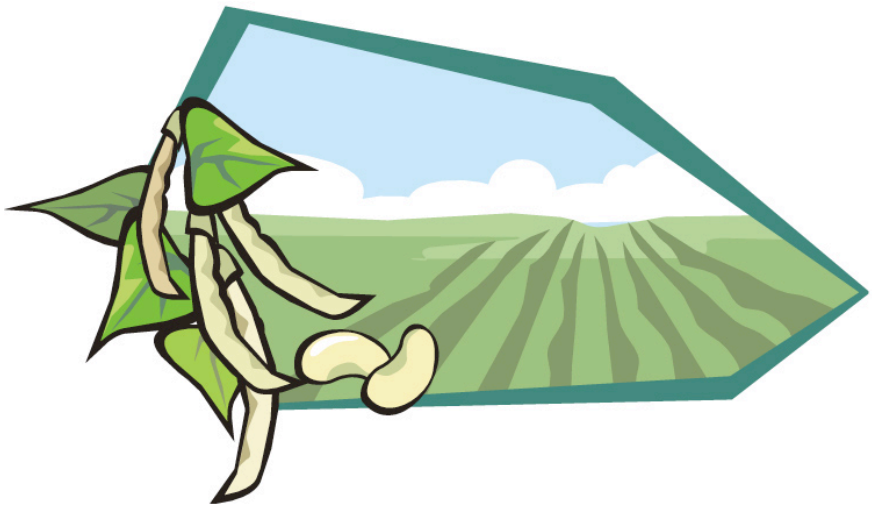
UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2008

SAMPLE COSTS TO PRODUCE

BEANS



COMMON DRY VARIETIES – DOUBLE-CROPPED
IN THE SACRAMENTO VALLEY

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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 light red kidney, canario, large 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.

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 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; 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 $100.80 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. 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 (or 12% of) the field is laser leveled to maintain irrigation efficiency. 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. 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 light red kidney, canario, large white, black turtle, cranberry, and miscellaneous varieties. Beans are planted at 50 to 75 pounds per acre depending on the variety.

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 six acre-inch preplant irrigation plus 22 acre-inches are applied after planting for a total of 28 acre-inches of water.

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. One mechanical cultivation pass is made once the beans have germinated and before row closure in June or July. During the cultivation aqua ammonia is sidedressed into the beds.

Insect and Disease Management. The two major pests 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. The mite/lygus treatment is applied by ground sprayer.

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 $3.54 and $3.57 per gallon, respectively.

Harvest. All harvest operations are performed by a custom harvester. 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 hundredweight. Postharvest bean costs include cleaning, bagging, storage, and insurance at the warehouse for a charge of $3.80 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 bean produced. The second assessment ranges from $0.03 to $0.07 per cwt depending on the variety grown. A combined assessment of $0.225 per cwt is used in this study.

Yields. The crop yield used in this study is 20.0 cwt per acre at 12% moisture. The yield is after cleaning at the warehouse. Yields for various unspecified bean varieties during the years 2002-2006 are indicated in Table A. Sutter County reports some acreage of pink and red kidney beans grown and yields and prices from 2002 through 2004 are shown in Table B.

Table A. Dry bean yields for counties in the Sacramento Valley [§] [‡]

County	2002	2003	2004	2005	2006
		Cwt/Acre			
Butte	22.0	23.8	22.0	17.2	23.8
Colusa	19.6	19.2	20.0	17.6	18.0
Glenn	18.0	26.6	25.0	21.0	27.4
Sacramento	16.0	24.0	16.0	NA	NA
Solano	16.6	24.8	20.4	20.6	20.8
Sutter	16.2	13.4	15.2	11.6	16.2
Tehama	17.8	20.0	18.8	NA	NA
Annual Average	**18.0**	**21.7**	**19.6**	**17.6**	**21.2**

[§] Data from County Crop Reports, 2003-2007. Published by California Agricultural Statistics Service.

[‡] Bean varieties are unspecified in the crop reports.

Table B. Pink and red kidney bean acres, yields, and prices for Sutter County [§]

	Harvested Acres		Yields		Price	
Year	Pinks	Red Kidneys	Pinks	Red Kidneys	Pinks	Red Kidneys
			Cwt/Acre		$/Cwt	
2002	700	515	13.2	15.4	25.00	32.63
2003	486	739	15.4	14.6	27.07	32.86
2004	305	252	13.2	16.0	26.00	33.19
Average	**497**	**502**	**13.9**	**15.3**	**26.02**	**32.89**

[§] 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 current price of a $35.00 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.

Table C. Dry bean prices for counties in the Sacramento Valley [§] [‡]

County	2002	2003	2004	2005	2006
		$/Cwt			
Butte	$33.18	$33.03	$33.03	$35.23	$38.03
Colusa	$32.00	$30.00	$33.00	$36.00	$38.00
Glenn	$33.68	$29.93	$36.97	$35.00	$39.00
Sacramento	$27.18	$29.00	$30.42	NA	NA
Solano	$29.00	$29.05	$31.75	$31.80	$37.85
Sutter	$32.41	$38.88	$31.13	$42.44	$36.22
Tehama	$31.25	$30.50	$37.00	NA	NA
Annual Average	**$31.24**	**$31.48**	**$33.33**	**$36.09**	**$37.82**

[§] Data from County Crop Reports, 2003-2007. Published by California Agricultural Statistics Service.

[‡] Bean varieties are unspecified in the crop reports.

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 $11 per acre or $16,500 for the farm. 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.

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 250-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 is 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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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, or your local county UC Cooperative Extension office.

Table 1

UC COOPERATIVE EXTENSION
COSTS PER ACRE TO PRODUCE BEANS
SACRAMENTO VALLEY – 2008
DOUBLE CROPPED COMMON DRY BEANS

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

Interest Rate: 6.89%
Yield per Acre: 19.2 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:							
Disc Stubble	0.25	5	15	0	0	20	
Weed Control - Preplant Herbicide	0.20	4	5	26	0	35	
Finish Disc 2X	0.40	8	25	0	0	32	
List Beds & Apply Starter Fertilizer	0.15	3	4	46	0	52	
Make Drain 3X	0.15	3	9	0	0	12	
Pre-Irrigation	2.40	26	0	16	0	42	
Plant Beans	0.25	10	7	40	0	57	
Irrigate 6X	6.00	65	0	59	0	124	
Close Drains 3X	0.07	1	2	0	0	3	
Cultivate	0.20	4	5	0	0	9	
Insect Control - Mites/Lygus	0.33	6	8	15	0	29	
Cultivate & Sidedress Fertilizer	0.20	4	5	53	0	62	
Insect Control - Lygus/Worms/Aphids	0.00	0	0	12	10	21	
Laser Level - 12% of Acreage	0.00	0	0	0	17	17	
Pickup Truck Use	0.19	7	5	0	0	12	
ATV Use	0.19	4	1	0	0	4	
TOTAL CULTURAL COSTS	10.99	149	90	265	27	531	
Harvest:							
Cut & Rake Beans	0.00	0	0	0	30	30	
Thresh Beans	0.00	0	0	0	38	38	
Haul Beans To Warehouse	0.00	0	0	0	12	12	
Clean, Bag, Store & Insure Beans	0.00	0	0	0	73	73	
Dry Bean Advisory Board Assessments	0.00	0	0	4	0	4	
TOTAL HARVEST COSTS	0.00	0	0	4	154	158	
Interest on Operating Capital @ 6.75%						11	
TOTAL OPERATING COSTS/ACRE		149	90	270	180	700	
CASH OVERHEAD:							
Liability Insurance						1	
Office Expense						11	
Share Rent @ 15% of Gross Returns						101	
Property Taxes						2	
Property Insurance						2	
Investment Repairs						5	
TOTAL CASH OVERHEAD COSTS						126	
TOTAL CASH COSTS/ACRE						827	
NON-CASH OVERHEAD:							
Investment		Per producing Acre		-- Annual Cost -- 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		213		23		23	
TOTAL NON-CASH OVERHEAD COSTS		377		34		34	
TOTAL COSTS/ACRE						859	

Table 2.

UC COOPERATIVE EXTENSION
COSTS AND RETURNS PER ACRE TO PRODUCE BEANS
SACRAMENTO VALLEY - 2008
DOUBLE CROPPED COMMON DRY BEANS

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					
Double Cropped Dry Beans	20.0	Cwt	35.00	700	
TOTAL GROSS RETURNS FOR DOUBLE CROPPED DRY BEANS				700	
OPERATING COSTS					
Custom:					
Herbicide:					
Dual Magnum	1.00	Pint	18.63	19	
Treflan HFP	1.50	Pint	4.84	7	
Fertilizer:					
8-24-6	20.00	Gal	2.28	46	
20-0-0	80.00	Lb N	0.663	53	
Irrigation:					
Water	28.00	AcIn	2.67	75	
Seed:					
Dry Bean Seed	75.00	Lb	0.53	40	
Miticide:					
Kelthane MF	2.00	Pint	7.29	15	
Insecticide:					
Warrior T	3.84	FlOz	3.05	12	
Custom:					
Air Application	1.00	Acre	9.75	10	
Cut & Windrow Beans	1.00	Acre	30.00	30	
Thresh Beans - Weight Charge	19.20	Cwt	2.00	38	
Haul Beans	19.20	Cwt	0.65	12	
Clean, Bag, Store & Insure Beans	19.20	Cwt	3.80	73	
Laser Level (1 in 8 years)	0.13	Acre	130.00	17	
Assessment:					
Dry Bean Advisory Board	19.20	Cwt	0.225	4	
Labor (machine)	3.33	Hrs	15.76	53	
Labor (non-machine)	8.90	Hrs	10.88	97	
Fuel - Gas	1.24	Gal	3.57	4	
Fuel - Diesel	17.06	Gal	3.54	60	
Lube				10	
Machinery repair				15	
Interest on Operating Capital @ 6.75%				11	
TOTAL OPERATING COSTS/ACRE				700	
NET RETURNS ABOVE OPERATING COSTS				0	
CASH OVERHEAD COSTS:					
Liability Insurance				1	
Office Expense				11	
Share Rent @ 15% of Gross Returns				101	
Property Taxes				2	
Property Insurance				2	
Investment Repairs				5	
TOTAL CASH OVERHEAD COSTS/ACRE				126	
TOTAL CASH COSTS/ACRE				827	
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				23	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				34	
TOTAL COSTS/ACRE				859	
NET RETURNS ABOVE TOTAL COSTS				-159	

Table 3. UC COOPERATIVE EXTENSION
MONTHLY CASH COSTS PER ACRE TO PRODUCE BEANS
SACRAMENTO VALLEY – 2008
DOUBLE CROPPED COMMON DRY BEANS

Beginning JUNE 08 Ending MAY 09	JUN 08	JUL 08	AUG 08	SEP 08	OCT 08	NOV 08	DEC 08	JAN 09	FEB 09	MAR 09	APR 09	MAY 09	TOTAL
Cultural:													
Disc Stubble	20												20
Weed Control - Preplant Herbicide	35												35
Finish Disc 2X	32												32
List Beds & Apply Starter Fertilizer	52												52
Make Drain 3X	4	4	4										12
Pre-Irrigation	42												42
Plant Beans	57												57
Irrigate 6X	29	53	42										124
Close Drains 3X	1		2										3
Cultivate	9												9
Insect Control - Mites/Lygus		29											29
Cultivate & Sidedress Fertilizer		62											62
Insect Control - Lygus/Worms/Aphids			21										21
Laser Level - 12% of Acreage				17									17
Pickup Truck Use	2	2	2	2	2								12
ATV Use	1	1	1	1	1								4
TOTAL CULTURAL COSTS	284	151	73	20	3								531
Harvest:													
Cut & Rake Beans				30									30
Thresh Beans				38									38
Haul Beans To Warehouse				12									12
Clean, Bag, Store & Insure Beans				73									73
Dry Bean Advisory Board Assessment				4									4
TOTAL HARVEST COSTS				158									158
Interest on Operating Capital @ 6.75%	2	2	3	4	0								11
TOTAL OPERATING COSTS/ACRE	285	153	76	182	3								700
OVERHEAD:													
Liability Insurance		1											1
Office Expense	2	2	2	2	2								11
Share Rent @ 15% of Gross Returns				105									105
Property Taxes	1						1						2
Property Insurance	1						1						2
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0	5
TOTAL CASH OVERHEAD COSTS	5	4	3	108	3	0	2	0	0	0	0	0	126
TOTAL CASH COSTS/ACRE	290	157	79	290	9	0	2	0	0	0	0	0	827

UC COOPERATIVE EXTENSION

Table 4. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
SACRAMENTO VALLEY – 2008
DOUBLE CROPPED COMMON DRY BEANS

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	Disc - Stubble 16'	18,320	10	3,240	2,020	80	108	2,208
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
	TOTAL	379,038		109,164	40,927	1,806	2,441	45,175
	60% of New Cost *	227,423		65,498	24,556	1,084	1,465	27,105

* 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 @ 15% of Gross Returns	100	Acre	105.00	10,500

Table 5.

UC COOPERATIVE EXTENSION
HOURLY EQUIPMENT COSTS
SACRAMENTO VALLEY – 2008
DOUBLE CROPPED COMMON DRY BEANS

			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	1,600.0	6.58	0.31	0.42	4.69	47.25	51.94	59.26
08	90 HP 2WD Tractor	1,199.9	3.34	0.16	0.22	3.12	17.99	21.11	24.82
08	ATV	285.0	1.44	0.05	0.07	0.31	4.11	4.42	5.99
08	Cultivator - 6 Row	166.0	3.63	0.15	0.21	2.15	0.00	2.15	6.15
08	Disc - Finish 18'	200.0	8.31	0.33	0.44	4.18	0.00	4.18	13.26
08	Disc - Stubble 16'	200.0	6.06	0.24	0.32	3.04	0.00	3.04	9.67
08	Ditcher V	166.0	1.40	0.07	0.09	1.47	0.00	1.47	3.03
08	Lister - 6 Row	166.5	0.63	0.03	0.04	0.37	0.00	0.37	1.07
08	Pickup - 1/2 Ton	285.0	6.84	0.25	0.34	1.48	10.26	11.74	19.17
08	Pickup - 3/4 Ton	285.0	8.14	0.30	0.41	1.75	12.32	14.07	22.93
08	Planter - 6 Row	150.0	7.56	0.30	0.40	4.76	0.00	4.76	13.03
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	149.8	1.57	0.06	0.08	0.97	0.00	0.97	2.69
08	Spray Boom - 20'	149.3	0.21	0.01	0.01	0.13	0.00	0.13	0.37

Table 6.

UC COOPERATIVE EXTENSION
RANGING ANALYSIS
SACRAMENTO VALLEY - 2008
DOUBLE CROPPED COMMON DRY BEANS

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE DRY BEANS

	YIELD (CWT/ACRE)						
	14.0	16.0	18.0	20.0	22.0	24.0	26.0
OPERATING COSTS/ACRE:							
Cultural Cost	531	531	531	531	531	531	531
Harvest Cost	120	133	145	158	171	184	197
Interest on Operating Capital	10	10	10	11	11	11	11
TOTAL OPERATING COSTS/ACRE	661	674	687	700	713	726	738
TOTAL OPERATING COSTS/CWT	47	42	38	35	32	30	28
CASH OVERHEAD COSTS/ACRE	126	126	126	126	126	126	126
TOTAL CASH COSTS/ACRE	787	800	813	826	839	851	864
TOTAL CASH COSTS/CWT	56	50	45	41	38	35	33
NON-CASH OVERHEAD COSTS/ACRE	34	34	34	34	34	34	34
TOTAL COSTS/ACRE	821	834	847	859	872	885	898
TOTAL COSTS/CWT	59	52	47	43	40	37	35

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR DRY BEANS

PRICE (DOLLARS/CWT)	YIELD (CWT/ACRE)						
Dry Beans	14.0	16.0	18.0	20.0	22.0	24.0	26.0
24.50	-318	-282	-246	-210	-174	-138	-101
28.00	-269	-226	-183	-140	-97	-54	-10
31.50	-220	-170	-120	-70	-20	30	81
35.00	-171	-114	-57	0	57	114	172
38.50	-122	-58	6	70	134	198	263
42.00	-73	-2	69	140	211	282	354
45.50	-24	54	132	210	288	366	445

NET RETURNS PER ACRE ABOVE CASH COSTS FOR DRY BEANS

PRICE (DOLLARS/CWT)	YIELD (CWT/ACRE)						
Dry Beans	14.0	16.0	18.0	20.0	22.0	24.0	26.0
24.50	-444	-408	-372	-336	-300	-263	-227
28.00	-395	-352	-309	-266	-223	-179	-136
31.50	-346	-296	-246	-196	-146	-95	-45
35.00	-297	-240	-183	-126	-69	-11	46
38.50	-248	-184	-120	-56	8	73	137
42.00	-199	-128	-57	14	85	157	228
45.50	-150	-72	6	84	162	241	319

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR DRY BEANS

PRICE (DOLLARS/CWT)	YIELD (CWT/ACRE)						
Dry Beans	14.0	16.0	18.0	20.0	22.0	24.0	26.0
24.50	-478	-442	-406	-369	-333	-297	-261
28.00	-429	-386	-343	-299	-256	-213	-170
31.50	-380	-330	-280	-229	-179	-129	-79
35.00	-331	-274	-217	-159	-102	-45	12
38.50	-282	-218	-154	-89	-25	39	103
42.00	-233	-162	-91	-19	52	123	194
45.50	-184	-106	-28	51	129	207	285

Table 7.

UC COOPERATIVE EXTENSION
COSTS AND RETURNS / BREAKEVEN ANALYSIS
SACRAMENTO VALLEY – 2008
DOUBLE CROPPED COMMON DRY BEANS

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	700	700	0	826	-126	859	-159

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	70,000	69,976	24	82,567	-12,567	85,947	-15,947

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	20.0	Cwt	34.99	41.28	42.97

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	$35.00	20.0	23.6	24.6

Table 8.

UC COOPERATIVE EXTENSION
DETAILS BY OPERATIONS
SACRAMENTO VALLEY - 2008
DOUBLE CROPPED COMMON DRY BEANS

Operation	Operation Month	Tractor/ Power Unit	Implement	Material	Broadcast Rate/acre	Material Unit
Cultural:						
Stubble Disc	June					
Weed Control - Preplant Herbicide	June	90 HP 2WD Tractor	Saddle Tank - 300 Gallon	Dual Magnum	1.00	Pint
			Spray Boom - 20'	Treflan HFP	1.50	Pint
Finish Disc 2X	June	200 HP Crawler	Disc - Finish 25'			
List Beds & Apply Starter Fertilizer	June	90 HP 2WD Tractor	Lister - 6 Row	8-24-6	20.00	Gal
Make Drains - 3X	June	200 HP Crawler	Ditcher - V			
	July	200 HP Crawler	Ditcher - V			
	August	200 HP Crawler	Ditcher - V			
Pre-irrigation	June	Labor		Water	6.00	AcIn
Plant Beans & Apply Fertilizer	June	90 HP 2WD Tractor	Planter - 6 Row	Dry Bean Seed	75.00	Lb
Irrigate - 6X	June	Labor		Water	6.00	AcIn
	July	Labor		Water	10.00	AcIn
	August	Labor		Water	6.00	AcIn
Close Ditch - 3X	June	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 Gallon	Kelthane MF	2.00	Pint
			Spray Boom - 20'			
Cultivate & Sidedress Fertilizer	July	90 HP 2WD Tractor	Cultivator - 6 Row	20-0-0	80.00	Lb N
			Saddle Tank - 300 Gallon			
Insect Control - Lygus/Worms/Aphids	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				
Laser Level - 12% of Acreage	October	Custom				
Pickup Truck Use	Annual	Pickup 1/2 Ton				
	Annual	Pickup 3/4 Ton				
ATV	Annual	ATV				