
UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2005

**SAMPLE COSTS TO PRODUCE
COMMON DRY
BEANS**



SAN JOAQUIN VALLEY - NORTH
Double Cropped

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INTRODUCTION

Sample costs to produce common dry 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 common dry 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 planted to common dry beans, double cropped with winter cereal or winter forage. The remaining 1,000 acres of rented and grower owned land is 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. For single crop beans, primary tillage, which includes chiseling, disking, land finishing (laser and triplane), and listing beds is done between October and May. For double-cropped beans, except for laser leveling, the operations are done in June. The land is chiseled 12 to 16 inches deep. The field is then disced three times to create an adequate seedbed, and leveled in one pass with a triplane. Although the fields are basically level, the fields are laser leveled once every four years and being the ground is double cropped each year, one-eighth 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 following the preirrigation and prior to planting.

Plant. Several varieties of bush and vine common dry beans in the following classes are available for planting: light and dark red kidney, black turtle, cranberry, canario, and pinto. Common dry bean seeds treated with protectants are planted during June using a six-row bean planter. Beans are usually planted 4 to 6 seeds per foot in a single row on 30-inch beds or 69,696 to 104,544 seeds per acre. Seed size varies among varieties and classes ranging from 775 to 4,000 seeds per pound. In this study the beans at 75 pounds per acre (kidney seeds) are planted one to two inches deep into moist soil five to six seeds per foot 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 \$10 to \$75 per acre-foot. Most growers use surface water and the cost will vary by water district. The bean field is furrow irrigated with one pre-irrigation averaging 4 to 6 inches depending on the previous crop and 6 to 8 irrigations during the growing season from June/July to September. 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 during listing using two shanks, 6-inches to each side of the seed row. Also during bed listing along with the nitrogen, 4-10-10 starter fertilizer at 209 pounds per acre (20 gallons) plus one quart of zinc is banded two-inches below and two-inches to the side of the seed row. 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 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 growers commonly use the pesticides mentioned, 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). The PCA monitors the field for agronomic problems including pests, diseases, and nutritional status. Growers may hire private consultants on a per acre basis 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. In this study herbicides -- Dual Magnum and Treflan -- are applied after the preirrigation and prior to planting to the listed beds and furrows, then incorporated 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 in July before row closure approximately two and four weeks after bean emergence. 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 (*propargite*) miticide for mite control is applied in July at the last cultivation. Lygus bugs are controlled with an aerial application of a pyrethroid insecticide [e.g. Warrior (*Lambda-cyhalothrin*)] during bloom to pod fill (August). Lygus populations are monitored during this period and treatments are made when lygus counts reach 1.5 lygus per sweep. Insecticide application dates will vary according to planting dates and insect infestation. In some years, control of corn earworms and armyworms may be needed to prevent seed damage during pod fill. The grower applies the ground application and an aerial applicator applies the air application.

Diseases. Seedling diseases caused by rhizoctonia (*Rhizoctonia solani*) and pythium (*Pythium* spp.) root rot are prevented with good cultural practices and additional benefits may be gained with seed treatments. 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 in September 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. Common beans are harvested using bean threshers. Beans are ready for harvest when they reach 15% seed 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 25 cwt per acre of cleaned beans at 12% moisture and is assumed that it is representative of the various bean classes. Specific yield data by class was not available to the authors. A typical cleanout rate for field run beans is 5-10%.

Returns. An average selling price of \$33 per cwt is used to calculate income. Prices from the 2002 to 2003 San Joaquin County Annual Crop Report for all dry bean classes ranged from \$32 to \$35 per cwt. Prices to growers will vary by market and contracts. Common grower prices in 2004 for each variety are shown in Table A. The prices are used to show a range of returns over a range of yields in the Ranging Analysis, Table 4.

Table A. *2004 Prices by Bean Class

Class	\$/cwt
Black Turtle	28.00
Cranberry	32.00
Canario	32.00
Kidney	32.00 – 34.00

*Personal communication from single CA warehouse

Assessments. The California Dry Bean Board (CDBB) assesses \$0.17 per hundredweight (cwt) to all bean varieties (general assessment). Varietal councils formed for specific research on that variety make additional assessments. Kidney beans are assessed \$0.04 per hundredweight and miscellaneous classes \$0.03. Beans are assessed \$0.04 in this study. The CDBB promotes marketing and research in dry beans.

Pickup/ATV. Costs for a 1/2-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 \$13.32 per hour for machine operators and \$10.00 for general labor includes payroll overhead of 48%. 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 1, 2005 (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 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 \$1.51 and \$2.05 per gallon, respectively. Costs are based on current delivery prices quoted by distributors and 2004 monthly price data. The cost includes a 2% local sales tax on diesel fuel and 8% sales tax on gasoline. Gasoline also includes federal and state excise taxes, which are refundable for on-farm use when filing your income tax return. The fuel, lube, and repair cost per acre for each operation in Table 2 is determined by multiplying the total hourly operating cost in Table 6 for each piece of equipment used for the selected operation by the hours per acre. Tractor time is 10% higher than implement time for a given operation to account for setup, travel and down time.

Interest On Operating Capital. Interest on operating capital is based on cash operating costs and is calculated monthly until harvest at a nominal rate of 7.65% 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. Crop insurance is available to reduce risk against crop losses.

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 0.69% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$1,277 for the entire farm.

Office Expense. Office and business expenses are estimated at \$30 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.

Crop Insurance. The grower, to protect the farm from crop losses, purchases crop insurance. Several levels of coverage are available, but the premium in this study is based on Light Red Kidney beans at the 75% level. The premium cost includes the base premium less the subsidized premium amount.

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 6.01% 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 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/Pipes. 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 in the northern San Joaquin Valley 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 COMMON DRY BEANS
 SAN JOAQUIN VALLEY – North 2005

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: Laser Level 1X/4Yr or 1X/8 Crops	0.00	0	0	0	13	13		
Land Prep: Chisel	0.13	2	4	0	0	6		
Land Prep: Disc 3X	0.41	6	13	0	0	19		
Land Prep: Triplane 1X	0.12	2	2	0	0	4		
Land Prep: List Beds	0.00	0	0	0	21	21		
Fertilize: at bed listing (Aqua, 4-10-10 + Zn)	0.00	0	0	60	0	60		
Irrigate: Pull Ditch 2X	0.10	2	3	0	0	5		
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	38	0	48		
Weed: Cultivate & Furrow 2X	0.28	4	3	0	0	8		
Irrigate: District Water 6X	3.00	30	0	100	0	130		
Insect: Mites (Comite) Ground	0.13	2	1	30	0	33		
Insect: Lygus (Warrior) Air	0.00	0	0	12	10	22		
Pickup: (bean business)	0.17	3	2	0	0	4		
ATV: (bean business)	0.17	3	0	0	0	3		
TOTAL CULTURAL COSTS	6.01	78	41	289	44	451		
Harvest:								
Cut & Rake Beans	0.00	0	0	0	24	24		
Thresh Beans	0.00	0	0	0	40	40		
Clean, Bag, Store, Insurance	0.00	0	0	0	75	75		
Assessments	0.00	0	0	4	0	4		
TOTAL HARVEST COSTS	0.00	0	0	4	139	143		
Interest on operating capital @ 7.65%						11		
TOTAL OPERATING COSTS/ACRE		78	41	293	183	605		
Cash Overhead:								
Liability Insurance						1		
Office Expense						30		
Land Rent						150		
Crop Insurance						14		
Property Taxes						2		
Property Insurance						1		
Investment Repairs						1		
TOTAL CASH OVERHEAD COSTS						199		
TOTAL CASH COSTS/ACRE						805		
Non-cash Overhead:								
		Per Producing		Annual Cost				
		Acre		Capital Recovery				
Buildings		54		4		4		
Fuel Tanks		4		0		0		
Shop Tools		11		1		1		
Siphon Tubes		4		1		1		
Equipment		201		23		23		
TOTAL NON-CASH OVERHEAD COSTS		274		29		29		
TOTAL COSTS/ACRE						834		

UC COOPERATIVE EXTENSION
Table 2. COSTS AND RETURNS PER ACRE TO PRODUCE COMMON DRY BEANS
 SAN JOAQUIN VALLEY – North 2005

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS: Common dry Beans	25.00	cwt	33.00	825	
OPERATING COSTS					
Custom:					
Laser Level (1X/4 Yr or 1X/8 Crops)	0.13	acre	100.00	13	
List Beds	1.00	acre	21.00	21	
Application - Air	1.00	acre	10.00	10	
Cutting & Windrow	1.00	acre	24.00	24	
Threshing	20.00	cwt	2.00	40	
Clean, Store, Insurance	20.00	cwt	3.75	75	
Fertilizer:					
4-10-10 (10.45 lbs/gal)	209.00	lb	0.08	16	
Zinc Chelate 6%	0.25	gal	10.00	3	
Aqua Ammonia 20-0-0	120.00	lb N	0.35	42	
Irrigation:					
Water	36.00	acin	3.33	120	
Herbicide:					
Dual Magnum	1.50	pint	15.00	23	
Treflan HFP	1.50	pint	4.75	7	
Seed:					
Common Dry (kidney treated with protectants)	75.00	lb	0.50	38	
Insecticide:					
Comite	2.00	pint	14.80	30	
Warrior	4.00	oz	3.00	12	
Assessment:					
Dry Bean Board (general assessment)	20.00	cwt	0.17	3	
Dry Bean Board (varietal assessment)	20.00	cwt	0.04	1	
Labor (machine)	3.01	hrs	13.32	40	
Labor (non-machine)	3.75	hrs	10.00	38	
Fuel - Gas	0.68	gal	2.05	1	
Fuel - Diesel	16.62	gal	1.51	25	
Lube				4	
Machinery repair				10	
Interest on operating capital @ 7.65%				11	
TOTAL OPERATING COSTS/ACRE				605	
NET RETURNS ABOVE OPERATING COSTS				220	
CASH OVERHEAD COSTS:					
Liability Insurance				1	
Office Expense				30	
Land Rent Beans				150	
Crop Insurance				14	
Property Taxes				2	
Property Insurance				1	
Investment Repairs				1	
TOTAL CASH OVERHEAD COSTS/ACRE				199	
TOTAL CASH COSTS/ACRE				805	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Building				4	
Fuel Tanks				0	
Shop Tools				1	
Siphon Tubes				1	
Equipment				23	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				29	
TOTAL COSTS/ACRE				834	
NET RETURNS ABOVE TOTAL COSTS				--9	

UC COOPERATIVE EXTENSION
Table 3. MONTHLY CASH COST PER ACRE TO PRODUCE COMMON DRY BEANS
 SAN JOAQUIN VALLEY – North 2005

	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	TOTAL
Beginning NOV 04													
Ending OCT 05	04	04	05	05	05	05	05	05	05	05	05	05	
Cultural:		*	*	*	*	*	*						
Land Prep: Laser Level 1X/4Yr	13												13
Land Prep: Chisel								6					6
Land Prep: Disc 3X								19					19
Land Prep: Triplane 1X								4					4
Land Prep: List Beds								21					21
Fertilize: at bed listing (Aqua, 4-10-10 + Zn)								60					60
Irrigate: Pull Ditch 2X								2	2				5
Irrigate: Pre-irrigation								25					25
Irrigate: Close Ditch 2X								1			1		3
Weed: Apply & Incorporate Preplant Herbicide (Treflan, Dual), 1st pass								39					39
Weed: Incorporate Preplant herbicide, 2nd pass								9					9
Plant: Beans								48					48
Weed: Cultivate & Furrow 2X									8				8
Irrigate: Water & Labor 6X									43	65	22		130
Insect: Mites (Comite) Ground									33				33
Insect: Lygus (Warrior) Air										22			22
Pickup: (bean business)	0	0	0	0	0	0	0	0	0	0	0	0	4
ATV: (bean business)	0	0	0	0	0	0	0	0	0	0	0	0	3
TOTAL CULTURAL COSTS	14	1	1	1	1	1	1	235	87	88	24	0	451
Harvest:													
Cut & Rake Beans											24		24
Thresh Beans											40		40
Clean, Bag, Store & Insurance											75		75
Assessments											4		4
TOTAL HARVEST COSTS											143		143
Interest on operating capital @ 7.65%	0	0	0	0	0	0	0	2	2	3	4		11
TOTAL OPERATING COSTS/ACRE	14	1	1	1	1	1	1	237	89	90	171	0	606
OVERHEAD:													
Liability Insurance			1										1
Office Expense	3	3	3	3	3	3	3	3	3	3	3		30
Land Rent												150	150
Crop Insurance							14						14
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	17	3	4	3	3	150	199
TOTAL CASH COSTS/ACRE	17	4	6	4	4	4	18	240	93	93	173	150	805

*Double Cropped with Winter Cereal or Forage

UC COOPERATIVE EXTENSION
Table 4. RANGING ANALYSIS FOR COMMON DRY BEAN
 SAN JOAQUIN VALLEY – North 2005

COSTS PER ACRE AT VARYING YIELD TO PRODUCE COMMON DRY BEANS

	YIELD (cwt)						
	19.00	21.00	23.00	25.00	27.00	29.00	31.00
OPERATING COSTS/ACRE:							
Cultural Cost	451	451	451	451	451	451	451
Harvest Cost (Cut, Windrow, Thresh)	54	58	61	64	67	70	74
Harvest Cost (Clean, Bag, Store)	57	63	69	75	81	87	93
Assessments	3	4	4	4	5	5	5
Interest on operating capital	11	11	11	11	11	11	11
TOTAL OPERATING COSTS/ACRE	576	587	596	605	615	624	634
TOTAL OPERATING COSTS/cwt	30.32	27.95	25.91	24.20	22.78	21.52	20.45
CASH OVERHEAD COSTS/ACRE	199	199	199	199	199	199	199
TOTAL CASH COSTS/ACRE	775	786	795	804	814	823	833
TOTAL CASH COSTS/cwt	40.79	37.43	34.57	32.16	30.15	28.38	26.87
NON-CASH OVERHEAD COSTS/ACRE	29	29	29	29	29	29	29
TOTAL COSTS/ACRE	804	815	824	833	843	852	862
TOTAL COSTS/cwt	42.32	38.81	35.83	33.32	31.22	29.38	27.81

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
29.00	-25	22	71	120	168	217	265
31.00	13	64	117	170	222	275	327
33.00	51	106	163	220	276	333	389
35.00	89	148	209	270	330	391	451
37.00	127	190	255	320	384	449	513
39.00	165	232	301	370	438	507	575
41.00	203	274	347	420	492	565	637

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
29.00	-224	-177	-128	-79	-31	18	66
31.00	-186	-135	-82	-29	23	76	128
33.00	-148	-93	-36	21	77	134	190
35.00	-110	-51	10	71	131	192	252
37.00	-72	-9	56	121	185	250	314
39.00	-34	33	102	171	239	308	376
41.00	4	75	148	221	293	366	438

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
29.00	-253	-206	-157	-108	-60	-11	37
31.00	-215	-164	-111	-58	-6	47	99
33.00	-177	-122	-65	-8	48	105	161
35.00	-139	-80	-19	42	102	163	223
37.00	-101	-38	27	92	156	221	285
39.00	-63	4	73	142	210	279	347
41.00	-25	46	119	192	264	337	409

UC COOPERATIVE EXTENSION
Table 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
 SAN JOAQUIN VALLEY – North 2005

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
						Insur- ance	Taxes	
05	215 HP Tractor Track	152,000	10	44,898	17,257	679	984	18,921
05	95 HP Tractor MFWD	62,968	10	18,600	7,149	281	408	7,838
05	ATV 4WD	5,128	10	1,515	582	23	33	638
05	Blade Rear 8'	2,545	10	450	312	10	15	337
05	Chisel 15 ft	9,500	10	1,680	1,164	39	56	1,258
05	Cultivator Rolling 6 Row	9,624	12	1,333	1,070	38	55	1,162
05	Cultivator Sled 6 Row	9,624	12	1,333	1,070	38	55	1,162
05	Disc - Finish 18'	23,823	12	3,300	2,648	94	136	2,877
05	Disc - Stubble 16'	18,320	12	2,537	2,036	72	104	2,212
05	Ditcher - V	4,505	12	624	501	18	26	544
05	Pickup 3/4 Ton	28,000	10	8,271	3,179	125	181	3,485
05	Planter-6 Row	16,248	10	2,873	1,991	66	96	2,152
05	SaddleTanks 2-200g	5,033	10	890	617	20	30	667
05	Spray Boom - 20'	482	10	85	59	2	3	64
05	Triplane - 16'	20,341	12	2,817	2,261	80	116	2,456
TOTAL		368,141		91,206	41,896	1,585	2,298	45,773
60% of New Cost *		220,885		54,724	25,136	951	1,378	27,465

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		5,090	224	325	1,300	6,939
Fuel Tanks 2-300 gal	4,708	20		411	16	24	94	545
Shop Tools	13,072	20	1,307	1,105	50	72	131	1,358
Siphon Tubes 720, 2-inch	5,302	10		721	18	27	106	872
TOTAL INVESTMENT	88,082		1,307	7,327	308	448	1,631	9,714

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Crop Insurance (75% Level)	200	acre	14.09	2,818
Land Rent Beans	200	acre	150.00	30,000
Liability Insurance	1,200	acre	1.06	1,277
Office Expense	1,200	acre	30.00	36,000

UC COOPERATIVE EXTENSION
Table 6. HOURLY EQUIPMENT COSTS
 SAN JOAQUIN VALLEY - North 2005

Yr Description	Actual	Cash Overhead			Operating			Total Costs/Hr.
	Hours Used	Capital Recovery	Insur- ance	Taxes	Repairs	Fuel & Lube	Total Oper.	
05 215 HP Tractor Track	1,600	6.47	0.25	0.37	3.96	21.67	25.63	32.72
05 95 HP Tractor MFWD	1,200	3.58	0.14	0.19	1.23	8.10	9.33	13.24
05 ATV 4WD	200	1.74	0.07	0.10	0.37	0.71	1.08	2.99
05 Blade Rear 8'	200	0.94	0.03	0.04	0.41	0.00	0.41	1.42
05 Chisel 15'	200	3.50	0.12	0.17	2.00	0.00	2.00	5.79
05 Cultivator Rolling 6 Row	166	3.86	0.14	0.20	1.96	0.00	1.96	6.16
05 Cultivator Sled 6 Row	166	3.86	0.14	0.20	1.96	0.00	1.96	6.16
05 Disc - Finish 18'	166	9.58	0.34	0.50	3.79	0.00	3.79	14.21
05 Disc - Stubble 16'	166	7.34	0.26	0.38	2.92	0.00	2.92	10.90
05 Ditcher - V	166	1.81	0.06	0.09	1.22	0.00	1.22	3.18
05 Pickup 3/4 Ton	170	11.20	0.44	0.64	2.02	8.84	10.86	23.14
05 Planter-6 Row	150	7.96	0.26	0.38	4.38	0.00	4.38	12.98
05 SaddleTanks 2-200g	800	0.46	0.02	0.02	0.01	0.00	0.01	0.51
05 Spray Boom - 20'	150	0.24	0.01	0.01	0.13	0.00	0.13	0.39
05 Triplane - 16'	250	5.42	0.19	0.28	3.08	0.00	3.08	8.97

UC COOPERATIVE EXTENSION
Table 7. OPERATIONS WITH EQUIPMENT
 SAN JOAQUIN VALLEY – North 2005

Operation	Operation Month	Tractor	Implement	Material	Broadcast Rate/acre	Unit
Cultural:						
Land Prep: Laser Level 1X/4Yr	October	Custom				
Land Prep: Chisel	June	215 HP Track	Chisel 15'			
Land Prep: Stubble Disc	June	215 HP Track	Stubble Disc 16'			
Land Prep: Finish Disc 2X	June	215 HP Track	Disc Finish 18'			
Land Prep: Triplane	June	95 HP MFWD	Triplane 16'			
Land Prep: List Beds & Preplant Fertilizer	June	Custom		Aqua 4-10-10 (20 gal)	120 209.00	lb N lb
				Zinc 6%	0.25	gal
Irrigate: Pull Ditch 2X	June	215 HP Track	V-Ditcher			
	July	215 HP Track	V-Ditcher			
Irrigate: Close Ditch	June	95 HP MFWD	Rear Blade			
	Sept	95 HP MFWD	Rear Blade			
Irrigate: Pre-irrigation	June			Water	6.00	acin
Irrigate: 6X	July			Water	10.00	acin
	Aug			Water	15.00	acin
	Sept			Water	5.00	acin
Weed: Preplant (Treflan, Dual)	June	95 HP MFWD	Rolling Cultivator Saddle Tanks Spray Boom 20'	Dual Treflan	1.50 1.50	pt pt
Weed: Incorporate Herbicide	June	95 HP MFWD	Rolling Cultivator			
Weed: Cultivate & Furrow	July	95 HP MFWD	Sled Cultivator 6 Row			
	July	95 HP MFWD	Sled Cultivator 6 Row			
Plant: Common Dry Bean Seed	June	95 HP MFWD	Planter 6 Row	Seed	75.00	lb
Insect: Mites (Comite)	July	95 HP MFWD	Saddle Tanks Spray Boom 20'	Comite	2.00	pt
Insect: Lygus (Warrior)	Aug	Custom		Air Application Warrior	10.00 4.00	acre oz
Harvest: Cut & Rake	Sept	Custom		Cut & Rake	24.00	acre
Harvest: Thresh Beans	Sept	Custom		Thresh Bean	2.20	cwt
Harvest: Clean, Bag, Store, Insurance	Sept	Custom		Clean, Bag, Store, Insurance	4.00	cwt