
UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2010

**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.

Current and archived 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) 752-6887 or obtained from the local county UC Cooperative Extension offices.

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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 Cultural Practices and Material Inputs

Land Preparation. Primary tillage, which includes subsoiling, disking, 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. 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 30 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 major insect pests are twospotted (*Tetranychus urticae*), strawberry (*Tetranychus turkestanii*) and pacific spider (*Tetranychus pacificus*) mites, lygus bugs (*Lygus hesperus*, *Lygus elisus*), black bean and cow pea aphid (*Aphis fabae*, *Aphis craccivora*). Comite miticide for mite control is applied in June/July after cultivation. Lygus bugs are controlled with air applications of an OP (organophosphate) insecticide (e.g. Dimethoate) during August bloom and a pyrethroid insecticide (e.g. Warrior) during pod fill. The dimethoate application also controls aphids. 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 custom operators.

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 \$38 per acre and threshing/harvesting costs \$2.50 per hundredweight (cwt) based on field/dirt weight plus \$0.70 cwt for hauling. Other postharvest bean costs include warehouse charges of \$4.50 per cwt for cleaning, storage and insurance.

Yields. The crop yield used in this study is 25 cwt field/dirt weight or 23 cwt per acre of cleaned beans at 12% moisture. A typical cleanout rate for field run beans is 5-10%.

Returns. Based on the 2008 and 2009 Bean Market Reports, an average selling price of a \$65 per cwt is used to calculate income. Prices for large lima beans during this period ranged from \$60 to \$70 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 \$0.175 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 \$0.04 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, Equipment, and Interest

Labor. Labor rates of \$13.70 per hour for machine operators and \$10.96 for general labor includes payroll overhead of 37%. The basic hourly wages are \$10.00 for machine operators and \$8.00 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. For this study the cost is based upon the average industry final rate as of January 1, 2010 (personal email from California Department of Insurance, March 2010). 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.

Wages for management are not included as a cash cost. Any return above total costs is considered a return to management and risk. However, growers wanting to account for management may wish to add a fee. The manager makes all production decisions including cultural practices, action to be taken on pest management recommendations, and labor.

Equipment Operating Costs. Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by American Society of Agricultural Engineers (ASAE). Fuel and lubrication costs are also determined by ASAE equations based on maximum Power Take Off (PTO) horsepower, and fuel type. Prices for on-farm delivery of diesel and gasoline are \$2.04 and \$2.67 per gallon, respectively. The cost includes a 2.5% local sales tax on diesel fuel and 7.5% sales tax on gasoline. Gasoline also includes federal and state excise tax, which are refundable 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. Fuel prices have fluctuated considerably and may be higher or lower on any given day.

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 5.75% 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. The interest rate will vary depending upon various factors. The rate in this study is considered a typical lending rate by a farm lending agency as of January 2010.

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.

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 0.767% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$1,405 for the entire farm.

Crop Insurance. The grower, to protect the farm from crop losses, purchases crop insurance. Several levels of coverage are available, but the premium as calculated by a crop insurance agency for large lima beans at the 75% level costs the San Joaquin County grower \$67.45 per acre. The premium cost includes the base premium less the subsidized premium amount.

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 \$200 per acre. The rented land includes the irrigation system that is maintained by the landlord. Cash rents on the county's Westside ranges from \$150 to \$200 per acre (2009 Trends & Leases) depending on crop, location and soil type.

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 4.75% used to calculate capital recovery cost is the suggested basic rate by a farm lending agency as of January 2010. The rate will vary depending upon loan amount and other lending agency conditions.

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. 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 in the northern San Joaquin Valley (San Joaquin County's Westside) ranges in value from \$8,000 to \$12,000 per acre (2009 Trends & Leases).

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. COSTS PER ACRE TO PRODUCE LARGE LIMA BEANS
 SAN JOAQUIN VALLEY – North 2010

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 2X	0.40	7	17	0	0	24		
Land Prep: Disc 3X	0.41	7	18	0	0	25		
Land Prep: Landplane 2X	0.24	4	4	0	0	8		
Land Prep: Laser Level 1X/4Yr	0.00	0	0	0	38	38		
Land Prep: List Beds	0.00	0	0	0	20	20		
Fertilize: at bed listing (Aqua, 4-10-10 + Zn)	0.00	0	0	91	0	91		
Irrigate: Pull Ditch 2X	0.10	2	4	0	0	6		
Irrigate: Pre-irrigation	0.50	6	0	20	0	26		
Irrigate: Close Ditch 2X	0.10	2	1	0	0	3		
Weed: Apply & Incorporate Preplant Herbicide (Treflan, Dual), 1st pass	0.33	6	5	38	0	49		
Weed: Incorporate Preplant herbicide, 2nd pass	0.33	6	5	0	0	11		
Plant: Beans	0.25	7	5	115	0	127		
Weed: Cultivate & Furrow 2X	0.28	5	4	0	0	9		
Irrigate: District Water 5X	2.50	29	0	80	0	109		
Insect: Mites (Comite) Ground	0.00	0	0	30	10	40		
Insect: Lygus, Aphid (Dimethoate) Air	0.00	0	0	9	16	25		
Insect: Lygus (Warrior) Air	0.00	0	0	13	16	29		
Pickup: (bean business)	0.17	3	3	0	0	6		
ATV: (bean business)	0.17	3	0	0	0	3		
TOTAL CULTURAL COSTS	5.78	86	67	395	100	647		
Harvest:								
Cut & Rake Beans	0.00	0	0	0	38	38		
Thresh Beans & Haul	0.00	0	0	0	80	80		
Clean, Bag, Store, Insurance	0.00	0	0	0	104	104		
Assessments	0.00	0	0	5	0	5		
TOTAL HARVEST COSTS	0	0	0	5	222	226		
Interest on operating capital @ 5.75%						19		
TOTAL OPERATING COSTS/ACRE		86	67	400	321	893		
Cash Overhead:								
Liability Insurance						1		
Office Expense						50		
Land Rent						200		
Crop Insurance						67		
Property Taxes						2		
Property Insurance						2		
Investment Repairs						2		
TOTAL CASH OVERHEAD COSTS						324		
TOTAL CASH COSTS/ACRE						1,217		
Non-Cash Overhead:								
		Per Producing		Annual Cost				
		Acre		Capital Recovery				
Buildings		67		4		4		
Fuel Tanks		4		0		0		
Shop Tools		13		1		1		
Siphon Tubes		7		1		1		
Equipment		281		29		29		
TOTAL NON-CASH OVERHEAD COSTS		371		36		36		
TOTAL COSTS/ACRE						1,253		

UC COOPERATIVE EXTENSION
Table 2. COSTS and RETURNS PER ACRE TO PRODUCE LARGE LIMA BEANS
 SAN JOAQUIN VALLEY – North 2010

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS: Large Lima Beans	23.00	cwt	65.00	1,495	
OPERATING COSTS					
Custom:					
Laser Level (1X per 4 yrs)	0.25	acre	150.00	38	
List Beds	1.00	acre	20.00	20	
Application - Ground	1.00	acre	10.00	10	
Application - Air	2.00	acre	16.00	32	
Cutting & Windrow	1.00	acre	38.00	38	
Threshing	25.00	cwt	2.50	63	
Haul	25.00	cwt	0.70	18	
Clean, Store, Insurance	23.00	cwt	4.50	104	
Fertilizer:					
4-10-10 (10.45 lbs/gal)	209.00	lb	0.13	27	
Zinc Chelate 6%	0.50	gal	12.80	6	
Aqua Ammonia 20-0-0	120.00	lb N	0.48	58	
Irrigation:					
Water (District)	30.00	acin	3.33	100	
Herbicide:					
Dual Magnum	1.50	pint	20.28	30	
Treflan HFP	1.50	pint	4.84	7	
Seed:					
Large Lima (treated with protectants)	120.00	lb	0.96	115	
Insecticide:					
Comite	2.00	pint	14.80	30	
Dimethoate 4E	1.00	pint	8.64	9	
Warrior	4.00	floz	3.21	13	
Assessment:					
Dry Bean Board (general assessment)	23.00	cwt	0.18	4	
Dry Bean Board (varietal assessment)	23.00	cwt	0.04	1	
Labor (machine)	3.33	hrs	14.39	48	
Labor (non-machine)	3.25	hrs	11.65	38	
Fuel - Gas	0.80	gal	2.67	2	
Fuel - Diesel	20.37	gal	2.04	42	
Lube				7	
Machinery repair				17	
Interest on operating capital @ 5.75%				19	
TOTAL OPERATING COSTS/ACRE				893	
NET RETURNS ABOVE OPERATING COSTS				602	
CASH OVERHEAD COSTS:					
Liability Insurance				1	
Office Expense				50	
Land Rent Beans				200	
Crop Insurance				67	
Property Taxes				2	
Property Insurance				2	
Investment Repairs				2	
TOTAL CASH OVERHEAD COSTS/ACRE				324	
TOTAL CASH COSTS/ACRE				1,217	

UC COOPERATIVE EXTENSION
Table 2. CONTINUED
 SAN JOAQUIN VALLEY – North 2010

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Building				4	
Fuel Tanks				0	
Shop Tools				1	
Siphon Tubes				1	
Equipment				29	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				36	
TOTAL COSTS/ACRE				1,253	
NET RETURNS ABOVE TOTAL COSTS				242	

UC COOPERATIVE EXTENSION
Table 3. MONTHLY CASH COSTS PER ACRE TO PRODUCE LARGE LIMA BEANS
 SAN JOAQUIN VALLEY – North 2010

Beginning NOV 09	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	TOTAL	
Ending OCT 10	09	09	10	10	10	10	10	10	10	10	10	10		
Cultural:														
Land Prep: Subsoil 2X	24												24	
Land Prep: Disc 3X	9						15						25	
Land Prep: Landplane 2X							8						8	
Land Prep: Laser Level 1X/4Yr							38						38	
Land Prep: List Beds							20						20	
Fertilize: at bed listing (Aqua, 4-10-10 + Zn)							91						91	
Irrigate: Pull Ditch 2X								3	3				6	
Irrigate: Pre-irrigation								26					26	
Irrigate: Close Ditch								2			2		3	
Weed: Preplant Apply/Incorporate (Treflan, Dual) 1st pass								49					49	
Weed: Preplant, Incorporate Herbicide, 2nd pass								11					11	
Plant: Beans								127					127	
Weed: Cultivate & Furrow 2X								5	5				9	
Irrigate: District Water 5X									26	42	42		109	
Insect: Mites (Comite) Ground									40				40	
Insect: Lygus (Dimethoate) Air										25			25	
Insect: Lygus (Warrior) Air												29	29	
Pickup: (bean business)	0	0	0	0	0	0	0	0	0	0	0	0	6	
ATV: (bean business)	0	0	0	0	0	0	0	0	0	0	0	0	3	
TOTAL CULTURAL COSTS	34	1	1	1	1	173	223	74	42	67	31	1	647	
Harvest:														
Cut & Rake Beans													38	38
Thresh Beans & Haul													80	80
Clean, Bag, Store & Insurance													104	104
Assessments													5	5
TOTAL HARVEST COSTS													226	226
Interest on operating capital @ 5.75%	0	0	0	0	0	1	2	2	3	3	3	4	19	
TOTAL OPERATING COSTS/ACRE	34	1	1	1	1	174	225	76	45	70	34	231	893	
OVERHEAD:														
Liability Insurance			1										1	
Office Expense	4	4	4	4	4	4	4	4	4	4	4	4	50	
Land Rent												200	200	
Crop Insurance							67						67	
Property Taxes			1						1				2	
Property Insurance			1						1				2	
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0	2	
TOTAL CASH OVERHEAD COSTS	4	4	7	4	4	4	72	4	6	4	4	204	324	
TOTAL CASH COSTS/ACRE	38	5	8	5	5	178	296	80	51	74	39	436	1,217	

UC COOPERATIVE EXTENSION
Table 4. RANGING ANALYSIS FOR LARGE LIMA BEAN
 SAN JOAQUIN VALLEY – North 2010

COSTS PER ACRE AT VARYING YIELDS 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	647	647	647	647	647	647	647
Harvest Cost (Cut, Windrow, Thresh)	104	111	118	125	132	139	146
Harvest Cost (Clean, Bag, Store)	86	94	103	113	122	131	140
Assessments	4	5	5	5	6	6	7
Interest on operating capital @ 5.75%	19	19	19	19	19	19	20
TOTAL OPERATING COSTS/ACRE	860	876	892	909	926	942	960
TOTAL OPERATING COSTS/cwt	45.28	41.73	38.79	36.37	34.30	32.49	30.98
CASH OVERHEAD COSTS/ACRE	324	324	324	324	324	324	324
TOTAL CASH COSTS/ACRE	1,184	1,200	1,216	1,233	1,250	1,266	1,284
TOTAL CASH COSTS/cwt	62.33	57.15	52.88	49.33	46.30	43.66	41.43
NON-CASH OVERHEAD COSTS/ACRE	36	36	36	36	36	36	36
TOTAL COSTS/ACRE	1,220	1,236	1,252	1,269	1,286	1,302	1,320
TOTAL COSTS/cwt	64.22	58.87	54.44	50.77	47.64	44.90	42.59

NET RETURNS PER ACRE ABOVE OPERATING COSTS

PRICE	YIELD (cwt)						
	19.00	21.00	23.00	25.00	27.00	29.00	31.00
\$/cwt							
45.00	-5	69	143	216	289	363	435
50.00	90	174	258	341	424	508	590
55.00	185	279	373	466	559	653	745
60.00	280	384	488	591	694	798	900
65.00	375	489	603	716	829	943	1,055
70.00	470	594	718	841	964	1,088	1,210
75.00	565	699	833	966	1,099	1,233	1,365

NET RETURNS PER ACRE ABOVE CASH COSTS

PRICE	YIELD (cwt)						
	19.00	21.00	23.00	25.00	27.00	29.00	31.00
\$/cwt							
45.00	-329	-255	-181	-108	-35	39	111
50.00	-234	-150	-66	17	100	184	266
55.00	-139	-45	49	142	235	329	421
60.00	-44	60	164	267	370	474	576
65.00	51	165	279	392	505	619	731
70.00	146	270	394	517	640	764	886
75.00	241	375	509	642	775	909	1,041

NET RETURNS PER ACRE ABOVE TOTAL COSTS

PRICE	YIELD (cwt)						
	19.00	21.00	23.00	25.00	27.00	29.00	31.00
\$/cwt							
45.00	-365	-291	-217	-144	-71	3	75
50.00	-270	-186	-102	-19	64	148	230
55.00	-175	-81	13	106	199	293	385
60.00	-80	24	128	231	334	438	540
65.00	15	129	243	356	469	583	695
70.00	110	234	358	481	604	728	850
75.00	205	339	473	606	739	873	1,005

UC COOPERATIVE EXTENSION
Table 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
 SAN JOAQUIN VALLEY – North 2010

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
						Insur- ance	Taxes	
10	215HP Tractor Track	240,000	10	70,892	25,003	1,192	1,554	27,749
10	95 HP Tractor MFWD	62,968	10	18,600	6,560	313	408	7,280
10	ATV 4WD	5,128	10	1,515	534	25	33	593
10	Blade Rear 8'	3,500	10	619	398	16	21	434
10	Cultivator Rolling 6 Row	11,500	12	1,593	1,178	50	65	1,293
10	Cultivator Sled 6 Row	10,153	12	1,406	1,040	44	58	1,142
10	Disc - Finish 18'	26,548	12	3,677	2,719	116	151	2,986
10	Disc - Stubble 16'	21,618	12	2,994	2,214	94	123	2,431
10	Ditcher - V	4,505	12	624	461	20	26	507
10	Pickup 3/4 Ton	31,000	10	9,157	3,229	154	201	3,584
10	Planter-6 Row	21,848	10	3,864	2,484	99	129	2,712
10	Saddle Tanks 2-200g	5,033	10	890	572	23	30	625
10	Spray Boom - 20'	1,220	10	216	139	6	7	151
10	Subsoiler - 16'	14,000	10	2,476	1,592	63	82	1,738
10	Triplane - 16'	20,341	12	2,817	2,083	89	116	2,288
TOTAL		479,362		121,340	50,206	2,304	3,004	55,513
60% of New Cost *		287,617		72,804	30,124	1,382	1,802	33,308

*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	
Building(s) 2,400 sqft	80,000	25	0	5,057	307	400	1,600	7,364
Fuel Tanks 2-300 gal	4,800	20	0	377	18	24	96	515
Shop Tools	15,000	20	0	1,178	58	75	300	1,611
Siphon Tubes 720, 2-inch	8,820	10	0	1,128	34	44	176	1,382
TOTAL INVESTMENT	108,620		0	7,741	417	543	2,172	10,872

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Crop Insurance 75% Level	200	acre	67.45	13,490
Land Rent Beans	200	acre	200.00	40,000
Liability Insurance	1,200	acre	1.17	1,404
Office Expense	1,200	acre	50.00	60,000

UC COOPERATIVE EXTENSION
Table 6. HOURLY EQUIPMENT COSTS
 SAN JOAQUIN VALLEY - North 2010

Yr Description	Actual	Cash Overhead			Operating			Total Costs/Hr.
	Hours Used	Capital Recovery	Insur- ance	Taxes	Repairs	Fuel & Lube	Total Oper.	
10 215HP Tractor Track	1,600	9.37	0.45	0.58	6.38	29.27	35.65	46.05
10 95 HP Tractor MFWD	1,267	3.28	0.16	0.20	1.25	10.94	12.19	15.83
10 ATV 4WD	200	1.60	0.08	0.11	0.37	0.92	1.29	3.08
10 Blade Rear 8'	200	1.19	0.05	0.06	0.58	0.00	0.58	1.88
10 Cultivator Rolling 6 Row	216	4.25	0.18	0.24	2.41	0.00	2.41	7.08
10 Cultivator Sled 6 Row	166	3.75	0.16	0.21	2.12	0.00	2.12	6.24
10 Disc - Finish 18'	166	9.84	0.42	0.55	4.31	0.00	4.31	15.12
10 Disc - Stubble 16'	166	7.98	0.34	0.44	3.51	0.00	3.51	12.27
10 Ditcher - V	166	1.67	0.07	0.09	1.25	0.00	1.25	3.08
10 Pickup 3/4 Ton	200	9.67	0.46	0.60	2.27	13.82	16.09	26.82
10 Planter-6 Row	132	9.94	0.39	0.51	6.02	0.00	6.02	16.86
10 Saddle Tanks 2-200g	800	0.43	0.02	0.02	0.01	0.00	0.01	0.48
10 Spray Boom - 20'	150	0.56	0.02	0.03	0.33	0.00	0.33	0.94
10 Subsoiler - 16'	200	4.78	0.19	0.25	3.20	0.00	3.20	8.42
10 Triplane - 16'	250	4.99	0.21	0.28	3.11	0.00	3.11	8.59

UC COOPERATIVE EXTENSION
Table 7. OPERATIONS WITH EQUIPMENT
 SAN JOAQUIN VALLEY – North 2010

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	4.00	acin
	July			Water	10.00	acin
	August			Water	10.00	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	Comite	2.00	pt
Insect: Lygus (Dimethoate)	August	Custom	Air	Dimethoate	1.00	pt
Insect: Lygus (Warrior)	September	Custom	Air	Warrior	4.00	floz
Harvest: Cut & Rake	October	Custom				
Harvest: Thresh Beans	October	Custom				
Harvest: Clean, Bag, Store, Insurance	October	Custom				