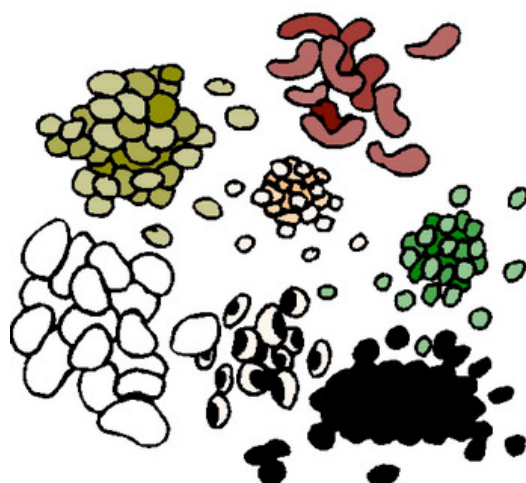


2004

UNIVERSITY OF CALIFORNIA - COOPERATIVE EXTENSION

SAMPLE COSTS TO PRODUCE

# *Beans*



**COMMON DRY VARIETIES - DOUBLE CROPPED**  
**In the SACRAMENTO VALLEY**

Prepared by:

Jerry Schmierer

U.C. Cooperative Extension Farm Advisor, Colusa, Sutter & Yuba Counties

Doug Munier

U.C. Cooperative Extension Farm Advisor, Glenn, Tehama & Butte Counties

Rachael Long

U.C. Cooperative Extension Farm Advisor, Yolo & Solano Counties

Karen M. Klonsky

U.C. Cooperative Extension Specialist, Department of Agricultural and Resource Economics, U.C. Davis

Pete Livingston

U.C. Cooperative Extension Staff Research Associate, Department of Agricultural and Resource Economics, U.C. Davis

---

## INTRODUCTION

Sample costs to produce common dry beans in the Sacramento Valley are presented in this study. The hypothetical farm used in this report is 1,500 acres producing 100 acres of dry beans, including dark and light red kidney, white navy, black turtle, cranberry, and miscellaneous varieties. This study is intended as a guide only, and can be used to make production decisions, determine potential returns, prepare budgets and evaluate production loans. Practices described are based on those production procedures considered typical for this crop and area, but will not apply to every situation. Sample costs for labor, materials, equipment, and custom services are based on current figures. Some costs and practices presented in this study may not be applicable to your situation. A blank column, “*Your Costs*”, is provided in Table 1 to enter your costs.

The hypothetical farm operation, 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, 530-752-2414.

## STUDY CONTENTS

INTRODUCTION .....	3
Cultural Practices and Material Inputs.....	3
Cash Overhead Costs .....	6
Non-Cash Overhead Costs .....	7
REFERENCES.....	8
Table 1. COSTS PER ACRE TO PRODUCE DRY BEANS .....	9
Table 2. COSTS AND RETURNS PER ACRE TO PRODUCE DRY BEANS .....	10
Table 3. MONTHLY CASH COSTS TO PRODUCE DRY BEANS .....	11
Table 4. WHOLE FARM EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS .....	12
Table 5. HOURLY EQUIPMENT COSTS .....	13
Table 6. RANGING ANALYSIS .....	14
Table 7. COSTS AND RETURNS/BREAKEVEN ANALYSIS .....	15
Table 8. DETAILS BY OPERATION .....	16

Sample Cost of Production studies for many commodities are available and can be requested through the Department of Agricultural and Resource Economics, UC Davis, 530-752-4424. Current studies, those produced during the last five years, can be obtained from selected county UC Cooperative Extension offices or downloaded from the department website <http://coststudies.ucdavis.edu>.

The University of California, in accordance with applicable Federal and State law and University policy, does not discriminate on the basis of race, color, national origin, religion, sex, disability, age, medical condition (cancer-related), ancestry, marital status, citizenship, sexual orientation, or status as a Vietnam-era veteran or special disabled veteran.

Inquiries regarding the University’s nondiscrimination policies may be directed to the Affirmative Action Director, University of California, Agriculture and Natural Resources, 1111 Franklin, 6<sup>th</sup> Floor, Oakland, CA 94607-5200 (510) 987-0096.

## ASSUMPTIONS

The following are assumptions pertaining to sample costs to produce dry beans in the Sacramento Valley. Practices described are not necessarily recommendations by the University of California, but rather represent production procedures considered typical of a well managed farm for the Sacramento Valley. Costs and practices detailed in this study may not be applicable to all situations. Cultural practices for the production of dry beans vary by grower and region; variations can be significant. The practices and inputs used in this cost study serve only as a sample or guide. These costs are represented on an annual, per acre basis. *The use of trade names in this report does not constitute an endorsement or recommendation by the University of California nor is any criticism implied by omission of other similar products.*

## CULTURAL PRACTICES AND MATERIAL INPUTS

**Land and Share Rent.** This report is based on a 1,500 acre field and row crop farm of which 100 acres are producing dry beans. Rotational crops that might be planted on the remaining 1,400 acres include alfalfa hay, field corn, safflower, sunflower, seed crops, processing tomatoes, and wheat.

Land in this study is leased on a share-rent basis with the land owner receiving 15% of the gross returns from the dry beans. Based on the yield and price assumed in this study land rent is \$89.25 per acre. The land rented includes developed wells and irrigation system. The grower owns a shop and an equipment yard to repair and store equipment.

**Labor.** Basic hourly wages for workers are \$9.87 and \$6.81 per hour for machine operators and non-machine (irrigators) workers, respectively. Adding 45% for SDI, FICA, insurance and other benefits raises the total labor costs to \$14.31 per hour for machine operators and \$9.87 per hour for non-machine labor. The labor for operations involving machinery are 20% higher than the operation time to account for the additional time involved in equipment set up, moving, maintenance and repair. Any returns above total costs are considered returns to investment.

**Land Preparation.** Primary tillage which includes discing and listing beds is performed in June. Land leveling occurs every eighth year during October in preparation for another crop. The cost of one eighth of the leveling is assigned to the dry bean crop. All operations are done on 100% of the acres unless otherwise noted.

Once every eight years the field is laser leveled to maintain irrigation efficiency. All of the acreage is chiseled to open the soil structure and breakup any hardpan. The ground is disced once with a stubble disc and twice with a finishing disc, in preparation for listing the seedbeds. Beds are listed six rows per pass, 30 inches apart.

**Stand Establishment.** In June, a preplant herbicide is sprayed and incorporated into the soil. Dry beans are planted in June and seeding is usually completed by early July. Seeds are planted into moist soil and begin to emerge in five to seven days depending on soil temperature. There are several different bean varieties planted in the Sacramento Valley including dark and light red kidney, white navy, black turtle, cranberry, and miscellaneous varieties.

**Fertilization.** A starter fertilizer of 8-24-6 is applied during planting at the rate of 20 gallons per acre. Later in the season aqua ammonia is sidedressed (injected) at 80 pounds of nitrogen per acre. Cultivation also occurs during the sidedress operation.

**Irrigation.** Dry beans are furrow irrigated with one preplant and four irrigations during the season. A total of 22 acre-inches of water is applied.

**Weed Management.** Both chemical and cultural practices are used for weed control in this study. Herbicides are applied preplant and mechanically mixed in the soil with two passes of a finish disc. Two mechanical cultivations are the usual practice once the beans have germinated and before row closure in June or July. One of the cultivations is used to sidedress aqua ammonia into the beds.

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

Spider mites and lygus bugs are treated in July with Kelthane plus Dimethoate control during the bloom period. A second treatment for lygus, worms, and aphids is made in August using Warrior. The mite/lygus treatment is applied by ground sprayer and the other insecticide application is made by air.

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

The pesticides and rates, and cultural practices mentioned in this cost study are a few of those that are listed in the “*UC IPM Pest Management Guidelines, Dry Beans*” and located on the internet at <http://www.ipm.ucdavis.edu/PMG/selectnewpest.beans.html>. Written recommendations are required for many pesticides and are made by licensed pest control advisors. For information and pesticide use permits, contact the local county Agricultural Commissioner's office.

**Equipment Cash Costs.** Equipment costs are composed of three parts; capital recovery, cash overhead, and operating costs. The operating costs consist of fuel, lubrication, and repairs.

Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by the American Society of Agricultural Engineers (ASAE). Fuel and lubrication costs are also determined by ASAE equations based on maximum PTO horsepower (hp) and type of fuel used. The fuel and repair cost per acre for each operation in Table 2 is determined by multiplying the total hourly operating cost in Table 5 for each piece of equipment used for the cultural practice by the number of hours per acre for that operation. Tractor time is 10% higher than implement time for a given operation to account for setup time. Prices for on-farm delivery of diesel and gasoline are \$1.45 and \$1.88 per gallon, respectively.

**Harvest.** Once the beans are mature they are cut below ground level with a set of tractor-mounted knives. Six to eight rows are cut in one pass and left to dry on top of the beds. One to two days later, depending on bean moisture, the cut beans are raked into windrows. Each windrow consists of six to eight rows combined into one row. If windrowed beans are rained on additional rakings maybe used to turn and dry the lower portion of the windrow. Beans are ready for harvest when they reach approximately 12% moisture.

Beans are cut and raked by the grower. Threshing the beans is done by a custom operator at a rate of \$2.50 per hundredweight (cwt) based on the weight in the field. Postharvest bean costs include cleaning, storage, and insurance at the warehouse for a charge of \$3.75 per cwt. Black turtle beans are often polished after cleaning and are included in the cost to clean, store, and insure.

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

**Assessments.** Dry bean growers pay a fee to the Dry Bean Advisory Board based on yields. The assessment has two components. First, is a basic fee of \$0.18 per cwt for any variety of bean produced. The second assessment ranges from \$0.01 to \$0.08 per cwt depending on the variety grown. A combined assessment of \$0.22 per cwt is used in this study.

**Yields.** The crop yield used in this study is 19.2 cwt per acre at 12% moisture. The yield is after cleaning at the warehouse. Yields for various unspecified bean varieties during the years 1998-2002 are indicated in Table A. Sutter County reports significant acreage of pink and baby lima beans grown and yields and prices from 1998 through 2002 are shown in Table B.

**Table A. Dry bean yields for counties in the Sacramento Valley<sup>§ †</sup>**

County	1998	1999	2000	2001	2002
	Cwt/Acre				
Butte	17.0	14.0	19.0	21.8	22.0
Colusa	14.0	18.0	16.0	19.0	19.6
Glenn	17.6	17.4	16.4	20.4	18.0
Sacramento	NA	14.2	NA	15.6	16.0
Solano	20.0	19.8	18.4	15.2	16.6
Sutter	15.0	13.0	14.8	17.0	16.2
Tehama	15.6	17.6	16.6	20.4	17.8
Yolo	11.4	NA	NA	NA	NA
<b>Annual Average</b>	<b>15.8</b>	<b>16.3</b>	<b>16.9</b>	<b>18.5</b>	<b>18.0</b>

<sup>§</sup> Data from County Crop Reports, 1998-2002. Published by California Agricultural Statistics Service.

<sup>†</sup> Bean varieties are unspecified in the crop reports.

**Table B. Pink and baby lima bean acres, yields, and prices for Sutter County<sup>§</sup>**

Year	Harvested Acres		Yields		Price	
	Pinks	Baby Limas	Pinks	Baby Limas	Pinks	Baby Limas
			Cwt/Acre		\$/Cwt	
1998	2,662	1,455	16.8	17.8	23.25	39.90
1999	1,164	3,648	12.6	20.6	23.85	27.35
2000	300	3,800	13.6	17.6	23.00	25.50
2001	263	2,677	22.0	18.4	20.00	29.75
2002	700	3,962	13.2	24.6	25.00	30.00
<b>Average</b>	<b>1,018</b>	<b>3,108</b>	<b>15.6</b>	<b>19.4</b>	<b>25.97</b>	<b>30.50</b>

<sup>§</sup> Data from Sutter County Crop Reports, 1998-2002.

**Returns.** Due to the different varieties of beans grown in the Sacramento Valley, prices will vary. A selling price of a \$31 per cwt is used to estimate income from the sale of dry beans. Prices for unspecified common dry bean varieties for the past five years are shown in Table C.

**Risk.** Risks associated with dry bean production are not assigned a production cost. While this study makes an effort to model a production system based on typical, real world practices, it cannot fully represent financial, agronomic and market risks which affect the profitability and economic viability of dry bean production. Though, not used in this study, crop insurance is a risk management tool available to growers.

**Table C. Dry bean prices for counties in the Sacramento Valley** <sup>§</sup>

County	1998	1999	2000	2001	2002
Butte	\$32	\$30	\$30	\$32	\$33
Colusa	\$35	\$30	\$31	\$30	\$32
Glenn	\$47	\$28	\$27	\$33	\$34
Sacramento	NA	\$33	NA	\$29	\$27
Solano	\$30	\$27	\$28	\$28	\$29
Sutter	\$35	\$30	\$32	\$31	\$32
Tehama	\$35	\$30	\$28	\$32	\$31
Yolo	\$25	NA	NA	NA	NA
<b>Annual Average</b>	<b>\$34</b>	<b>\$30</b>	<b>\$29</b>	<b>\$31</b>	<b>\$31</b>

<sup>§</sup> Data from County Crop Reports, 1998-2002. Published by California Agricultural Statistics Service.

\* Bean varieties are unspecified in the crop reports.

## CASH OVERHEAD COSTS

**Cash Overhead.** Cash overhead consists of various cash expenses paid out during the year that are assigned to the whole farm and not to a particular operation. These costs include property taxes, interest on operating capital, office expense, liability and property insurance, and investment repairs.

*Property Taxes.* Counties charge a base property tax rate of 1% on the assessed value of the property. In some counties special assessment districts exist and charge additional taxes on property including equipment, buildings, and improvements. For this study, county taxes are calculated as 1% of the average value of the property. Average value equals new cost plus salvage value divided by 2 on a per acre basis.

*Interest On Operating Capital.* Interest on operating capital is based on cash operating costs and is calculated monthly until harvest at a nominal rate of 6.89% per year. A nominal interest rate is the going market cost of borrowed funds.

*Insurance.* Insurance for farm investments vary depending on the assets included and the amount of coverage. Property insurance provides coverage for property loss and is charged at 0.676% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$1,122 for the entire farm or \$0.75 per acre.

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

## NON-CASH OVERHEAD COSTS

**Capital Recovery Costs.** Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments. Although farm equipment on farms in the Sacramento Valley might be purchased new or used, this study shows the current purchase price for new equipment. The new purchase price is adjusted to 60% to indicate a mix of new and used equipment. Annual ownership costs (Equipment and Investments) are shown in Tables 1-3, and 5. They represent the capital recovery cost for investments on an annual per acre basis.

*Capital Recovery Costs.* Capital recovery cost is the annual depreciation and interest costs for a capital investment. It is the amount of money required each year to recover the difference between the purchase price and salvage value (unrecovered capital). Put another way, it is equivalent to the annual payment on a loan for the investment with the 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 calculation for the annual capital recovery costs is as follows.

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

*Salvage Value.* Salvage value is an estimate of the remaining value of an investment at the end of its life. For farm machinery (e.g., tractors and implements) the remaining value is a percentage of the new cost of the investment (Boehlje and Eidman). The life in years is estimated by dividing the wear-out life, as given by ASAE by the annual use in hours. Salvage value is calculated as

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

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

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

*Interest Rate.* The interest rate of 6.23% used to calculate capital recovery cost is the United States Department of Agriculture-Economic Reporting Service's (USDA-ERS) ten year average of California's agricultural sector long-run real rate of return to production assets from current income. It is used to reflect the long-term realized rate of return to these specialized resources that can only be used effectively in the agricultural sector, not including inflation. In other words, the next best alternative use for these resources is in another agricultural enterprise.

**Acknowledgment.** Appreciation is expressed to cooperators who provided support and information for this study Colusa Produce Corporation.

## REFERENCES

- American Society of Agricultural Engineers. 2002. *American Society of Agricultural Engineers Standards Yearbook*. Russell H. Hahn and Evelyn E. Rosentreter (ed.) St. Joseph, MO. 41st edition.
- Blank, Steve, Karen Klonsky, Kim Norris, and Steve Orloff. 1992. *Acquiring alfalfa hay equipment: A financial analysis of alternatives*. University of California. Oakland, California. Giannini Information Series No. 92-1.
- Boehlje, Michael D., and Vernon R. Eidman. 1984. *Farm Management*. John Wiley and Sons. New York, New York
- California Department of Food and Agriculture. 1998, 1999, 2000, 2001, 2002. Agricultural Commissioners' Data. <http://www.nass.usda.gov/ca/bul/agcom/indexcac.htm>. Internet accessed April, 2004.
- Integrated Pest Management Education and Publications. 2004. *UC IPM Pest Management Guidelines: Dry Beans*. In M. L. Flint (ed.) *UC IPM pest management guidelines*. Pub. 3339. UC IPM pest management guidelines. University of California. Division of Agriculture and Natural Resources. Oakland, California. <http://www.ipm.ucdavis.edu/PMG/selectnewpest.beans.html>. Internet accessed March 2004.
- Long, Rachael, Doug Munier, Michael Cahn, Jerry Schmierer, Kent Brittan, Karen M. Klonsky, Pete Livingston. 1999. *Sample Costs To Produce Beans, Common Dry Varieties, Sacramento Valley*. University of California, Cooperative Extension. Department of Agricultural and Resource Economics. Davis, CA.
- Smith, Jerry D., W. H. Isom, H. Agamalian, W. Bendixen, V. Burton, M. Canevari, M. Murray, and M. Vilchez. 1989. *Common Dry Bean Production In California*. Cooperative Extension. University of California. Division of Agriculture and Natural Resources. Oakland, California. Publication 21468.

---

For information concerning the above or other University of California publications, contact UC DANR Communications Services at 1-800-994-8849, online at [www.ucop.edu](http://www.ucop.edu), or your local county UC Cooperative Extension office.



Table 1

U.C. COOPERATIVE EXTENSION  
 COSTS PER ACRE TO PRODUCE DRY BEANS  
 SACRAMENTO VALLEY – 2004

Operation	Time (Hrs/A)	Cash and Labor Costs per Acre				Total Cost	Your Cost
		Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent		
Disc Stubble	0.25	4	7	0	0	12	
Weed Control - Preplant Herbicide	0.20	3	2	25	0	31	
Finish Disc 2X	0.40	7	12	0	0	19	
List Beds & Apply Starter Fertilizer	0.15	3	2	28	0	32	
Make Drain 3X	0.15	3	4	0	0	7	
Pre-Irrigation	2.40	24	0	9	0	32	
Plant Beans	0.25	9	4	38	0	51	
Irrigate 6X	4.80	47	0	30	0	77	
Close Drains 3X	0.07	1	1	0	0	2	
Cultivate	0.20	3	3	0	0	6	
Insect Control - Mites/Lygas	0.33	6	4	24	0	34	
Cultivate & Sidedress Fertilize	0.20	3	3	28	0	34	
Insect Control - Lygas/Worm/Aphid	0.00	0	0	12	10	21	
Laser Level (1 In 8 Years)	0.00	0	0	0	10	10	
Pickup Truck Use	0.19	7	3	0	0	9	
ATV Use	0.19	3	0	0	0	4	
<b>TOTAL CULTURAL COSTS</b>	<b>9.79</b>	<b>124</b>	<b>45</b>	<b>193</b>	<b>19</b>	<b>381</b>	
Harvest:							
Cut & Rake Beans	0.25	4	3	0	0	7	
Thresh Beans - Custom	0.00	0	0	0	48	48	
Haul Beans To Warehouse	0.00	0	0	0	10	10	
Clean, Bag, Store & Insurance	0.00	0	0	0	72	72	
Dry Bean Advisory Board Assess	0.00	0	0	4	0	4	
<b>TOTAL HARVEST COSTS</b>	<b>0.25</b>	<b>4</b>	<b>3</b>	<b>4</b>	<b>130</b>	<b>141</b>	
Interest on operating capital @ 6.89%						8	
<b>TOTAL OPERATING COSTS/ACRE</b>		<b>128</b>	<b>48</b>	<b>197</b>	<b>149</b>	<b>530</b>	
CASH OVERHEAD:							
Liability Insurance						1	
Office Expense						10	
Land Rent						89	
Property Taxes						2	
Property Insurance						1	
Investment Repairs						1	
<b>TOTAL CASH OVERHEAD COSTS</b>						<b>104</b>	
<b>TOTAL CASH COSTS/ACRE</b>						<b>634</b>	
NON-CASH OVERHEAD:							
		Per producing		-- Annual Cost --			
Investment		<u>Acres</u>		<u>Capital Recovery</u>			
Shop Building		46		4		4	
Fuel Tanks & Pumps		11		1		1	
Shop Tools		9		1		1	
Fuel Wagon		1		0		0	
Tool Carrier		10		1		1	
Siphon Tubes		2		0		0	
Equipment		215		26		26	
<b>TOTAL NON-CASH OVERHEAD COSTS</b>		<b>293</b>		<b>33</b>		<b>33</b>	
<b>TOTAL COSTS/ACRE</b>						<b>667</b>	

Table 2.

U.C. COOPERATIVE EXTENSION  
COSTS AND RETURNS PER ACRE TO PRODUCE DRY BEANS  
SACRAMENTO VALLEY – 2004

Labor Rate: \$14.31/hr. machine labor  
\$9.87/hr. non-machine labor

Interest Rate: 6.89%

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
<b>GROSS RETURNS</b>					
Dry Beans	19.2	Cwt	31.00	595	
<b>TOTAL GROSS RETURNS FOR DRY BEANS</b>				595	
<b>OPERATING COSTS</b>					
Herbicide:					
Dual Magnum	1.00	Pint	18.32	18	
Treflan HFP	1.50	Pint	4.74	7	
Irrigation:					
Water	22.00	AcIn	1.76	39	
Seed:					
Dry Bean Seed	75.00	Lb	0.50	38	
Fertilizer:					
8-24-6	20.00	Gal	1.39	28	
20-0-0	80.00	Lb N	0.35	28	
Miticide:					
Kelthane MF	2.00	Pint	8.81	18	
Insecticide:					
Dimethoate 4EC	1.00	Pint	6.23	6	
Warrior T	3.84	Oz	3.02	12	
Custom:					
Air Application	1.00	Acre	9.50	10	
Thresh Beans	19.20	Cwt	2.50	48	
Haul Beans	19.20	Cwt	0.50	10	
Clean, Bag, Store, Insure, & Polish	19.20	Cwt	3.75	72	
Laser Level	0.13	Acre	75.00	10	
Assessment:					
Dry Bean Advisory Board	19.20	Cwt	0.22	4	
Labor (machine)	3.63	Hrs	14.31	52	
Labor (non-machine)	7.70	Hrs	9.87	76	
Fuel - Gas	1.23	Gal	1.88	2	
Fuel - Diesel	18.28	Gal	1.45	27	
Lube				4	
Machinery repair				15	
Interest on operating capital @ 6.89%				8	
<b>TOTAL OPERATING COSTS/ACRE</b>				530	
<b>NET RETURNS ABOVE OPERATING COSTS</b>				65	
<b>CASH OVERHEAD COSTS:</b>					
Liability Insurance				1	
Office Expense				10	
Land Rent				89	
Property Taxes				2	
Property Insurance				1	
Investment Repairs				1	
<b>TOTAL CASH OVERHEAD COSTS/ACRE</b>				104	
<b>TOTAL CASH COSTS/ACRE</b>				634	
<b>NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY):</b>					
Shop Building				4	
Fuel Tanks & Pumps				1	
Shop Tools				1	
Fuel Wagon				0	
Tool Carrier				1	
Siphon Tubes				0	
Equipment				26	
<b>TOTAL NON-CASH OVERHEAD COSTS/ACRE</b>				33	
<b>TOTAL COSTS/ACRE</b>				667	
<b>NET RETURNS ABOVE TOTAL COSTS</b>				-72	

Table 3.

U.C. COOPERATIVE EXTENSION  
MONTHLY CASH COSTS PER ACRE TO PRODUCE DRY BEANS  
SACRAMENTO VALLEY – 2004

Beginning	JUNE 04	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	TOTAL
Ending	MAY 05	04	04	04	04	04	04	04	05	05	05	05	05	
Cultural:														
Disc Stubble		12												12
Weed Control - Preplant Herbicide		31												31
Finish Disc 2X		19												19
List Beds and Apply Fertilizer		32												32
Make Drain 3X		2	2	2										7
Pre-Irrigation		32												32
Plant Beans		51												51
Irrigate 6X		19	40	19										77
Close Drains 3X		1		1										2
Cultivate		6												6
Insect Control - Mites/Lygus			34											34
Cultivate & Sidedress Fertilize			34											34
Insect Control - Lygus/Worm/Aphid				21										21
Laser Level (1 In 8 Years)							10							10
Pickup Truck Use		2	2	2	2	2								9
ATV Use		<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>								<u>4</u>
<b>TOTAL CULTURAL COSTS</b>		<b>208</b>	<b>112</b>	<b>46</b>	<b>3</b>	<b>12</b>								<b>381</b>
Harvest:														
Cut & Rake Beans					7									7
Thresh Beans - Custom					48									48
Haul Beans To Warehouse					10									10
Clean, Bag, Store, Insure & Polish					72									72
Dry Bean Advisory Board					<u>4</u>									<u>4</u>
<b>TOTAL HARVEST COSTS</b>					<b>141</b>									<b>141</b>
Interest on operating capital		1	2	2	3	0								8
<b>TOTAL OPERATING COSTS/ACRE</b>		<b>209</b>	<b>114</b>	<b>48</b>	<b>147</b>	<b>12</b>								<b>530</b>
OVERHEAD:														
Liability Insurance			1											1
Office Expense		2	2	2	2	2								10
Land Rent							89							89
Property Taxes		1						1						2
Property Insurance		1						1						1
Investment Repairs		<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>
<b>TOTAL CASH OVERHEAD COSTS</b>		<b>4</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>89</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>104</b>
<b>TOTAL CASH COSTS/ACRE</b>		<b>212</b>	<b>117</b>	<b>50</b>	<b>149</b>	<b>14</b>	<b>89</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>634</b>

Table 4.

U.C. COOPERATIVE EXTENSION  
WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS  
SACRAMENTO VALLEY – 2004

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	- Cash Overhead -		Total
						Insur- ance	Taxes	
04	200 HP Crawler	165,579	10	48,909	19,072	725	1,072	20,869
04	90 HP 2WD Tractor	62,968	10	18,600	7,253	276	408	7,936
04	ATV	4,500	5	2,017	719	22	33	773
04	Bean Knives	1,200	20	63	105	4	6	116
04	Cultivator - 6 Row	9,624	12	1,333	1,084	37	55	1,176
04	Disc - Finish 18'	23,823	10	4,213	2,956	95	140	3,191
04	Disc - Stubble 16'	18,320	10	3,240	2,273	73	108	2,454
04	Ditcher V	4,474	15	430	449	17	25	491
04	Lister - 6 Row	1,677	12	232	189	6	10	205
04	Pickup - 1/2 Ton	21,396	5	9,589	3,418	105	155	3,678
04	Pickup - 3/4 Ton	25,840	5	11,581	4,128	126	187	4,441
04	Planter - 6 Row	16,248	10	2,873	2,016	65	96	2,176
04	Rake - 9'	5,000	10	884	620	20	29	670
04	Rear Blade - 8'	2,545	20	133	223	9	13	245
04	Saddle Tank – 300 Gal	3,379	10	598	419	13	20	453
04	Spray Boom - 20'	482	10	85	60	2	3	65
	<b>TOTAL</b>	<b>367,055</b>		<b>104,780</b>	<b>44,984</b>	<b>1,595</b>	<b>2,359</b>	<b>48,938</b>
	60% of New Cost *	220,233		62,868	26,990	957	1,416	29,363

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

ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	Salvage Value	Capital Recovery	----- Cash Overhead -----			Total
					Insur- ance	Taxes	Repairs	
INVESTMENT	16,859	20	1,686	1,453	63	93	227	1,835
Fuel Tanks	2,045	10	205	265	8	11	40	324
Fuel Wagon	68,327	25	6,833	5,342	254	376	922	6,894
Shop Building	13,072	20	1,307	1,126	49	72	131	1,378
Shop Tools	3,690	20	369	318	14	20	92	444
Siphon Tubes	15,118	15	1,512	1,516	56	83	350	2,006
Tool Carrier	119,111		11,912	10,021	443	655	1,762	12,881
<b>TOTAL INVESTMENT</b>	<b>16,859</b>	<b>20</b>	<b>1,686</b>	<b>1,453</b>	<b>63</b>	<b>93</b>	<b>227</b>	<b>1,835</b>

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm Unit	Price/ Unit	Total Cost
Land Rent @ 15% of Gross Returns	100 Acre	89.25	8,925
Liability Insurance	1,500 Acre	0.83	1,245
Office Expense	1,500 Acre	10.00	15,000

Table 5.

U.C. COOPERATIVE EXTENSION  
HOURLY EQUIPMENT COSTS  
SACRAMENTO VALLEY – 2004

Description	Actual Hours Used	Capital Recovery	----- COSTS PER HOUR -----					Total Oper.	Total Costs/Hr.
			- Cash Overhead -		----- Operating -----				
			Insur- ance	Taxes	Repairs	Fuel & Lube			
200 HP Crawler	1,600.0	7.15	0.27	0.40	4.30	19.35	23.65	31.47	
90 HP 2WD Tractor	1,199.4	3.63	0.14	0.20	2.86	7.37	10.23	14.20	
ATV	285.0	1.51	0.05	0.07	0.29	2.16	2.45	4.08	
Bean Knives	100.0	0.63	0.03	0.04	0.22	0.00	0.22	0.92	
Cultivator - 6 Row	166.0	3.92	0.13	0.20	1.94	0.00	1.94	6.20	
Disc - Finish 18'	200.0	8.87	0.28	0.42	3.86	0.00	3.86	13.43	
Disc - Stubble 16'	200.0	6.82	0.22	0.32	2.96	0.00	2.96	10.33	
Ditcher V	166.0	1.62	0.06	0.09	1.41	0.00	1.41	3.18	
Lister - 6 Row	166.5	0.68	0.02	0.03	0.34	0.00	0.34	1.08	
Pickup - 1/2 Ton	285.0	7.20	0.22	0.33	1.39	5.40	6.79	14.53	
Pickup - 3/4 Ton	285.0	8.69	0.27	0.39	1.67	6.49	8.16	17.51	
Planter - 6 Row	150.0	8.06	0.26	0.38	4.36	0.00	4.36	13.07	
Rake - 9'	250.0	1.49	0.05	0.07	0.70	0.00	0.70	2.30	
Rear Blade - 8'	150.0	0.89	0.04	0.05	0.37	0.00	0.37	1.35	
Saddle Tank – 300 Gal	164.8	1.53	0.05	0.07	0.90	0.00	0.90	2.55	
Spray Boom - 20'	169.3	0.21	0.01	0.01	0.13	0.00	0.13	0.35	

Table 6.

U.C. COOPERATIVE EXTENSION  
RANGING ANALYSIS  
SACRAMENTO VALLEY - 2004

	COSTS PER ACRE AT VARYING YIELDS TO PRODUCE DRY BEANS						
	YIELD (CWT/ACRE)						
	5	10	15	20	25	30	35
OPERATING COSTS/ACRE:							
Cultural Cost	381	381	381	381	381	381	381
Harvest Cost	37	74	110	147	184	221	257
Interest on operating capital	7	8	8	8	8	8	9
TOTAL OPERATING COSTS/ACRE	425	462	499	536	573	610	647
TOTAL OPERATING COSTS/CWT	85	46	33	27	23	20	18
CASH OVERHEAD COSTS/ACRE	104	104	104	104	104	104	104
TOTAL CASH COSTS/ACRE	529	566	603	640	677	714	751
TOTAL CASH COSTS/CWT	106	57	40	32	27	24	21
NON-CASH OVERHEAD COSTS/ACRE	32	32	33	33	33	33	34
TOTAL COSTS/ACRE	561	598	636	673	710	748	785
TOTAL COSTS/CWT	112	60	42	34	28	25	22

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR DRY BEANS

PRICE (DOLLARS/CWT)	YIELD (CWT/ACRE)						
	5	10	15	20	25	30	35
Dry Beans							
19	-330	-272	-214	-156	-98	-40	18
23	-310	-232	-154	-76	2	80	158
27	-290	-192	-94	4	102	200	298
31	-270	-152	-34	84	202	320	438
35	-250	-112	26	164	302	440	578
39	-230	-72	86	244	402	560	718
43	-210	-32	146	324	502	680	858

NET RETURNS PER ACRE ABOVE CASH COSTS FOR DRY BEANS

PRICE (DOLLARS/CWT)	YIELD (CWT/ACRE)						
	5	10	15	20	25	30	35
Dry Beans							
19	-434	-376	-318	-260	-202	-144	-86
23	-414	-336	-258	-180	-102	-24	54
27	-394	-296	-198	-100	-2	96	194
31	-374	-256	-138	-20	98	216	334
35	-354	-216	-78	60	198	336	474
39	-334	-176	-18	140	298	456	614
43	-314	-136	42	220	398	576	754

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR DRY BEANS

PRICE (DOLLARS/CWT)	YIELD (CWT/ACRE)						
	5	10	15	20	25	30	35
Dry Beans							
19	-466	-408	-351	-293	-235	-178	-120
23	-446	-368	-291	-213	-135	-58	20
27	-426	-328	-231	-133	-35	62	160
31	-406	-288	-171	-53	65	182	300
35	-386	-248	-111	27	165	302	440
39	-366	-208	-51	107	265	422	580
43	-346	-168	9	187	365	542	720

Table 7.

U.C. COOPERATIVE EXTENSION  
COSTS AND RETURNS / BREAKEVEN ANALYSIS

SACRAMENTO VALLEY – 2004

COSTS AND RETURNS - PER ACRE BASIS

Crop	1. Gross Returns	2. Operating Costs	3. Net Returns Above Oper. Costs (1-2)	4. Cash Costs	5. Net Returns Above Cash Costs (1-4)	6. Total Costs	7. Net Returns Above Total Costs (1-6)
Dry Beans	595	530	65	634	-39	667	-72

COSTS AND RETURNS - TOTAL ACREAGE

Crop	1. Gross Returns	2. Operating Costs	3. Net Returns Above Oper. Costs (1-2)	4. Cash Costs	5. Net Returns Above Cash Costs (1-4)	6. Total Costs	7. Net Returns Above Total Costs (1-6)
Dry Beans	59,520	53,012	6,508	63,437	-3,917	66,719	-7,199

BREAKEVEN PRICES PER YIELD UNIT

CROP	Base Yield (Units/Acre)	Yield Units	----- Breakeven Price To Cover -----		
			Operating Costs	Cash Costs	Total Costs
----- \$ per Yield Unit -----					
Dry Beans	19.2	Cwt	\$27.61	\$33.04	\$34.75

BREAKEVEN YIELDS PER ACRE

CROP	Yield Units	Base Price (\$/Unit)	----- Breakeven Yield To Cover -----		
			Operating Costs	Cash Costs	Total Costs
----- Yield Units /Acre -----					
Dry Beans	Cwt	\$31.00	17.1	20.5	21.5

Table 8.

UC COOPERATIVE EXTENSION  
OPERATIONS BY MONTH  
SACRAMENTO VALLEY - 2004

Operation	Operation Month	Tractor/ Power Unit	Implement	Material	Broadcast Rate/acre	Material Unit
Cultural:						
Disc Stubble	June	200 HP Crawler	Disc - Stubble 16'			
Weed Control - Preplant Herbicide	June	90 HP 2WD Tractor	Saddle Tank - 300 Gal	Dual Magnum	1.0	Pint
			Spray Boom - 20'	Treflan HFP	1.5	Pint
Finish Disc 2X	June	200 HP Crawler	Disc - Finish 18'			
List Beds & Apply Starter Fertilizer	June	90 HP 2WD Tractor	Lister - 6 Row			
			Saddle Tank - 300 Gal	8-24-6	20	Gal
			Spray Boom - 20'			
Make Drain 3X	June	200 HP Crawler	Ditcher V			
	July	200 HP Crawler	Ditcher V			
	August	200 HP Crawler	Ditcher V			
Pre-Irrigation	June	Labor		Water	5.0	AcIn
Plant Beans	June	90 HP 2WD Tractor	Planter - 6 Row	Dry Bean Seed	75	Lb
Irrigate 6X	June	Labor		Water	4.0	AcIn
	July	Labor		Water	9.0	AcIn
	August	Labor		Water	4.0	AcIn
Close Drains 3X	June	90 HP 2WD Tractor	Rear Blade - 8'			
	July	90 HP 2WD Tractor	Rear Blade - 8'			
	August	90 HP 2WD Tractor	Rear Blade - 8'			
Cultivate	June	90 HP 2WD Tractor	Cultivator - 6 Row			
Insect Control - Mites/Lygus	July	90 HP 2WD Tractor	Saddle Tank - 300 Gal	Kelthane MF	2.0	Pint
			Spray Boom - 20'	Dimethoate 4EC	1.0	Pint
Cultivate & Sidedress Fertilize	July	90 HP 2WD Tractor	Cultivator - 6 Row	20-0-0	80	Lb N
			Saddle Tank - 300 Gal			
Insect Control - Lygus/Worm/Aphid	August	Air Application		Warrior T	3.84	Oz
Laser Level (1 In 8 Years)	October			Laser Level	0.13	Acre
Cut & Rake Beans	October	90 HP 2WD Tractor	Bean Knives & Rake - 9'			
Thresh Beans - Custom	October			Thresh Beans	19.2	Cwt
Haul Beans To Warehouse	October			Haul Beans	19.2	Cwt
Clean, Bag, Store, Insure, & Polish	October			Fee Charge	19.2	Cwt
Dry Bean Advisory Board Assess	October			Assessment	19.2	Cwt
Pickup Truck Use	All	Pickup - 1/2 Ton				
		Pickup - 3/4 Ton				
ATV Use	All	ATV				