

2005

SAMPLE COSTS TO PRODUCE
GREEN BEANS

BLUE LAKE TYPES



SAN JOAQUIN VALLEY - SOUTH

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UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

**SAMPLE COSTS TO PRODUCE
GREEN BEANS
San Joaquin Valley - South 2005**

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INTRODUCTION

Sample costs to produce green beans in the 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 to 7 and pertain to sample costs to produce green beans in the San Joaquin Valley. The cultural practices described represent production operations and materials considered typical for a small farm in the region. Costs, materials, and practices in this study will not apply to all farms. Timing of and types of cultural practices will vary among growers within the region and from season to season due to variables such as weather, soil, and insect and disease pressure. 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 60 contiguous acre farm. The land is rented and farmed by the grower. In this study 20 acres are planted to green beans and the remaining acres to other vegetables.

Production Operating Costs

Land Preparation. A custom operator rips the land, once every seven years and one-seventh of the cost is included each year. The grower discs two times, rolls the ground and lists the beds in February. In a single operation after listing, the beds are shaped, and the drip tape lain. Besides the tractor driver, two people follow the shaper to handle the drip tape.

Plant. In this study a bush green bean variety such as Jade, Savannah, Strike, or Benchmark, is planted. The beans are planted at 80 pounds per acre, two lines (rows) per 38-inch bed at six to eight seeds per foot. There are approximately 2,000 seeds per pound. The seed is planted in early March with a tractor and precision planter or Planet Junior. The beans may also be planted as a fall crop in August.

Irrigation. Irrigation includes the water costs per irrigation and irrigation labor. The crop in this study is drip irrigated. The drip line is buried two to three inches in the center of the bed at bed shaping. Trenches are made at the top edge of the field with the grower's equipment; the laterals are laid by hand in the trenches and covered with a tractor and blade, and the drip line connected. The field is preirrigated prior to planting and then irrigated weekly, beginning after planting, through the first week of May when harvest begins. Water costs were provided from the growers' summer pumping charges and converted to acre-inches. Three acre-inches are applied during the preirrigation and 30 acre-inches during the growing season. Rainfall is not taken into account in this study, but can affect the number of irrigations and amount of water applied. Irrigation labor is calculated as one-half hour per acre per irrigation.

Fertilization. The crop is fertilized prior to planting by broadcasting 15-15-15 fertilizer on the beds at 500 pounds per acre. CAN 17 is applied once a week beginning with first bloom in April (4 applications) and in May (one application) at 18 pounds of nitrogen (N) per application for a total of 90 pounds of N.

Pest Management. The pesticides and rates mentioned in this cost study are listed in *UC Integrated Pest Management, Beans*. For more information on other pesticides available, pest identification, monitoring, and management visit the above UC IPM website at www.ipm.ucdavis.edu or contact your local farm advisor or pest control adviser. Adjuvants are recommended for many pesticides for effective control, but are not included in this study. Pesticide costs in this study are take from a single dealer and shown as full retail.

Weeds. The field is cultivated once in March and once in April.

Insects. Dipel insecticide (Bt) is applied in May for worm control. For fall plantings, the field may need to be sprayed one to two times for aphids and/or whiteflies. The materials are applied with the grower's equipment.

Diseases. No diseases treated.

Pickup/ATV. Costs for a 1/2-ton pickup is included in the study. The grower drives 250 miles per acre for farming purposes. The miles driven is assumed and not taken from any specific data. Grower miles vary by farm size and location, and by crops grown.

Harvest. The crop is hand harvested in May/June by a labor crew for \$4 per box. A truck driver and one stacker haul the picked beans to the packinghouse. In this study, the field is harvested as a single picking. Sometimes there may be several hand pickings. Growers with an August planted crop will harvest in October/November.

Yields. The crop yields an average of 340 thirty-pound boxes (10,200 pounds) per acre. A range of yields over various returns is shown in Table 4.

Returns. Returns to growers of \$11 per 30-pound box are calculated as 70% of the USDA average wholesale prices for May and June 2004. October/November average returns for round green type beans are approximately \$31 per box. The returns are used in the Ranging Analysis Table to calculate a range of returns over various yields.

Labor. Labor rates of \$12.42 per hour for machine operators and \$9.32 for general labor includes payroll overhead of 38%. 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 truck crops (code 0172), 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. The cost includes a 2% local sales tax on diesel fuel and 8% 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.

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.

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 \$529 for the entire farm.

Office Expense. Office and business expenses are estimated at \$30 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, and legal fees. The cost is a general estimate and not based on any actual data.

Land Rent. The 60 acres are rented for cash at \$300 per acre. The rented land includes the irrigation system that is maintained by the landlord. The landlord pays the property taxes. Land rents range from \$250 to \$350 per acre.

Investment Repairs. Annual maintenance except 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-ERSs 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.

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

Irrigation/Laterals. The landlord maintains the irrigation system. The grower purchases drip tape for the beds annually and owns the lateral lines that connect to the drip tape. The field is assumed to be one-quarter mile long and require 660 feet of lateral lines.

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 GREEN BEANS
 SAN JOAQUIN VALLEY 2005

Operation	Operatio n Machine (Hrs/A)	Time Labor	Cash and Labor Costs per Acre				Total Cost	Your Cost
			Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent		
Cultural:								
Land Prep: Rip (custom 1X/7 Yr)	0.00		0	0	0	21	21	
Land Prep: Disk 2X	0.28		4	3	0	0	7	
Land Prep: List Beds	0.20		3	2	0	0	5	
Fertilize: Band (15-15-15)	0.13		2	1	99	0	102	
Land Prep: Shape Beds/Lay Tape	2.50	5.00	84	23	165	0	272	
Irrigate: Lay laterals/connect drip	0.20	3.50	36	1	0	0	36	
Irrigate: (water & labor)	0.00	3.90	36	0	159	0	196	
Plant: Seed	0.33		14	5	240	0	259	
Weed: Cultivate 2X	0.40		6	3	0	0	9	
Fertilize: through drip (CAN 17)	0.00		0	0	61	0	61	
Insect: Worms (Dipel)	0.18		3	2	14	0	18	
Pickup: Business Use	2.50		37	30	0	0	67	
TOTAL CULTURAL COSTS	7.04	12.40	225	69	738	21	1,053	
Harvest:								
Harvest: Pick (hand)	0.00		0	0	340	1,360	1,700	
Load & Haul	1.00	1.00	24	8	0	0	32	
TOTAL HARVEST COSTS	1.00	1.00	24	8	340	1,360	1,732	
Interest on operating capital							32	
TOTAL OPERATING COSTS/ACRE			249	77	1,078	1,381	2,818	
CASH OVERHEAD:								
Land Rent							300	
Office							30	
Liability							9	
Property Taxes							5	
Property Insurance							3	
Investment Repairs							2	
TOTAL CASH OVERHEAD COSTS							349	
TOTAL CASH COSTS/ACRE							3,167	
Non-Cash Overhead (Capital Recovery)								
			Per Producing		Annual Cost			
			Acre		Capital Recovery			
Miscellaneous Field/Shop Tools			100		24		24	
Irrigation Laterals			9		3		3	
Equipment			706		84		84	
TOTAL NON-CASH OVERHEAD COSTS			815		111		111	
TOTAL COSTS/ACRE							3,278	

UC COOPERATIVE EXTENSION
Table 2. COST PER ACRE TO PRODUCE GREEN BEANS
 SAN JOAQUIN VALLEY - 2005

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Green Beans	340.00	box	11.00	3,740	
OPERATING COSTS					
Fertilizer:					
15-15-15	500.00	lb	0.20	99	
CAN 17 (17-0-0)	90.00	lb N	0.68	61	
Irrigation:					
Drip Tape 5 mil	13,755.00	foot	0.01	165	
Water Pumped	33.00	acin	4.83	159	
Seed:					
Green Beans (Blue Lake or Round Type)	80.00	lb	3.00	240	
Custom/Contract:					
Pick Beans	340.00	box	4.00	1,360	
Rip (1X per 7 years)	0.14	acre	150.00	21	
Insecticide:					
Dipel DF	1.00	lb	13.55	14	
Cartons:					
Boxes 30 lb	340.00	each	1.00	340	
Labor (machine)	9.24	hrs	12.42	115	
Labor (non-machine)	14.40	hrs	9.32	134	
Fuel - Gas	10.41	gal	2.05	21	
Fuel - Diesel	18.19	gal	1.51	27	
Lube				7	
Machinery repair				21	
Interest on operating capital @ 7.65%				32	
TOTAL OPERATING COSTS/ACRE				2,818	
NET RETURNS ABOVE OPERATING COSTS				922	
CASH OVERHEAD COSTS:					
Land Rent				300	
Office				30	
Liability				9	
Property Taxes				5	
Property Insurance				3	
Investment Repairs				2	
TOTAL CASH OVERHEAD COSTS/ACRE				349	
TOTAL CASH COSTS/ACRE				3,167	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Miscellaneous Field/Shop Tools				24	
Irrigation Laterals				3	
Equipment				84	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				111	
TOTAL COSTS/ACRE				3,278	
NET RETURNS ABOVE TOTAL COSTS				462	

UC COOPERATIVE EXTENSION
Table 3. COST PER ACRE TO PRODUCE GREEN BEANS
 SAN JOAQUIN VALLEY - 2005

Beginning JAN 05	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Ending DEC 05	05	05	05	05	05	05	05	05	05	05	05	05	
Cultural:													
Land Prep: Rip (Custom, 1X/7 Yrs)		21											21
Land Prep: Disk 2X		7											7
Land Prep: List Beds		5											5
Fertilize: Band (15-15-15)		102											102
Land Prep: Shape Beds/Lay Tape		272											272
Irrigate: Lay laterals/connect drip		36											36
Irrigate: (water & labor)			69	109	17								196
Plant: Seed			259										259
Weed: Cultivate 2X			5	5									9
Fertilize: through drip (CAN 17)				49	12								61
Insect: Worms (Dipel)					18								18
Pickup: Business Use	13	13	13	13	13								67
TOTAL CULTURAL COSTS	13	456	346	176	61	0	1,053						
Harvest:													
Harvest: Pick (hand)					1,700								1,700
Load & Haul					32								32
TOTAL HARVEST COSTS	0	0	0	0	1,732	0	1,732						
Interest on operating capital @ 7.65%	0	3	5	6	18								32
TOTAL OPERATING COSTS/ACRE	13	459	351	183	1,811	0	2,818						
OVERHEAD:													
Land Rent					300								300
Office	6	6	6	6	6								30
Liability	2	2	2	2	2								9
Property Taxes				2								2	5
Property Insurance	2							2					3
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0	2
TOTAL CASH OVERHEAD COSTS	10	8	8	10	308	0	0	2	0	0	0	3	349
TOTAL CASH COSTS/ACRE	23	467	359	193	2,119	0	0	2	0	0	0	3	3,167

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Table 4. RANGING ANALYSIS
SAN JOAQUIN VALLEY - 2005

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE GREEN BEANS

	YIELD (30 lb boxes/acre)						
	220	280	340	400	460	520	580
OPERATING COSTS/ACRE:							
Cultural Cost	1,053	1,053	1,053	1,053	1,053	1,053	1,053
Harvest Cost (Pick & Haul)	1,121	1,427	1,732	2,038	2,344	2,649	2,955
Interest on operating capital	28	30	32	34	36	38	40
<i>TOTAL OPERATING COSTS/ACRE</i>	2,202	2,510	2,817	3,125	3,433	3,740	4,048
<i>TOTAL OPERATING COSTS/box</i>	10.01	8.96	8.29	7.81	7.46	7.19	6.98
CASH OVERHEAD COSTS/ACRE							
<i>TOTAL CASH COSTS/ACRE</i>	2,551	2,859	3,166	3,474	3,782	4,090	4,398
<i>TOTAL CASH COSTS/box</i>	11.60	10.21	9.31	8.69	8.22	7.87	7.58
NON-CASH OVERHEAD COSTS/ACRE							
<i>TOTAL COSTS/ACRE</i>	2,660	2,969	3,277	3,586	3,896	4,205	4,514
<i>TOTAL COSTS/box</i>	12.09	10.60	9.64	8.97	8.47	8.09	7.78

NET RETURNS PER ACRE ABOVE OPERATING COSTS

PRICE \$/box	YIELD (30 lb boxes/acre)						
	220	280	340	400	460	520	580
6.00	-882	-830	-777	-725	-673	-620	-568
8.50	-332	-130	73	275	477	680	882
11.00	218	570	923	1,275	1,627	1,980	2,332
13.50	768	1,270	1,773	2,275	2,777	3,280	3,782
16.00	1,318	1,970	2,623	3,275	3,927	4,580	5,232
18.50	1,868	2,670	3,473	4,275	5,077	5,880	6,682
21.00	2,418	3,370	4,323	5,275	6,227	7,180	8,132

NET RETURNS PER ACRE ABOVE CASH COSTS

PRICE \$/box	YIELD (30 lb boxes/acre)						
	220	280	340	400	460	520	580
6.00	-1,231	-1,179	-1,126	-1,074	-1,022	-970	-918
8.50	-681	-479	-276	-74	128	330	532
11.00	-131	221	574	926	1,278	1,630	1,982
13.50	419	921	1,424	1,926	2,428	2,930	3,432
16.00	969	1,621	2,274	2,926	3,578	4,230	4,882
18.50	1,519	2,321	3,124	3,926	4,728	5,530	6,332
21.00	2,069	3,021	3,974	4,926	5,878	6,830	7,782

NET RETURNS PER ACRE ABOVE TOTAL COSTS

PRICE \$/box	YIELD (30 lb boxes/acre)						
	220	280	340	400	460	520	580
6.00	-1,340	-1,289	-1,237	-1,186	-1,136	-1,085	-1,034
8.50	-790	-589	-387	-186	14	215	416
11.00	-240	111	463	814	1,164	1,515	1,866
13.50	310	811	1,313	1,814	2,314	2,815	3,316
16.00	860	1,511	2,163	2,814	3,464	4,115	4,766
18.50	1,410	2,211	3,013	3,814	4,614	5,415	6,216
21.00	1,960	2,911	3,863	4,814	5,764	6,715	7,666

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**Table 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
SAN JOAQUIN VALLEY - 2005**

ANNUAL EQUIPMENT COSTS

Yr Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
					Insur- ance	Taxes	
05 35HP 2WD Tractor	15,265	20	1,959	1,279	59	86	1,424
05 75HP MFWD Tractor	36,800	20	4,722	3,083	143	208	3,434
05 Bed Shaper 15'	10,000	10	1,768	1,225	41	59	1,325
05 Blade Rear 3pt 6'	1,012	20	53	87	4	5	96
05 Boom Sprayer 300 gal	4,500	10	796	551	18	26	596
05 Disk Offset 15'	21,000	20	1,095	1,803	76	110	1,989
05 Fertilizer Applicator 15'	12,000	20	625	1,030	44	63	1,137
05 Furrowing Shank 5'	150	20	8	13	1	1	14
05 Lister/Cultivator- 4 Row 13'	3,536	12	490	393	14	20	427
05 Pickup 1/2 Ton	28,000	5	12,549	4,423	140	203	4,766
05 Planter-Precision 13'	24,000	10	4,244	2,941	97	141	3,179
05 Truck 20 ft bed	51,000	10	15,065	5,790	228	330	6,348
TOTAL	207,263		43,374	22,617	865	1,253	24,735
60% of New Cost *	124,358		26,024	13,570	519	752	14,841

*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	
Irrigation Laterals 660'	180	3		67	1	1	4	73
Miscellaneous Field/Shop Tools	6,000	5		1,425	21	30	120	1,595
TOTAL INVESTMENT	6,180			1,492	21	31	124	1,668

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Land Rent	60	acre	300.00	18,000
Liability Insurance	60	acre	8.82	529
Office Expense	60	acre	30.00	1,800

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Table 6. HOURLY EQUIPMENT COSTS
 SAN JOAQUIN VALLEY 2005

Yr Description	Actual	Cash Overhead			Operating		Total Oper.	Total Costs/Hr.
	Hours Used	Capital Recovery	Insur- ance	Taxes	Repairs	Fuel & Lube		
05 35HP 2WD Tractor	507	1.51	0.07	0.10	0.62	2.98	3.60	5.28
05 75HP MFWD Tractor	735	2.52	0.12	0.17	0.86	6.40	7.26	10.07
05 Bed Shaper 15'	200	3.68	0.12	0.18	1.13	0.00	1.13	5.11
05 Blade Rear 3pt 6'	100	0.52	0.02	0.03	0.15	0.00	0.15	0.72
05 Boom Sprayer 300 gal	150	2.21	0.07	0.11	1.20	0.00	1.20	3.59
05 Disk Offset 15'	100	10.87	0.46	0.67	3.13	0.00	3.13	15.13
05 Fertilizer Applicator 15'	60	10.37	0.44	0.64	4.42	0.00	4.42	15.87
05 Furrowing Shank 5'	10	0.77	0.03	0.05	0.03	0.00	0.03	0.88
05 Lister/Cultivator- 4 Row 13'	45	5.25	0.19	0.27	0.72	0.00	0.72	6.43
05 Pickup 1/2 Ton	285	9.31	0.29	0.43	2.08	9.82	11.90	21.93
05 Planter - Precision 13'	22	82.06	2.72	3.94	6.47	0.00	6.47	95.19
05 Truck 20 ft bed	520	6.68	0.26	0.38	4.88	3.26	8.14	15.46

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

Operation	Operation		Implement	Non-Mach	Material	Broadcast	Unit
	Month	Tractor		Labor		Rate/acre	
				Hrs/acre			
Cultural:							
Land Prep: Rip 1X/ 7 Yrs	Feb	Custom					
Land Prep: Disk 2X	Feb	75HP MFWD	Disk Offset				
Land Prep: List beds	Feb	75HP MFWD	Lister - 4 Row				
Fertilize: Broadcast (15-15-15)	Feb	35HP 2WD	Applicator		15-15-15	500.00	lb
Land Prep: Shape Beds/Lay Tape	Feb	75HP MFWD	Bedshaper 3 Row	5.00	Drip Tape	13,755.00	ft
Irrigate: Lay laterals/Connect drip	Feb	35HP 2WD	Furrowing Shank	3.00			
	Feb	35HP 2WD	Blade Rear	0.50			
Irrigate (preirrigation)	Mar			0.30	Water	3.00	acin
Irrigate (season)	Mar			0.90	Water	9.00	acin
	Apr			2.40	Water	18.00	acin
	May			0.30	Water	3.00	acin
Plant: Bean Seed	Mar	75HP MFWD	Planter	1.00	Seed	80.00	lb
Weed: Cultivate	Mar	75HP MFWD	Lister/Cultivator				
	Apr	75HP MFWD	Lister/Cultivator				
Fertilize: (CAN 17) through drip	Apr				CAN 17	72.00	lbN
	May				CAN 17	18.00	lbN
Insect: Worms (Dipel)	May	75HP MFWD	Boom Sprayer		Dipel	1.00	lb
Harvest: Pick	May	Custom			Contract Labor	4.00	box
					Boxes	340.00	ea
Haul (driver & stacker)	May	Truck		1.00			