
UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2004

**SAMPLE COSTS TO PRODUCE
LARGE LIMA
Beans**



SAN JOAQUIN VALLEY - North

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INTRODUCTION

Sample costs to produce large lima beans in the northern San Joaquin Valley are shown in this study. The study is intended as a guide only, and can be used to make production decisions, determine potential returns, prepare budgets and evaluate production loans. The practices described are based on production operations considered typical for this crop and region, but will not apply to every farm. Sample costs for labor, materials, equipment and custom services are based on current figures. “Your Costs” columns in Tables 1 and 2 are provided for entering your farm costs.

The hypothetical farm operations, production practices, overhead, and calculations are described under the assumptions. For additional information or an explanation of the calculations used in the study call the Department of Agricultural and Resource Economics, University of California, Davis, California, (530) 752-3589 or the local UC Cooperative Extension office.

Sample Cost of Production Studies for many commodities can be downloaded at <http://coststudies.ucdavis.edu>, requested through the Department of Agricultural and Resource Economics, UC Davis, (530) 752-4424 or obtained from the local county UC Cooperative Extension offices. Some archived studies are also available on the website.

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ASSUMPTIONS

The assumptions refer to Tables 1 through 7 and pertain to sample costs to produce large lima beans in the northern San Joaquin Valley. The cultural practices described and materials used are considered typical for a well-managed bean field in the region. The costs, materials, and practices will not apply to all situations every production year. Cultural practices vary among growers within the region and can be significant. The study is intended as a guide only. **The use of trade names and cultural practices 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 or cultural practices.**

Farm. This report is based on a 1,200 non-contiguous acre field and row crop farm on which 200 acres of rented land are producing large lima beans; 1,000 acres of rented and grower owned land are planted to alfalfa hay, field corn, tomatoes, and wheat. The grower maintains an equipment yard and shop on a portion of the owned land.

Production Operating Costs

Land Preparation. Primary tillage, which includes subsoiling, discing, land leveling (laser and triplane), and listing beds is done from October through April. The land is subsoiled in two directions to open the soil structure and breakup any hardpan. The field is then disced three times to create an adequate seedbed, and leveled in two passes with a triplane. Although the fields are basically level, the fields are laser leveled once every four years and one-fourth of the cost is charged to the current bean crop. The beds are listed and preplant fertilizer applied by a custom operator/fertilizer company in a single operation. Herbicides are applied and the field is preirrigated prior to planting.

Plant. Several varieties of bush and vine large limas are available for planting, but Dompe 95, a bush variety with 120-day maturity is planted in this study. Large lima bean seeds treated with protectants are planted during May using a six-row bean planter. The beans at 120 pounds per acre are planted two to four inches deep into moist soil on 30-inch beds and will emerge in seven to ten days depending on soil temperature. Planting costs include the seed, tractor driver and one attendant on the planter.

Irrigation. Irrigation includes the water costs and irrigation labor. Water at \$40 per acre-foot (\$3.33 per acre inch) is assumed to be a typical cost. Water costs in the region range from \$5 to \$75 per acre-foot. Most growers use surface water and the cost will vary by water district. The beans are furrow irrigated with one pre-irrigation and five regular season irrigations from June to August. A total of 36 acre-inches of water, which includes the preplant irrigation, is applied. Ditches are made for the preirrigation, and then closed prior to planting. Ditches are made again after the cultivation and closed prior to harvest. Water is delivered from the ditches to the furrows by siphon pipes.

Fertilization. Nitrogen (N) recommendations range from 80 to 120 units per acre. All or part of the Nitrogen requirement (as UN32, aqua ammonia, or anhydrous ammonia) is banded below the seed line during bed listing along with the 4-10-10 starter fertilizer at 209 pounds per acre (20 gallons) plus 1/2 gallon of zinc. Additional nitrogen can be sidedressed once the beans have reached the three to four leaf stage. Although not included in the study, soil amendments with gypsum or sulfur products are a routine practice and may be necessary every three to four years.

Pest Management. The pesticides and rates mentioned in this cost study are listed in *UC Integrated Pest Management Guidelines, Beans*. For more information on other pesticides available, pest identification, monitoring, and management visit the above UC IPM website at www.ipm.ucdavis.edu. For information and

pesticide use permits, contact the local county agricultural commissioner's office. **Pesticides mentioned in this study are used to calculate rates and costs. Although the pesticides mentioned are commonly used by growers, other pesticides are available. Check with your Farm Advisor, PCA and/or the UC IPM website for current recommendations.** Spray adjuvants are an additional cost and may be necessary for use with many pesticides for effective control. They are assumed to be included in the pesticide cost in this study. Pesticide costs vary by location, brand, and grower volume. Pesticide costs in this study are taken from a single dealer and shown as full retail.

Pest Control Adviser (PCA). Written recommendations are required for commercially applied pesticides and are written by licensed pest control advisers. In addition the PCA will monitor the field for other problems including pests, diseases, and nutritional status. Growers may hire private consultants or receive the service as part of an agreement with an agricultural chemical and fertilizer company. Separate costs for a PCA are not included in this study.

Weeds. Herbicides -- Dual Magnum and Treflan -- are applied preplant to the listed beds and furrows, then mixed in the soil with a rolling cultivator – the first pass applies and incorporates the herbicides (spray boom and cultivator attached to tractor); the second pass is for further incorporation. The beans are cultivated twice once in May and once in June prior to row closure. After the ditches are made, all turning is done inside the field.

Insects. The two major insect pests are twospotted (*Tetranychus urticae*), strawberry (*Tetranychus turkestanii*) and pacific spider (*Tetranychus pacificus*) mites and lygus bugs (*Lygus hesperus*, *Lygus elisus*). Comite miticide for mite control is applied in June/July after cultivation. Lygus bugs are controlled with air applications of an OP insecticide (e.g. Dimethoate) during August bloom and a pyrethroid insecticide (e.g. Warrior) during pod fill. Additional lygus control may be needed until pod maturity. Worm control may be needed in some years for corn earworms and armyworms to prevent bean seed damage in the pod. The ground (Comite) and air (Dimethoate/ Warrior) applications are done by a custom operator.

Diseases. Seedling diseases caused by rhizoctonia (*Rhizoctonia solani*) and pythium (*Pythium* spp.) root rot are prevented with seed treatments and good cultural practices. The fungicide seed protectants are applied to the seed by the bean warehouse and the cost is included in the seed price.

Harvest. The beans are cut and threshed by a custom operator. At maturity six rows per pass are cut at ground level with a set of tractor-mounted knives. One to two days later, depending on bean moisture, the cut beans are raked into windrows consisting of six to eight rows. Lima beans are harvested using bean threshers equipped with two or three slow-turning cylinders. Beans are ready for harvest when they reach 12% moisture. Cutting and windrowing costs \$24 per acre and threshing/harvesting costs \$2.00 per hundredweight (cwt). Other postharvest bean costs include warehouse charges of \$3.75 per cwt for cleaning, storage and insurance.

Yields. The crop yield used in this study is 23 cwt per acre of cleaned beans at 12% moisture. A typical cleanout rate for field run beans is 5-10%.

Returns. An average selling price of a \$40 per cwt is used to calculate income. Prices for large lima beans can range from \$35 to \$45 per cwt. The prices are used to show a range of returns over a range of yields in the Ranging Analysis Table.

Assessments. The California Dry Bean Board (CDBB) assesses \$0.17 per hundredweight (cwt) to all bean varieties (general assessment). Additional assessments are made by varietal councils formed for specific research on that variety. The large lima council assesses \$0.08 per cwt. The CDBB promotes marketing and research in dry beans.

Pickup/ATV. Costs for a 3/4-ton pickup and ATV are included in the study. The pickup and ATV may be used by the irrigator, field foreman and/or the grower. The pickup travels 9,000 miles per year (1,500 miles for the beans) and the ATV 3,000 miles per year (500 miles for the beans). The miles are not based on any actual data, but the assumptions are used to calculate a vehicle cost for this study.

Labor. Labor rates of \$13.05 per hour for machine operators and \$9.79 for general labor includes payroll overhead of 45%. The basic hourly wages are \$9.00 for machine operators and \$6.75 for general labor. The overhead includes the employers' share of federal and California state payroll taxes, workers' compensation insurance for field crops (code 0171), and a percentage for other possible benefits. Workers' compensation costs will vary among growers, but for this study the cost is based upon the average industry final rate as of January 5, 2004 (California Department of Insurance). 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 field repair.

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 Agriculture Engineers (ASAE). Fuel and lubrication costs are also determined by ASAE equations based on maximum power takeoff (PTO) horsepower, and fuel type. Prices for on-farm delivery of diesel and gasoline are \$1.45 and \$1.88 per gallon, respectively. The fuel prices are averaged based on four California delivery locations plus \$0.24 per gallon, which is one-half the difference between the high and low price for regular gasoline in 2003 from the California State Automobile Association Monthly Survey. The cost includes a 2.25% sales tax (effective September 2001) on diesel fuel and 7.25% sales tax on gasoline. Gasoline also includes federal and state excise tax, which can be refunded for on-farm use when filing your income tax. The fuel, lube, and repair cost per acre for each operation in Table 1 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 operating costs and is calculated monthly until harvest at a nominal rate of 6.89% 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. Production risks 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 of bean production.

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.

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 0.676% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$1,246 for the entire farm.

Office Expense. Office and business expenses are estimated at \$50 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, shop and office utilities, and miscellaneous administrative charges. The cost is a general estimate and not based on any actual data.

Land Rent. The 200 acres are rented for cash at \$150 per acre. The rented land includes the irrigation system that is maintained by the landlord.

Investment Repairs. Annual maintenance is calculated as two percent of the purchase price.

Non-cash Overhead

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 land is the purchase price because land does not depreciate. The purchase price and salvage value for equipment and investments are shown in the tables.

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 value that corresponds to the interest rate used and the life of the machine.

Interest Rate. The interest rate of 6.23% 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 agricultural sector.

Buildings. The metal building(s) are constructed on a cement slab totaling 2,400 square feet and are used for shop and/or storage.

Tools. This includes shop tools, hand tools, and miscellaneous field tools. The tools are an estimated value and not taken from any specific data.

Siphon Tubes. For this study, it is assumed the grower owns 720, 2-inch siphon tubes for use on the ranch.

Fuel Tanks. Two 300-gallon fuel tanks using gravity feed are on metal stands. The tanks are setup in a cement containment pad that meets federal, state, and county regulations.

Land Values. Being the beans are planted on rented land, land values are not shown in this study. Cropland owned by the grower on San Joaquin County's Westside ranges in value from \$5,500 to \$8,000 per acre.

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 the Whole Farm Annual Equipment, Investment, and Business Overhead Costs table. 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.

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UC COOPERATIVE EXTENSION
Table 1. COST PER ACRE TO PRODUCE LARGE LIMA BEANS
 SAN JOAQUIN VALLEY – North 2004

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre					Total Cost	Your Cost
		Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent			
Cultural:								
Land Prep: Subsoil 1X	0.40	6	12	0	0	19		
Land Prep: Disc 3X	0.41	6	12	0	0	19		
Land Prep: Landplane 2X	0.24	4	3	0	0	7		
Land Prep: Laser Level 1X/4Yr	0.00	0	0	0	25	25		
Land Prep: List Beds	0.00	0	0	0	19	19		
Fertilize: at bed listing (Aqua, 4-10-10 + Zn)	0.00	0	0	63	0	63		
Irrigate: Pull Ditch 2X	0.10	2	3	0	0	4		
Irrigate: Pre-irrigation	0.50	5	0	20	0	25		
Irrigate: Close Ditch 2X	0.10	2	1	0	0	3		
Weed: Apply & Incorporate Preplant Herbicide (Treflan, Dual), 1st pass	0.33	5	4	30	0	39		
Weed: Incorporate Preplant herbicide, 2nd pass	0.33	5	4	0	0	9		
Plant: Beans	0.25	6	4	72	0	82		
Weed: Cultivate & Furrow 2X	0.28	4	3	0	0	8		
Irrigate: District Water 5X	6.00	59	0	100	0	159		
Insect: Mites (Comite) Ground	0.00	0	0	30	8	38		
Insect: Lygus (Dimethoate) Air	0.00	0	0	6	10	16		
Insect: Lygus (Warrior) Air	0.00	0	0	12	10	22		
Pickup: (bean business)	0.17	3	2	0	0	5		
ATV: (bean business)	0.17	3	0	0	0	3		
TOTAL CULTURAL COSTS	9.28	110	49	332	72	562		
Harvest:								
Cut & Rake Beans	0.00	0	0	0	24	24		
Thresh Beans	0.00	0	0	0	46	46		
Clean, Bag, Store, Insurance	0.00	0	0	0	86	86		
Assessments	0.00	0	0	6	0	6		
TOTAL HARVEST COSTS	0.00	0	0	6	156	162		
Interest on operating capital @ 6.89%						19		
TOTAL OPERATING COSTS/ACRE		110	49	338	228	743		
Cash Overhead:								
Liability Insurance						1		
Office Expense						30		
Land Rent						150		
Property Taxes						2		
Property Insurance						1		
Investment Repairs						1		
TOTAL CASH OVERHEAD COSTS						185		
TOTAL CASH COSTS/ACRE						928		
Non-cash Overhead:								
		<u>Per Producing Acre</u>		<u>Annual Cost Capital Recovery</u>				
Buildings		54		4		4		
Fuel Tanks		4		0		0		
Shop Tools		11		1		1		
SiphonTubes		4		1		1		
Equipment		229		26		26		
TOTAL NON-CASH OVERHEAD COSTS		302		33		33		
TOTAL COSTS/ACRE						961		

UC COOPERATIVE EXTENSION
Table 2. COST PER ACRE TO PRODUCE LARGE LIMA BEANS
 SAN JOAQUIN VALLEY – North 2004

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS: Large Lima Beans	23.00	cwt	40.00	920	
OPERATING COSTS					
Custom:					
Laser Level	0.25	acre	100.00	25	
List Beds	1.00	acre	18.50	19	
Application - Ground	1.00	acre	8.00	8	
Application - Air	2.00	acre	10.00	20	
Cutting & Windrow	1.00	acre	24.00	24	
Threshing	23.00	cwt	2.00	46	
Clean, Store, Insurance	23.00	cwt	3.75	86	
Fertilizer:					
4-10-10 (10.45 lbs/gal)	209.00	lb	0.08	16	
Zinc Chelate 6%	0.50	gal	10.00	5	
Aqua Ammonia 20-0-0	120.00	lb N	0.35	42	
Irrigation:					
Water (District)	36.00	acin	3.33	120	
Herbicide:					
Dual Magnum	1.50	pint	15.00	23	
Treflan HFP	1.50	pint	4.75	7	
Seed:					
Large Lima (treated with protectants)	120.00	lb	0.60	72	
Insecticide:					
Comite	2.00	pint	14.80	30	
Dimethoate 4E	1.00	pint	6.25	6	
Warrior	4.00	oz	3.00	12	
Assessment:					
Dry Bean Board (general assessment)	23.00	cwt	0.17	4	
Dry Bean Board (varietal assessment)	23.00	cwt	0.08	2	
Labor (machine)	3.33	hrs	13.05	44	
Labor (non-machine)	6.75	hrs	9.79	66	
Fuel - Gas	0.80	gal	1.88	2	
Fuel - Diesel	20.36	gal	1.45	30	
Lube				5	
Machinery repair				13	
Interest on operating capital @ 6.89%				16	
TOTAL OPERATING COSTS/ACRE				743	
NET RETURNS ABOVE OPERATING COSTS				177	
CASH OVERHEAD COSTS:					
Liability Insurance				1	
Office Expense				30	
Land Rent Beans				150	
Property Taxes				2	
Property Insurance				1	
Investment Repairs				1	
TOTAL CASH OVERHEAD COSTS/ACRE				185	
TOTAL CASH COSTS/ACRE				928	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Building				4	
Fuel Tanks				0	
Shop Tools				1	
Siphon Tubes				1	
Equipment				26	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				33	
TOTAL COSTS/ACRE				961	
NET RETURNS ABOVE TOTAL COSTS				-41	

UC COOPERATIVE EXTENSION
Table 3. COST PER ACRE TO PRODUCE LARGE LIMA BEANS
 SAN JOAQUIN VALLEY – North 2004

Beginning NOV 03	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	TOTAL	
Ending OCT 04	03	03	04	04	04	04	04	04	04	04	04	04	04	
Cultural:														
Land Prep: Subsoil 2X	19												19	
Land Prep: Disc 3X	7						12						19	
Land Prep: Landplane 2X							7						7	
Land Prep: Laser Level 1X/4Yr							25						25	
Land Prep: List Beds							19						19	
Fertilize: at bed listing (Aqua, 4-10-10 + Zn)							63						63	
Irrigate: Pull Ditch 2X								2	2				4	
Irrigate: Pre-irrigation								25					25	
Irrigate: Close Ditch								1			1		3	
Weed: Preplant Apply/Incorporate (Treflan, Dual) 1st pass								39					39	
Weed: Preplant, Incorporate Herbicide, 2nd pass								9					9	
Plant: Beans								82					82	
Weed: Cultivate & Furrow 2X								4	4				8	
Irrigate: District Water 5X									32	63	63		159	
Insect: Mites (Comite) Ground									38				38	
Insect: Lygus (Dimethoate) Air											16		16	
Insect: Lygus (Warrior) Air												22	22	
Pickup: (bean business)	0	0	0	0	0	0	0	0	0	0	0	0	5	
ATV: (bean business)	0	0	0	0	0	0	0	0	0	0	0	0	3	
TOTAL CULTURAL COSTS	26	1	1	1	1	126	163	76	64	80	24	1	562	
Harvest:														
Cut & Rake Beans													24	24
Thresh Beans													46	46
Clean, Bag, Store & Insurance													86	86
Assessments													6	6
TOTAL HARVEST COSTS													162	162
Interest on operating capital	0	0	0	0	0	1	2	2	3	3	3	4	19	
TOTAL OPERATING COSTS/ACRE	26	1	1	1	1	126	165	78	67	83	27	167	743	
OVERHEAD:														
Liability Insurance			1										1	
Office Expense	3	3	3	3	3	3	3	3	3	3	3	3	30	
Land Rent												150	150	
Property Taxes			1						1				2	
Property Insurance			1						1				1	
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0	1	
TOTAL CASH OVERHEAD COSTS	3	3	5	3	3	3	3	3	4	3	3	153	185	
TOTAL CASH COSTS/ACRE	29	3	6	3	3	129	167	81	71	86	30	319	928	

UC COOPERATIVE EXTENSION
Table 4. RANGING ANALYSIS FOR LARGE LIMA BEAN
 SAN JOAQUIN VALLEY – North 2004

COSTS PER ACRE AT VARYING YIELD TO PRODUCE LARGE LIMA BEANS

	YIELD (cwt)						
	19.00	21.00	23.00	25.00	27.00	29.00	31.00
OPERATING COSTS/ACRE:							
Cultural Cost	562	562	562	562	562	562	562
Harvest Cost (Cut, Windrow, Thresh)	62	66	70	74	78	82	86
Harvest Cost (Clean, Bag, Store)	71	79	86	94	101	109	116
Assessments	5	5	6	6	7	7	8
Interest on operating capital	19	19	19	19	19	19	19
TOTAL OPERATING COSTS/ACRE	719	731	743	755	767	779	791
TOTAL OPERATING COSTS/cwt	37.84	34.81	32.30	30.20	28.41	26.86	25.52
CASH OVERHEAD COSTS/ACRE	185	185	185	185	185	185	185
TOTAL CASH COSTS/ACRE	904	916	928	940	952	964	976
TOTAL CASH COSTS/cwt	47.58	43.62	40.35	37.60	35.26	33.24	31.48
NON-CASH OVERHEAD COSTS/ACRE	33	33	33	33	33	33	33
TOTAL COSTS/ACRE	937	949	961	973	985	997	1,009
TOTAL COSTS/cwt	49.32	45.19	41.78	38.92	36.48	34.38	32.55

NET RETURNS PER ACRE ABOVE OPERATING COSTS

PRICE \$/cwt	YIELD (cwt)						
	19.00	21.00	23.00	25.00	27.00	29.00	31.00
32.00	-111	-59	-7	45	97	149	201
34.00	-73	-17	39	95	151	207	263
36.00	-35	25	85	145	205	265	325
38.00	3	67	131	195	259	323	387
40.00	41	109	177	245	313	381	449
42.00	79	151	223	295	367	439	511
44.00	117	193	269	345	421	497	573

NET RETURNS PER ACRE ABOVE CASH COSTS

PRICE \$/cwt	YIELD (cwt)						
	19.00	21.00	23.00	25.00	27.00	29.00	31.00
32.00	-296	-244	-192	-140	-88	-36	16
34.00	-258	-202	-146	-90	-34	22	78
36.00	-220	-160	-100	-40	20	80	140
38.00	-182	-118	-54	10	74	138	202
40.00	-144	-76	-8	60	128	196	264
42.00	-106	-34	38	110	182	254	326
44.00	-68	8	84	160	236	312	388

NET RETURNS PER ACRE ABOVE TOTAL COSTS

PRICE \$/cwt	YIELD (cwt)						
	19.00	21.00	23.00	25.00	27.00	29.00	31.00
32.00	-329	-277	-225	-173	-121	-69	-17
34.00	-291	-235	-179	-123	-67	-11	45
36.00	-253	-193	-133	-73	-13	47	107
38.00	-215	-151	-87	-23	41	105	169
40.00	-177	-109	-41	27	95	163	231
42.00	-139	-67	5	77	149	221	293
44.00	-101	-25	51	127	203	279	355

UC COOPERATIVE EXTENSION
Table 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
 SAN JOAQUIN VALLEY – North 2004

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
						Insur- ance	Taxes	
04	215HP Tractor Track	152,000	10	44,898	17,508	666	984	19,158
04	95 HP Tractor MFWD	6,2968	10	18,600	7,253	276	408	7,936
04	ATV 4WD	5,128	10	1,515	591	22	33	646
04	Blade Rear 8'	2,545	10	450	316	10	15	341
04	Cultivator Rolling 6 Row	9,624	12	1,333	1,084	37	55	1,176
04	Cultivator Sled 6 Row	9,624	12	1,333	1,084	37	55	1,176
04	Disc - Finish 18'	23,823	12	3,300	2,684	92	136	2,912
04	Disc - Stubble 16'	18,320	12	2,537	2,064	71	104	2,239
04	Ditcher - V	4,505	12	624	508	17	26	551
04	Pickup 3/4 Ton	31,000	10	9,157	3,571	136	201	3,907
04	Planter-6 Row	16,248	10	2,873	2,016	65	96	2,176
04	SaddleTanks 2-200g	5,033	10	890	625	20	30	674
04	Spray Boom - 20'	482	10	85	60	2	3	65
04	Subsoiler - 16'	14,000	10	2,476	1,737	56	82	1,875
04	Triplane - 16'	20,341	12	2,817	2,292	78	116	2,486
TOTAL		375,641		92,888	43,393	1,585	2,343	47,318
60% of New Cost *		225,385		55,733	26,036	950	1,406	28,391

ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead			Total
					Insur- ance	Taxes	Repairs	
Building(s) 2,400 sqft	65,000	25		5,196	220	325	1,300	7,041
Fuel Tanks 2-300 gal	4,708	20		418	16	24	94	552
Shop Tools	13,072	20	1,307	1,126	49	72	131	1,378
Siphon Tubes 720, 2-inch	5,302	10		728	18	27	106	879
TOTAL INVESTMENT	88,082		1,307	7,469	302	447	1,631	9,849

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Land Rent Beans	200	acre	150.00	30,000
Liability Insurance	1,200	acre	1.04	1,248
Office Expense	1,200	acre	30.00	36,000

UC COOPERATIVE EXTENSION
Table 6. HOURLY EQUIPMENT COSTS
 SAN JOAQUIN VALLEY - North 2004

Yr Description	Actual	Cash Overhead			Operating			Total Costs/Hr.
	Hours Used	Capital Recovery	Insur- ance	Taxes	Repairs	Fuel & Lube	Total Oper.	
04 215HP Tractor Track	1,600.20	6.56	0.25	0.37	3.94	20.81	24.75	31.94
04 95 HP Tractor MFWD	1199.60	3.63	0.14	0.20	1.22	7.78	9.00	12.97
04 ATV 4WD	200.30	1.77	0.07	0.10	0.37	0.65	1.02	2.96
04 Blade Rear 8'	200.00	0.95	0.03	0.04	0.41	0.00	0.41	1.44
04 Cultivator Rolling 6 Row	216.30	3.01	0.10	0.15	1.94	0.00	1.94	5.21
04 Cultivator Sled 6 Row	166.20	3.92	0.13	0.20	1.94	0.00	1.94	6.19
04 Disc - Finish 18'	165.80	9.71	0.33	0.49	3.78	0.00	3.78	14.32
04 Disc - Stubble 16'	166.40	7.44	0.25	0.38	2.90	0.00	2.90	10.98
04 Ditcher - V	166.00	1.83	0.06	0.09	1.22	0.00	1.22	3.21
04 Pickup 3/4 Ton	200.30	10.69	0.41	0.60	2.24	9.73	11.97	23.67
04 Planter-6 Row	150.00	8.06	0.26	0.38	4.36	0.00	4.36	13.07
04 SaddleTanks 2-200g	799.70	0.47	0.02	0.02	0.01	0.00	0.01	0.51
04 Spray Boom - 20'	149.70	0.24	0.01	0.01	0.13	0.00	0.13	0.38
04 Subsoiler - 16'	199.80	5.22	0.17	0.25	3.16	0.00	3.16	8.79
04 Triplane - 16'	250.40	5.49	0.19	0.28	3.07	0.00	3.07	9.03

UC COOPERATIVE EXTENSION
Table 7. OPERATIONS WITH EQUIPMENT
 SAN JOAQUIN VALLEY – North 2004

Operation	Operation Month	Tractor	Implement	Material	Broadcast Rate/acre	Unit
Cultural:						
Land Prep: Subsoil 2X	November	215 HP Track	Subsoiler 16'			
Land Prep: Disc 3X	November	215 HP Track	Disc			
	April	215 HP Track	Disc			
	April	215 HP Track	Disc			
Land Prep: Landplane 2X	April	95 HP MFWD	Triplane			
Land Prep: Laser Level 1X/4Yr	April	Custom				
Land Prep: List Beds & Preplant Fertilizer	May	Custom		4-10-10 (20 gal)	209.00	lb
				Zinc 6%	0.50	gal
				Aqua Ammonia	120.00	lb N
Irrigate: Pull Ditch 2X	May	215 HP Track	V-Ditcher			
	June	215 HP Track	V-Ditcher			
Irrigate: Close Ditch	May	95 HP MFWD	Rear Blade			
	September	95 HP MFWD	Rear Blade			
Irrigate: Pre-irrigation	May			Water	6.00	acin
Irrigate: 5X	June			Water	6.00	acin
	July			Water	12.00	acin
	August			Water	12.00	acin
Weed: Preplant (Treflan, Dual)	May	95 HP MFWD	Rolling Cultivator Saddle Tanks Spray Boom 20'	Dual Treflan	1.50 1.50	pt pt
Weed: Incorporate Herbicide	May	95 HP MFWD	Rolling Cultivator			
Weed: Cultivate & Furrow	May	95 HP MFWD	Sled Cultivator 6 Row			
	June	95 HP MFWD	Sled Cultivator 6 Row			
Plant: Large Lima	May	95 HP MFWD	Planter 6 Row	Seed	120.00	lb
Insect: Mites (Comite)	June	Custom		Ground Application Comite	8.00 2.00	acre pt
Insect: Lygus (Dimethoate)	August	Custom		Air Application Dimethoate	10.00 1.00	acre pt
Insect: Lygus (Warrior)	September	Custom		Air Application Warrior	10.00 4.00	acre oz
Harvest: Cut & Rake	October	Custom		Cut & Rake	24.00	acre
Harvest: Thresh Beans	October	Custom		Thresh Bean	2.00	cwt
Harvest: Clean, Bag, Store, Insurance	October	Custom		Clean, Bag, Store, Insurance	3.75	cwt