UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2008

SAMPLE COSTS TO PRODUCE

BEANS

DRY BUSH AND VINE VARIETIES – SINGLE-CROPPED IN THE SACRAMENTO VALLEY

Prepared by:

Douglas J. Munier	UC Cooperative Extension Farm Advisor, Glenn, Tehama, & Butte Counties
Rachael F. Long	UC Cooperative Extension Farm Advisor, Yolo, Solano, & Sacramento Counties
Jerry L. Schmierer	UC Cooperative Extension Farm Advisor, Colusa, Sutter, & Yuba Counties
Karen M. Klonsky	UC Cooperative Extension Economist, Department of Agricultural and Resource Economics, UC Davis
Pete Livingston	UC Cooperative Extension Staff Research Associate, Department of Agricultural and Resource Economics, UC Davis

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INTRODUCTION

Sample costs to produce single-cropped 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 Lima (large and baby) and blackeye (vine and bush) beans. 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.

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.

ASSUMPTIONS

The following are assumptions pertaining to sample costs to produce single-cropped dry beans in the Sacramento Valley. Practices described are not 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, which 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, 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 19% of the gross returns from the dry beans. Based on the yield and price assumed in this study land rent is $185.25 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 $11.59 and $8.00 per hour for machine operators and non-machine (irrigators) workers, respectively. Adding 36% for SDI, FICA, insurance and other benefits raises the total labor costs to $15.76 per hour for machine operators and $10.88 per hour for non-machine labor (personal e-mail from the California Department of Insurance, March 2008). 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. Land leveling occurs every eighth year (or 12% of the acreage) during October in preparation for another crop. The field is laser leveled to maintain irrigation efficiency. The cost of one eighth of the leveling is assigned to the dry bean crop. After leveling, the ground is disced twice with a finishing disc prior to listing the beds. In this study, six rows of beds are listed per pass 30 inches apart in October. Growers in this region also use three beds 60 inches wide for planting. All operations are done on 100% of the acres unless otherwise noted.

Stand Establishment. In February, a preplant herbicide is sprayed and incorporated into the soil. Dry beans are seeded in May with a starter fertilizer. Dry beans are planted at 75 pounds per acre with a cost of $0.50 per pound. Seeds are planted into moisture and begin to emerge in five to seven days depending on soil temperature. There are several different bean varieties single-cropped in the Sacramento Valley including Lima (large and baby) and blackeye (vine and bush) beans.

Fertilization. A starter fertilizer of 8-24-6 is applied at planting at 20 gallons per acre. Later in the season aqua ammonia is sidedressed (injected) at 60 pounds of nitrogen per acre in June. Cultivation for weed control also occurs during the sidedress operation.

Irrigation. Dry beans are furrow irrigated with one preplant (4 acre-inches on 50% of the acreage) and six irrigations (30 acre-inches) during the season. A total of 32 acre-inches of water is applied during May through August for a single crop.

Weed Management. Both chemical and cultural practices are used for weed control in this study. During the winter a fallow herbicide is used to control weeds. Weeds are also controlled during the first cultivation (only 50% of the acreage prior to planting) and again when fields are sidedressed with aqua ammonia in June.

Insect and Disease Management. The two major pests of dry beans are spider mites and *Lygus* bugs. In some years corn earworms and armyworms are serious pests damaging developing pods.

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

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 or 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 may be 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, windrowed by a custom operator for a rate of $30.00 per acre. Threshing costs $2.00 per hundredweight (cwt) by a custom operator based on the field weight. Beans are hauled from the field to the warehouse for $0.65 per pound. Postharvest bean costs include cleaning, bagging, storage, and insurance at the warehouse for a charge of $3.80 per cwt. If blackeye beans are produced fumigation may be required and cost about $0.20 per cwt.

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 $0.175 per cwt for any variety of beans grown. The second assessment ranges from $0.03 to $0.07 per cwt depending on the variety. A combined assessment of $0.225 per cwt is used in this study.

Yields. The crop yield used in this study is 25.0 cwt per acre at 12% moisture. The yield is after cleaning at the warehouse. Sutter County was the only county that separates blackeye and Lima from unspecified bean varieties in the annual crop reports for the Sacramento Valley. Acreage of harvested beans in Sutter County for the last five years averaged 802 acres of blackeye and 3,387 acres of baby Lima. The reported blackeye and baby Lima bean yields from 2002 through 2006 are shown in Table A.

Table A. Blackeye and baby Lima bean yields and prices for Sutter County [§]

	Yields		Price	
Year	**Blackeye**	**Baby Lima**	**Blackeye**	**Baby Lima**
	Cwt/Acre		$/Cwt	
2002	15.2	22.8	29.78	41.65
2003	27.2	21.0	28.89	33.65
2004	15.0	-NA-	29.83	-NA-
2005	15.4	19.4	32.33	30.21
2006	13.0	24.6	39.94	30.00
Average	**17.2**	**22.0**	**32.15**	**33.87**

[§] Data from Sutter County Crop Reports, 2002-2006.

Returns. Due to the different varieties of beans grown in the Sacramento Valley, prices will vary. A selling price of a $39.00 per cwt is used to estimate income from the sale of these beans based on the current blackeye and baby Lima price. Prices for blackeye and baby Lima bean varieties for the past five years are shown in Table A.

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.

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.

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 $3.54 and $3.57 per gallon, respectively.

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 6.75% 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 0.740% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs $1,350 for the entire farm or $0.90 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.

$$\left[\left(\begin{matrix}\text{Purchase}\\ \text{Price}\end{matrix} - \begin{matrix}\text{Salvage}\\ \text{Value}\end{matrix}\right) \times \left(\begin{matrix}\text{Capital}\\ \text{Recovery}\\ \text{Factor}\end{matrix}\right)\right] + \left[\begin{matrix}\text{Salvage}\\ \text{Value}\end{matrix} \times \begin{matrix}\text{Interest}\\ \text{Rate}\end{matrix}\right]$$

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 or investment.

Interest Rate. The interest rate of 4.25% is used to calculate capital recovery cost is the effective long-term interest rate in April 2008. The interest rate 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. In other words, the next best alternative use for these resources is in another agricultural enterprise.

Shop Building. A shop building is used for equipment maintenance and repair, parts and supply storage, a bathroom, and houses the farm's office. The building encompasses 8,000 square feet, has a concrete floor, and is wired and plumbed as needed to meet building codes.

Tools. Includes shop equipment/tools and other tools used on the farm and does not recognize any specific inventory.

Fuel Tanks and Pumps. Two 500-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.

Fuel Wagon. The farm has a 250 gallon fuel wagon that is used to deliver fuel to equipment in the fields and to pumps powered non-electric engines.

Tool Carrier. The tool carrier is used to move equipment to the fields.

Siphon Tubes. The irrigation system for the beans consists of surface delivered and pumped water using siphon tubes to irrigated the fields. The permanent irrigation system consists of canals, wells, pumps and motors, and a buried mainline and are included in the land rental costs.

Equipment. Although, farm equipment is purchased new or used, 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. 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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U.C. COOPERATIVE EXTENSION

Table 1 COSTS PER ACRE TO PRODUCE SINGLE-CROPPED DRY BEANS

SACRAMENTO VALLEY – 2008

BUSH AND VINE VARIETIES

Labor Rate: $15.76/hr. machine labor
$10.88/hr. non-machine labor

Interest Rate: 6.75%
Yield per Acre: 25.0 Cwt

Operation	Operation Time (Hrs/A)	Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
		---------- Cash and Labor Costs per Acre ----------					
Cultural:							
Laser Level - 12% of Acreage	0.00	0	0	0	17	17	
Finish Disc 2X	0.40	8	25	0	0	32	
List Beds	0.15	3	4	0	0	7	
Weed Control - Fallow Herbicide	0.07	1	0	14	0	16	
Make Drains 4X	0.20	4	12	0	0	16	
Pre-Irrigate - 50% of Acreage	1.20	13	0	5	0	18	
Close Drains 4X	0.11	2	3	0	0	5	
Weed Control - Preplant Herbicides	0.20	4	5	26	0	35	
Plant Beans & Apply Fertilizer	0.25	10	7	85	0	103	
Irrigate 6X	7.20	78	0	80	0	158	
Cultivate & Sidedress Fertilizer	0.20	4	5	40	0	49	
Insect Control - Mites/Lygus	0.33	6	8	15	0	29	
Insect Control - Lygus/Worms/Aphids	0.00	0	0	12	10	21	
Pickup Truck Use	0.19	7	5	0	0	12	
ATV Use	0.19	4	1	0	0	4	
TOTAL CULTURAL COSTS	10.69	144	74	277	27	521	
Harvest:							
Cut & Rake Beans	0.00	0	0	0	30	30	
Thresh Beans - Custom	0.00	0	0	0	50	50	
Haul Beans To Warehouse	0.00	0	0	0	16	16	
Clean, Bag, Store & Insure	0.00	0	0	0	95	95	
Dry Bean Advisory Board Assessments	0.00	0	0	6	0	6	
TOTAL HARVEST COSTS	0.00	0	0	6	191	197	
Interest on Operating Capital @ 6.75%						13	
TOTAL OPERATING COSTS/ACRE		144	74	282	218	731	
CASH OVERHEAD:							
Liability Insurance						1	
Office Expense						11	
Share Rent @ 19% of Gross Returns						185	
Property Taxes						4	
Property Insurance						3	
Investment Repairs						5	
TOTAL CASH OVERHEAD COSTS						209	
TOTAL CASH COSTS/ACRE						940	
NON-CASH OVERHEAD:							
		Per producing		-- Annual Cost --			
Investment		Acre		Capital Recovery			
Shop Building		138		9		9	
Fuel Tanks & Pumps - 2 250 Gallon		2		0		0	
Shop Tools		9		1		1	
Fuel Wagon		1		0		0	
Tool Carrier		11		1		1	
Siphon Tubes		3		0		0	
Equipment		462		48		48	
TOTAL NON-CASH OVERHEAD COSTS		626		59		59	
TOTAL COSTS/ACRE						999	

U.C. COOPERATIVE EXTENSION

Table 2. COSTS AND RETURNS PER ACRE TO PRODUCE SINGLE CROPPED DRY BEANS
SACRAMENTO VALLEY - 2008
BUSH AND VINE VARIETIES

Labor Rate: $15.76/hr. machine labor
$10.88/hr. non-machine labor

Interest Rate: 6.75%

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Single Cropped Dry Beans	25.0	Cwt	39.00	975	
TOTAL GROSS RETURNS FOR SINGLE-CROPPED DRY BEANS				975	
OPERATING COSTS					
Custom:					
Laser Level (1 in 8 years)	0.13	Acre	130.00	17	
Air Application	1.00	Acre	9.75	10	
Cut & Windrow Beans	1.00	Acre	30.00	30	
Thresh Beans - Weight Charge	25.00	Cwt	2.00	50	
Haul Beans	25.00	Cwt	0.65	16	
Clean, Bag, Store & Insure Beans	25.00	Cwt	3.80	95	
Herbicide:					
Roundup Ultra Max	26.00	FlOz	0.54	14	
Dual Magnum	1.00	Pint	18.63	19	
Treflan HFP	1.50	Pint	4.84	7	
Irrigation:					
Water	32.00	AcIn	2.67	85	
Seed:					
Dry Bean Seed	75.00	Lb	0.53	40	
Fertilizer:					
8-24-6	20.00	Gal	2.28	46	
20-0-0	60.00	Lb N	0.663	40	
Miticide:					
Kelthane MF	2.00	Pint	7.29	15	
Insecticide:					
Warrior T	3.84	FlOz	3.05	12	
Assessment:					
Dry Bean Advisory Board	25.00	Cwt	0.225	6	
Labor (machine)	2.98	hrs	15.76	47	
Labor (non-machine)	8.90	hrs	10.88	97	
Fuel - Gas	1.30	gal	3.57	5	
Fuel - Diesel	13.73	gal	3.54	49	
Lube				8	
Machinery repair				13	
Interest on Operating Capital @ 6.75%				13	
TOTAL OPERATING COSTS/ACRE				731	
NET RETURNS ABOVE OPERATING COSTS				244	
CASH OVERHEAD COSTS:					
Liability Insurance				1	
Office Expense				11	
Share Rent @ 19% of Gross Returns				185	
Property Taxes				4	
Property Insurance				3	
Investment Repairs				5	
TOTAL CASH OVERHEAD COSTS/ACRE				209	
TOTAL CASH COSTS/ACRE				940	
NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY):					
Shop Building				9	
Fuel Tanks & Pumps - 2 250 Gallon				0	
Shop Tools				1	
Fuel Wagon				0	
Tool Carrier				1	
Siphon Tubes				0	
Equipment				48	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				59	
TOTAL COSTS/ACRE				999	
NET RETURNS ABOVE TOTAL COSTS				-24	

U.C. COOPERATIVE EXTENSION

Table 3. MONTHLY CASH COSTS PER ACRE TO PRODUCE SINGLE CROPPED DRY BEANS
SACRAMENTO VALLEY – 2008
BUSH AND VINE VARIETIES

Beginning OCT 07 Ending SEPT 08	OCT 07	NOV 07	DEC 07	JAN 08	FEB 08	MAR 08	APR 08	MAY 08	JUN 08	JUL 08	AUG 08	SEP 08	TOTAL
Cultural:													
Laser Level - 12% of Acreage	17												17
Finish Disc 2X	32												32
List Beds	7												7
Weed Control - Fallow Herbicide					16								16
Make Drains 4X							4	4	4	4			16
Pre-Irrigate - 50% of Acreage							18						18
Close Drains 4X							1		2		2		5
Weed Control - Preplant Herbicides							35						35
Plant Beans & Apply Fertilizer								103					103
Irrigate 6X								24	29	53	53		158
Cultivate & Sidedress Fertilizer									49				49
Insect Control - Mites/Lygus										29			29
Insect Control - Lygus/Worm/Aphid											21		21
Pickup Truck Use	1	1	1	1	1	1	1	1	1	1	1		12
ATV Use	0	0	0	0	0	0	0	0	0	0	0		4
TOTAL CULTURAL COSTS	57	2	2	2	17	2	59	132	85	87	78		521
Harvest:													
Cut & Rake Beans											30		30
Thresh Beans - Custom											50		50
Haul Beans To Warehouse											16		16
Clean, Bag, Store & Insure											95		95
Dry Bean Advisory Board Assessment											6		6
TOTAL HARVEST COSTS											197		197
Interest on Operating Capital @ 6.75%	0	0	0	0	0	0	1	2	2	2	4		13
TOTAL OPERATING COSTS/ACRE	57	2	2	2	18	2	60	133	87	90	279		731
OVERHEAD:													
Liability Insurance										1			1
Office Expense	1	1	1	1	1	1	1	1	1	1	1		11
Share Rent @ 19% of Gross Returns											185		185
Property Taxes			2						2				4
Property Insurance			1						1				3
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0	5
TOTAL CASH OVERHEAD COSTS	1	1	5	1	1	1	1	1	5	2	187	0	209
TOTAL CASH COSTS/ACRE	59	3	7	3	19	3	61	135	92	92	465	0	940

U.C. COOPERATIVE EXTENSION

Table 4. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
SACRAMENTO VALLEY – 2008
BUSH AND VINE VARIETIES

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	- Cash Overhead - Insur-ance	Taxes	Total
08	200 HP Crawler Tractor	174,685	10	51,599	17,558	837	1,131	19,526
08	90 HP 2WD Tractor	66,431	10	19,623	6,677	318	430	7,426
08	ATV	4,747	5	2,127	683	25	34	743
08	Cultivator - 6 Row	10,153	12	1,406	1,005	43	58	1,106
08	Disc - Finish 18'	25,133	10	4,445	2,771	109	148	3,029
08	Ditcher V	4,474	15	430	388	18	25	431
08	Lister - 6 Row	1,769	12	245	175	7	10	193
08	Pickup - 1/2 Ton	22,572	5	10,116	3,248	121	163	3,532
08	Pickup - 3/4 Ton	26,881	5	12,047	3,868	144	195	4,206
08	Planter - 6 Row	17,141	10	3,031	1,890	75	101	2,066
08	Rear Blade - 8'	2,685	20	140	197	10	14	222
08	Saddle Tank - 300 Gallon	3,565	10	630	393	16	21	430
08	Spray Boom - 20'	482	10	85	53	2	3	58
08	Sprayer System - ATV	3,959	15	380	344	16	22	381
	TOTAL	364,677		106,304	39,251	1,743	2,355	43,348
	60% of New Cost *	218,806		63,782	23,551	1,046	1,413	26,009

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

ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	Salvage Value	Capital Recovery	------ Cash Overhead ------ Insur-ance	Taxes	Repairs	Total
INVESTMENT								
Fuel Tanks & Pumps - 2 250 Gallon	3,617	20	362	260	15	20	995	1,290
Fuel Wagon	2,157	10	216	251	9	12	59	331
Shop Building	206,688	25	20,669	13,103	841	1,137	5,684	20,765
Shop Tools	13,790	20	1,308	994	56	75	379	1,505
Siphon Tubes	3,893	20	389	280	16	21	107	424
Tool Carrier	15,949	15	1,595	1,381	65	88	438	1,972
TOTAL INVESTMENT	246,094		24,539	16,270	1,001	1,353	7,662	26,287

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	1,500	Acre	0.90	1,350
Office Expense	1,500	Acre	11.00	16,500
Share Rent @ 19% of Gross Returns	100	Acre	185.25	18,525

Table 5.

U.C. COOPERATIVE EXTENSION
HOURLY EQUIPMENT COSTS
SACRAMENTO VALLEY – 2008
BUSH AND VINE VARIETIES

			COSTS PER HOUR						
		Actual		- Cash Overhead -		-------- Operating --------			
Yr	Description	Hours Used	Capital Recovery	Insur-ance	Taxes	Repairs	Fuel & Lube	Total Oper.	Total Costs/Hr.
08	200 HP Crawler Tractor	200.0	53.34	2.48	3.35	4.69	47.25	51.94	111.11
08	90 HP 2WD Tractor	1,199.3	3.38	0.16	0.21	3.12	17.99	21.11	24.86
08	ATV	284.5	1.48	0.05	0.07	0.31	4.11	4.42	6.03
08	Cultivator - 6 Row	166.0	3.65	0.15	0.21	2.15	0.00	2.15	6.16
08	Disc - Finish 18'	200.0	8.37	0.33	0.44	4.18	0.00	4.18	13.31
08	Ditcher V	166.0	1.40	0.07	0.09	1.47	0.00	1.47	3.03
08	Lister - 6 Row	165.5	0.64	0.03	0.04	0.37	0.00	0.37	1.07
08	Pickup - 1/2 Ton	285.0	7.04	0.25	0.34	1.48	10.26	11.74	19.37
08	Pickup - 3/4 Ton	285.0	8.32	0.30	0.40	1.75	12.32	14.07	23.10
08	Planter - 6 Row	150.0	7.61	0.30	0.40	4.76	0.00	4.76	13.07
08	Rear Blade - 8'	150.0	0.79	0.04	0.06	0.40	0.00	0.40	1.29
08	Saddle Tank - 300 Gallon	159.3	1.49	0.06	0.08	0.97	0.00	0.97	2.59
08	Spray Boom - 20'	159.3	0.20	0.01	0.01	0.13	0.00	0.13	0.35
08	Sprayer System - ATV	99.5	2.08	0.10	0.13	1.06	0.00	1.06	3.36

Table 6.

U.C. COOPERATIVE EXTENSION
RANGING ANALYSIS
SACRAMENTO VALLEY - 2008
BUSH AND VINE VARIETIES

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE SINGLE CROPPED DRY BEANS

	YIELD (CWT/ACRE)						
	17.5	20.0	22.5	25.9	27.5	30.0	32.5
OPERATING COSTS/ACRE:							
Cultural Cost	521	521	521	521	521	521	521
Harvest Cost	147	164	180	197	214	230	247
Interest on Operating Capital	13	13	13	13	13	13	13
TOTAL OPERATING COSTS/ACRE	681	698	714	731	748	765	781
TOTAL OPERATING COSTS/CWT	39	35	32	29	27	25	24
CASH OVERHEAD COSTS/ACRE	209	209	209	209	209	209	209
TOTAL CASH COSTS/ACRE	890	907	923	940	957	974	990
TOTAL CASH COSTS/CWT	51	45	41	38	35	32	30
NON-CASH OVERHEAD COSTS/ACRE	59	59	59	59	59	59	59
TOTAL COSTS/ACRE	948	965	982	999	1,016	1,032	1,049
TOTAL COSTS/CWT	54	48	44	40	37	34	32

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR SINGLE CROPPED DRY BEANS

PRICE (DOLLARS/CWT)	YIELD (CWT/ACRE)						
Dry Beans	17.5	20.0	22.5	25.0	27.5	30.0	32.5
27.00	-208	-158	-107	-56	-5	45	96
31.00	-138	-78	-17	44	105	165	226
35.00	-68	2	73	144	215	285	356
39.00	2	82	163	244	325	405	486
43.00	72	162	253	344	435	525	616
47.00	142	242	343	444	545	645	746
51.00	212	322	433	544	655	765	876

NET RETURNS PER ACRE ABOVE CASH COSTS FOR SINGLE CROPPED DRY BEANS

PRICE (DOLLARS/CWT)	YIELD (CWT/ACRE)						
Dry Beans	17.5	20.0	22.5	25.0	27.5	30.0	32.5
27.00	-417	-367	-316	-265	-214	-164	-113
31.00	-347	-287	-226	-165	-104	-44	17
35.00	-277	-207	-136	-65	6	76	147
39.00	-207	-127	-46	35	116	196	277
43.00	-137	-47	44	135	226	316	407
47.00	-67	33	134	235	336	436	537
51.00	3	113	224	335	446	556	667

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR SINGLE CROPPED DRY BEANS

PRICE (DOLLARS/CWT)	YIELD (CWT/ACRE)						
Dry Beans	17.5	20.0	22.5	25.0	27.5	30.0	32.5
27.00	-476	-425	-374	-324	-273	-222	-172
31.00	-406	-345	-284	-224	-163	-102	-42
35.00	-336	-265	-194	-124	-53	18	88
39.00	-266	-185	-104	-24	57	138	218
43.00	-196	-105	-14	76	167	258	348
47.00	-126	-25	76	176	277	378	478
51.00	-56	55	166	276	387	498	608

Table 7.

U.C. COOPERATIVE EXTENSION
COSTS AND RETURNS / BREAKEVEN ANALYSIS
SACRAMENTO VALLEY – 2008
BUSH AND VINE VARIETIES

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	975	731	244	940	35	999	-24

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	97,500	73,109	24,391	94,007	3,493	99,878	-2,378

BREAKEVEN PRICES PER YIELD UNIT

			-------- Breakeven Price To Cover --------		
CROP	Base Yield (Units/Acre)	Yield Units	Operating Costs	Cash Costs	Total Costs
			---------- $ per Yield Unit ----------		
Dry Beans	25.0	Cwt	29.24	37.60	39.95

BREAKEVEN YIELDS PER ACRE

			-------- Breakeven Yield To Cover --------		
CROP	Yield Units	Base Price ($/Unit)	Operating Costs	Cash Costs	Total Costs
			---------- Yield Units /Acre ----------		
Dry Beans	Cwt	31.00	18.7	24.1	25.6

Table 8.

UC COOPERATIVE EXTENSION
DETAILS BY OPERATIONS
SACRAMENTO VALLEY - 2008
BUSH AND VINE VARIETIES

Operation	Operation Month	Tractor/ Power Unit	Implement	Material	Broadcast Rate/acre	Material Unit
Cultural:						
Laser Level - 12% of Acreage	October	Custom				
Finish Disc 2X	October	200 HP Crawler	Disc - Finish 25'			
List Beds	October	90 HP 2WD Tractor	Lister - 6 Row			
Weed Control - Fallow Herbicide	February	ATV	Sprayer System - ATV	Roundup Ultra	26.00	Fl Oz
Make Drains 4X	April	200 HP Crawler	Ditcher - V			
	May	200 HP Crawler	Ditcher - V			
	June	200 HP Crawler	Ditcher - V			
	July	200 HP Crawler	Ditcher - V			
Pre-irrigate - 50% of Acreage	April	Labor		Water	2.00	AcIn
Weed Control - Preplant Herbicide	April	90 HP 2WD Tractor	Saddle Tank - 300 Gallon	Dual Magnum	1.00	Pint
			Spray Boom - 20'	Treflan HFP	1.50	Pint
Plant Beans & Apply Fertilizer	May	90 HP 2WD Tractor	Planter - 6 Row	Dry Bean Seed	75.00	Lb
				8-24-6	20.00	Gal
Irrigate - 6X	May	Labor		Water	4.00	AcIn
	June	Labor		Water	6.00	AcIn
	July	Labor		Water	10.00	AcIn
	August	Labor		Water	10.00	AcIn
Close Ditch - 4X	April	90 HP 2WD Tractor	Rear Blade - 8'			
	June	90 HP 2WD Tractor	Rear Blade - 8'			
	June	90 HP 2WD Tractor	Rear Blade - 8'			
	August	90 HP 2WD Tractor	Rear Blade - 8'			
Cultivate & Sidedress Fertilizer	June	90 HP 2WD Tractor	Cultivator - 6 Row	20-0-0	60.00	Lb N
			Saddle Tank - 300 Gallon			
Insect Control - Mites/Lygus	July	90 HP 2WD Tractor	Saddle Tank - 300 Gallon	Kelthane MF	2.00	Pint
			Spray Boom - 20'			
Insect Control - Lygus/Worm/Aphid	August	Air Application		Warrior T	2.00	Pint
Cut & Rake Beans	August	Custom				
Thresh Beans	August	Custom				
Haul Beans to Warehouse	August	Custom				
Clean, Bag, Store, & Insure	August	Custom				
Pickup Truck Use	Annual	Pickup 1/2 Ton				
		Pickup 3/4 Ton				
ATV	Annual	ATV				