LIMA BEANS

PRICE (DOLLARS/CWT)	YIELD (CWT/ACRE)						
	15	20	25	30	35	40	45
Baby Lima							
21.00	-408	-328	-249	-169	-89	-9	71
24.00	-363	-268	-174	-79	16	111	206
27.00	-318	-208	-99	11	121	231	341
30.00	-273	-148	-24	101	226	351	476
33.00	-228	-88	51	191	331	471	611
36.00	-183	-28	126	281	436	591	746
39.00	-138	32	201	371	541	711	881

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR BABY LIMA BEANS

PRICE (DOLLARS/CWT)	YIELD (CWT/ACRE)						
	15	20	25	30	35	40	45
Baby Lima							
21.00	-452	-372	-292	-212	-132	-52	28
24.00	-407	-312	-217	-122	-27	68	163
27.00	-362	-252	-142	-32	78	188	298
30.00	-317	-192	-67	58	183	308	433
33.00	-272	-132	8	148	288	428	568
36.00	-227	-72	83	238	393	548	703
39.00	-182	-12	158	328	498	668	838

Table 7.

U.C. COOPERATIVE EXTENSION
 COSTS AND RETURNS / BREAKEVEN ANALYSIS
 SAN JOAQUIN VALLEY - 1998

COSTS AND RETURNS - PER ACRE BASIS

Crop	1. Gross Returns	2. Operating Costs	3. Net Returns Above Oper. Costs (1-2)	4. Cash Costs	5. Net Returns Above Cash Costs (1-4)	6. Total Costs	7. Net Returns Above Total Costs (1-6)
Baby Lima Beans	900	583	317	799	101	842	58

COSTS AND RETURNS - TOTAL ACREAGE

Crop	1. Gross Returns	2. Operating Costs	3. Net Returns Above Oper. Costs (1-2)	4. Cash Costs	5. Net Returns Above Cash Costs (1-4)	6. Total Costs	7. Net Returns Above Total Costs (1-6)
Baby Lima Beans	180000	116696	63304	159705	20295	168315	11685

BREAKEVEN PRICES PER YIELD UNIT

CROP	Base Yield (Units/Acre)	Yield Units	Breakeven Price To Cover		
			Operating Costs	Cash Costs	Total Costs
Baby Lima Beans	30.0	Cwt	19.45	26.62	28.05

BREAKEVEN YIELDS PER ACRE

CROP	Yield Units	Base Price (\$/Unit)	Breakeven Yield To Cover		
			Operating Costs	Cash Costs	Total Costs
Baby Lima Beans	Cwt	30.00	19.4	26.6	28.1