UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2014
SAMPLE COSTS TO PRODUCE

BEANS

COMMON DRY VARIETIES – DOUBLE-CROPPED IN THE SACRAMENTO VALLEY

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UC COOPERATIVE EXTENSION
SAMPLE COSTS TO PRODUCE BEANS-DOUBLE CROPPED
In the SACRAMENTO VALLEY-2014
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INTRODUCTION

Sample costs to produce 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 & dark 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 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, 530-752-3589, klonsky@primal.ucdavis.edu.

Sample Cost of Production studies for many commodities are available and can be down loaded from the Department website. http://coststudies.ucdavis.edu. Some archived studies are also available on the website.

ASSUMPTIONS

The assumptions refer to tables 1-7 pertaining to sample costs to produce dry beans, double cropped 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, row crop and orchard 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, wheat. Permanent crops such as almonds or walnuts could be planted on part of the remaining acreage.

Land in this study is leased on a share-rent basis with the land owner receiving 16% of the gross returns from the dry bean crop. Land rent is based on crop & yield. The land rented includes developed wells and a n irrigation system. The grower owns a shop, fuel tanks, tools and an equipment yard to repair and store equipment.

Labor. Basic hourly wages for workers are $12.50 and $10.00 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 $17.00 per hour for machine operators and $13.60 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.

Land Preparation. Primary tillage which includes discing and listing beds is performed in June. The ground is disced once with a stubble disc and twice with a finishing disc. Beds are listed six rows per pass, 30 inches apart. All operations are done on 100% of the acres unless otherwise noted.

Stand Establishment. Dry beans are planted in June at 40-80 pounds of seed per acre depending on variety. In this study 75 pounds per acre of kidney bean seed is used. Seeds are planted into moist soil, (pre-irrigated) and begin to emerge in five to seven days depending on soil temperature.

Fertilization. Nitrogen (N) recommendations range from 80 to 120 units per acre, depending on background N in the soil and irrigation water. A starter fertilizer of 8-24-6, 2% Zn is band applied during planting at the rate of 8 lbs. N per acre (100 lbs. dry fertilizer or 10 gallons liquid fertilizer) and 24 lbs. P205. Later in the season aqua ammonia, (20-0-0) is side dressed (injected) at 90 pounds of nitrogen per acre. Cultivation also occurs during the side dress operation.

Irrigation. Dry beans are furrow irrigated with one pre-plant 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. Water costs are 50% well/pumped at ($90.00 per acre foot) and 50% Canal/district at ($40.00 per acre foot). For this study an average of ($65.00 per acre foot or $5.42 per acre inch) is used.

Weed Management. Both chemical and cultural practices are used for weed control in this study. Herbicides are applied preplant, (Duel Magnum & Treflan) and mechanically mixed in the soil with a 6 row power incorperator. One mechanical close cultivation pass is made once the beans have emerged in June with aqua ammonia side dressed into the beds.

Insect and Disease Management. The two major pests of beans are spider mites and Lygus bugs. In some years aphids can be problematic as well as corn earworms and armyworms that can damage developing pods. Spider mites and Lygus bugs are treated with Brigade in July by air.

Seedling diseases caused by rhizoctonia and pythium root rot are prevented through seed treatment pesticides and good cultural practices. The seed treatment pesticides are included in the price of the seed.

The pesticides, rates, and cultural practices mentioned in this cost study 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 windrowed into one row and left to dry on top of the beds. 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% to 15% moisture.

Beans are cut, raked & windrowed at a rate of $35.00 per acre. Threshing and harvesting costs are $3.50/hundredweight, (cwt). Beans are hauled from the field to the warehouse for ($0.30/cwt). Post-harvest bean costs include cleaning, bagging, storage, and insurance at the warehouse for a charge of $5.78 per cwt.

Assessments. Dry bean growers pay a fee to the California Dry Bean Board based on yields. The assessment has two components. First, is a basic fee of $0.27 per cwt for any variety of beans produced. The second assessment ranges from $0.07 to $0.09 per cwt depending on the variety grown and paid to the individual council. A combined assessment of $0.35 per cwt is used in this study.

Yields. A five year average of 22.50 cwt per acre (1.125 tons/acre) at 12% moisture is used for this study. The yield is after cleaning at the warehouse. Average yields are from 5 Sacramento Valley Counties, Butte, Colusa, Glenn, Solano and Sutter from 2008-2012. (Ag Commissioner Crop Reports).

Returns. Due to the different varieties of beans grown in the Sacramento Valley, prices will vary. A five year average price of $48.00 per cwt is used to estimate income from the sale of dry beans. Average returns are from 5 Sacramento Valley Counties, Butte, Colusa, Glenn, Solano and Sutter from 2008-2012. (Ag Commissioner Crop Reports).

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 equipment cash costs, property taxes, interest on operating capital, liability & property insurance, miscellaneous costs, field supervisors' salary, office expenses 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 and type of fuel used. The fuel and repair cost per acre for each operation in Table 1 is determined by multiplying the total hourly operating cost in Table 6 for each piece of equipment used for the 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 $4.12 and $3.90 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 5.75% 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 $1500.00 for the entire farm or $1.00 per acre. Crop insurance is a risk management tool available to growers at variable rates. Crop insurance is not specified or charged in this study.

Miscellaneous Costs. Included expenses are employee safety training as well as pesticide use and regulatory continuing education training, employee bonuses and additional materials application for unique fields or special conditions. 50% of the costs ($10/acre) is used for this study because of the double cropping.

Field Supervisors' Salary. Supervisor salaries for beans include insurance, payroll taxes, benefits and bonuses. One sixth of the supervisors' time is allocated to beans. The costs used in this study are $21.25 per acre.

Office Expense. Office and business expenses are estimated at $50 per acre for the ranch and are not based on any specific information, except that there are costs involved for bookkeeping, payroll, tax preparation, and communication systems. 50% of the costs ($25/acre) is used for this study because of the double cropping.

Investment Repairs. Annual repairs on investments or capital recovery items that require maintenance are calculated as two percent of the purchase price. Cash overhead costs are found in Tables 1, 2, 3 and 4.

NON-CASH OVERHEAD

Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments. Annual ownership costs (Equipment and Investments) are shown in Tables 1, 2 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 prices 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;

[(Purchase Price – Salvage Value) x Capital Recovery Factor] + (Salvage Value x 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 for other investments including irrigation systems, buildings, and miscellaneous equipment at the end of its useful life 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 5.

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. An interest rate of 4.75% is used to calculate capital recovery. The rate will vary depending upon loan amount and other lending agency conditions, but is the basic suggested rate by a farm lending agency as of January 2014.

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.

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

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.

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 farming practices, it cannot fully represent financial, agronomic and market risks which affect the profitability and economic viability of dry bean production.

Table Values. Due to rounding, the totals may be slightly different from the sum of the components.

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TABLE 1. COSTS PER ACRE TO PRODUCE BEANS (DOUBLE CROP)

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre						
		Labor Cost	Fuel	Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Pre-Plant:								
Stubble Disc & Roll	0.11	2	12	4	0	0	18	
Finish Disc & Roll 2X	0.14	3	7	3	0	0	13	
List 6 Row-30" Beds	0.16	3	7	3	0	0	13	
Bed Shape Pre-Plant Herbicide	0.21	4	8	4	41	0	57	
Irrigation-Open Ditch 1X	0.08	2	4	1	0	0	8	
Irrigation-Pre-Plant	0.10	9	1	0	33	0	43	
Irrigation-Close Ditch 1X	0.15	3	3	1	0	0	7	
TOTAL PRE-PLANT COSTS	0.95	26	43	17	74	0	159	
Cultural:								
Plant Beans Starter Fertilizer	0.13	3	5	3	96	0	106	
Cultivate Side-Dress Fertilizer	0.13	3	5	2	68	0	77	
Irrigation-Open Ditch 2X	0.17	3	9	3	0	0	15	
Irrigate 4X	0.40	35	4	1	119	0	160	
Irrigation-Close Ditch 2X	0.30	6	6	2	0	0	14	
Insects-Lygus/Mites	0.08	2	2	1	18	12	33	
3/4 Ton Pickup Truck	0.00	1	0	0	0	0	1	
Service Truck	0.00	1	0	0	0	0	1	
TOTAL CULTURAL COSTS	1.20	54	31	12	300	12	408	
Harvest:								
Cut/Rake/Windrow Beans	0.00	0	0	0	0	35	35	
Thresh/Harvest Beans	0.00	0	0	0	0	79	79	
Haul Beans	0.00	0	0	0	0	7	7	
Land Rent 16%	0.00	0	0	0	173	0	173	
TOTAL HARVEST COSTS	0.00	0	0	0	173	121	293	
Post-Harvest:								
Clean/Bag/Store Beans	0.00	0	0	0	0	131	131	
TOTAL POST-HARVEST COSTS	0.00	0	0	0	0	131	131	
Assessment:								
Assessment	0.00	0	0	0	8	0	8	
TOTAL ASSESSMENT COSTS	0.00	0	0	0	8	0	8	
Interest on Operating Capital at 5.75%							15	
TOTAL OPERATING COSTS/ACRE	2	80	73	29	555	263	1,014	

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TABLE 1. CONTINUED

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre						
		Labor Cost	Fuel	Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
CASH OVERHEAD:								
Liability Insurance							1	
Office Expense 50% DC							25	
Miscellaneous Costs 50% DC							10	
Field Supervisor 1/6 Time							21	
Property Taxes							1	
Property Insurance							1	
Investment Repairs							1	
TOTAL CASH OVERHEAD COSTS/ACRE							60	
TOTAL CASH COSTS/ACRE							1,074	
NON-CASH OVERHEAD:		Per Producing Acre		Annual Cost Capital Recovery				
Fuel Tanks & Pumps		15		1			1	
Shop Building		107		7			7	
Siphon Tubes		7		1			1	
Shop Tools		13		1			1	
GPS Sending Unit		4		0			0	
GPS Receiver		1		0			0	
Equipment		220		26			26	
TOTAL NON-CASH OVERHEAD COSTS		367		37			37	
TOTAL COSTS/ACRE							1,111	

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TABLE 2. COSTS AND RETURNS PER ACRE TO PRODUCE BEANS (DOUBLE CROP)

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Beans (Double Crop) Cwt= Hundred weight	23	Cwt	48.00	1,080	
TOTAL GROSS RETURNS	23	Cwt		1,080	
OPERATING COSTS					
Fertilizer:				**94**	
8-24-6 2% Zn	8.00	lb/N	3.34	27	
20-0-0 (Aqua)	90.00	lb N	0.75	68	
Custom:				**263**	
Air App Spray 10g	1.00	Acre	11.80	12	
Cut/Rake/Windrow	1.00	Acre	35.00	35	
Thresh/Harvest Beans	22.50	Cwt	3.50	79	
Hauling Beans	22.50	Cwt	0.30	7	
Clean/Bag/Store Beans	22.50	Cwt	5.80	131	
Insecticide:				**18**	
Brigade WSB	6.00	Oz	2.95	18	
Herbicide:				**41**	
Dual Magnum	1.50	Pint	22.58	34	
Treflan HFP	1.50	Pint	4.85	7	
Seed:				**69**	
Dry Bean Seed	75.00	lb	0.92	69	
Irrigation:				**152**	
SV-Canal/District	28.00	AcIn	5.42	152	
Assessment:				**8**	
CDBB	22.50	Cwt	0.35	8	
Land Rent:				**173**	
Land Rent 16% DC	22.50	Cwt	7.68	173	
Labor				**80**	
Equipment Operator Labor	2.69	hrs	17.00	46	
Irrigation Labor	2.50	hrs	13.60	34	
Machinery				**103**	
Fuel-Gas	1.25	gal	3.90	5	
Fuel-Diesel	16.65	gal	4.12	69	
Lube				11	
Machinery Repair				18	
Interest on Operating Capital @ 5.75%				15	
TOTAL OPERATING COSTS/ACRE				1,015	
TOTAL OPERATING COSTS/CWT				45	
NET RETURNS ABOVE OPERATING COSTS				65	

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TABLE 2. CONTINUED

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
CASH OVERHEAD COSTS					
Liability Insurance				1	
Office Expense 50% DC				25	
Miscellaneous Costs 50% DC				10	
Field Supervisor 1/6 Time				21	
Property Taxes				1	
Property Insurance				1	
Investment Repairs				1	
TOTAL CASH OVERHEAD COSTS/ACRE				60	
TOTAL CASH OVERHEAD COSTS/CWT				3	
TOTAL CASH COSTS/ACRE				1,075	
TOTAL CASH COSTS/CWT				48	
NET RETURNS ABOVE CASH COSTS				5	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Fuel Tanks & Pumps				1	
Shop Building				7	
Siphon Tubes				1	
Shop Tools				1	
GPS Sending Unit				0	
GPS Receiver				0	
Equipment				26	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				37	
TOTAL NON-CASH OVERHEAD COSTS/CWT				2	
TOTAL COST/ACRE				1,112	
TOTAL COST/CWT				49	
NET RETURNS ABOVE TOTAL COST				-32	

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TABLE 3. MONTHLY COSTS PER ACRE TO PRODUCE BEANS (DOUBLE CROP)

	JUN 14	JUL 14	AUG 14	SEP 14	OCT 14	Total
Pre-Plant:						
Stubble Disc & Roll	18					18
Finish Disc & Roll 2X	13					13
List 6 Row-30" Beds	13					13
Bed Shape Pre-Plant Herbicide	57					57
Irrigation-Open Ditch 1X	8					8
Irrigation-Pre-Plant	43					43
Irrigation-Close Ditch 1X	7					7
TOTAL PRE-PLANT COSTS	159					159
Cultural:						
Plant Beans Starter Fertilizer	106					106
Cultivate Side-Dress Fertilizer	77					77
Irrigation-Open Ditch 2X		8	8			15
Irrigate 4X		40	80	40		160
Irrigation-Close Ditch 2X		7		7		14
Insects-Lygus/Mites		33				33
3/4 Ton Pickup Truck	0	0	0	0	0	1
Service Truck	0	0	0	0	0	1
TOTAL CULTURAL COSTS	184	88	88	48	0	408
Harvest:						
Cut/Rake/Windrow Beans				35		35
Thresh/Harvest Beans				79		79
Haul Beans				7		7
Land Rent 16%				173		173
TOTAL HARVEST COSTS	0	0	0	293	0	293
Post-Harvest:						
Clean/Bag/Store Beans					131	131
TOTAL POST-HARVEST COSTS	0	0	0	0	131	131
Assessment:						
Assessment					8	8
TOTAL ASSESSMENT COSTS	0	0	0	0	8	8
Interest on Operating Capital @ 5.75%	2	2	2	4	5	15
TOTAL OPERATING COSTS/ACRE	345	90	90	345	144	1,014
CASH OVERHEAD						
Liability Insurance					1	1
Office Expense 50% DC					25	25
Miscellaneous Costs 50% DC					10	10
Field Supervisor 1/6 Time	4	4	4	4	4	21
Property Taxes		0				1
Property Insurance		0				1
Investment Repairs	0	0	0	0	0	1

TABLE 3. CONTINUED

	JUN 14	JUL 14	AUG 14	SEP 14	OCT 14	Total
TOTAL CASH OVERHEAD COSTS	4	5	4	4	40	60
TOTAL CASH COSTS/ACRE	350	96	95	349	184	1,074

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TABLE 4. RANGING ANALYSIS - BEANS (DOUBLE CROP)

COSTS PER ACRE AND PER CWT AT VARYING YIELDS TO PRODUCE BEANS (DOUBLE CROP)

	YIELD (Cwt)						
	7.50	12.50	17.50	22.50	27.50	32.50	37.50
OPERATING COSTS/ACRE:							
Pre-Plant	159	159	159	159	159	159	159
Cultural	408	408	408	408	408	408	408
Harvest	98	163	228	293	358	424	489
Post-Harvest	44	73	102	131	160	189	218
Assessment	3	4	6	8	10	11	13
Interest on Operating Capital @ 5.75%	13	14	14	15	16	17	17
TOTAL OPERATING COSTS/ACRE	724	821	918	1,014	1,111	1,208	1,305
TOTAL OPERATING COSTS/CWT	96.57	65.70	52.45	45.09	40.40	37.16	34.79
CASH OVERHEAD COSTS/ACRE	62	62	62	62	62	62	62
TOTAL CASH COSTS/ACRE	787	883	980	1,077	1,173	1,270	1,367
TOTAL CASH COSTS/CWT	104.87	70.68	56.01	47.86	42.67	39.08	36.45
NON-CASH OVERHEAD COSTS/ACRE	37	37	37	37	37	37	37
TOTAL COSTS/ACRE	824	920	1,017	1,114	1,210	1,307	1,404
TOTAL COSTS/CWT	110.00	74.00	58.00	49.00	44.00	40.00	37.00

Net Return Per Acre Above Operating Costs For Beans (Double Crop)

PRICE ($/cwt)	YIELD (Cwt /acre)						
Beans (Double Crop)	7.50	12.50	17.50	22.50	27.50	32.50	37.50
33.00	-477	-409	-340	-272	-204	-135	-67
38.00	-439	-346	-253	-159	-66	27	120
43.00	-402	-284	-165	-47	71	190	308
48.00	-364	-221	-78	66	209	352	495
53.00	-327	-159	10	178	346	515	683
58.00	-289	-96	97	291	484	677	870
63.00	-252	-34	185	403	621	840	1,058

Net Return Per Acre Above Cash Costs For Beans (Double Crop)

PRICE ($/cwt)	YIELD (Cwt /acre)						
Beans (Double Crop)	7.50	12.50	17.50	22.50	27.50	32.50	37.50
33.00	-539	-471	-403	-334	-266	-197	-129
38.00	-502	-408	-315	-222	-128	-35	58
43.00	-464	-346	-228	-109	9	128	246
48.00	-427	-283	-140	3	147	290	433
53.00	-389	-221	-53	116	284	453	621
58.00	-352	-158	35	228	422	615	808
63.00	-314	-96	122	341	559	778	996

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TABLE 4. RANGING ANALYSIS CONTINUED

Net Return Per Acre Above Total Costs For Beans (Double Crop)

PRICE ($/cwt)	YIELD (Cwt /acre)						
Beans (Double Crop)	7.50	12.50	17.50	22.50	27.50	32.50	37.50
33.00	-576	-508	-440	-371	-303	-234	-166
38.00	-539	-445	-352	-259	-165	-72	21
43.00	-501	-383	-265	-146	-28	91	209
48.00	-464	-320	-177	-34	110	253	396
53.00	-426	-258	-90	79	247	416	584
58.00	-389	-195	-2	191	385	578	771
63.00	-351	-133	85	304	522	741	959

UC COOPERATIVE EXTENSION

TABLE 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
BEANS (DOUBLE CROP)
ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead Insur-ance	Cash Overhead Taxes	Total
14	425 HP Crawler	340,000	10	100,431	35,420	1,630	2,202	39,252
14	200 HP Crawler	229,338	10	67,743	23,892	1,099	1,485	26,476
14	155 HP2WD Tractor	158,066	10	46,690	16,467	758	1,024	18,248
14	92 HP 2WD Tractor	66,599	10	19,672	6,938	319	431	7,689
14	Service Truck	38,600	10	11,402	4,021	185	250	4,456
14	6 Row-30" Bed Air Planter	31,446	10	5,561	3,576	137	185	3,898
14	Rice Roller 18'	15,552	10	2,750	1,768	68	92	1,928
14	Bed Shaper 6-Row	13,292	10	2,351	1,511	58	78	1,648
14	Ring Roller 26'	8,747	10	1,547	995	38	51	1,084
14	Cultivator 6-Row Sled	5,478	10	969	623	24	32	679
14	Fertilizer Bar 8-Row	2,000	10	377	226	9	12	246
14	Stubble Disc 18'	55,000	5	17,916	9,357	270	365	9,992
14	Finish Disc 25'	48,769	5	15,886	8,297	239	323	8,860
14	3/4 Ton Pickup	28,000	5	12,549	4,140	150	203	4,493
14	1/2 Ton Pickup	24,000	5	10,756	3,549	129	174	3,851
14	6 Row Lister-30" Bed	20,176	5	6,572	3,433	99	134	3,665
14	Ditcher-V	8,631	5	2,811	1,468	42	57	1,568
14	Rear Blade 8'	4,388	5	1,429	747	22	29	797
14	Spray Boom 25'	3,630	5	1,182	618	18	24	659
14	300 Gallon Saddle Tank	3,218	5	1,048	547	16	21	585
	TOTAL	1,104,930	-	329,642	127,594	5,308	7,173	140,074
	60% of New Cost*	662,958	-	197,785	76,556	3,185	4,304	84,045

*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	Cash Overhead Taxes	Repairs	Total
INVESTMENT								
Shop Building	160,000	25	7,217	10,913	619	836	722	13,090
Fuel Tanks & Pumps	21,949	20	2,195	1,656	89	121	439	2,305
Shop Tools	20,000	20	1,447	1,526	79	107	145	1,858
Siphon Tubes	11,066	15	1,107	996	45	61	313	1,415
GPS Sending Unit	5,895	10	590	707	24	32	100	863
GPS Receiver	1,995	10	200	239	8	11	50	308
TOTAL INVESTMENT	220,905	-	12,756	16,037	865	1,168	1,769	19,839

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	100	Acre	1.00	100
Office Expense 50% DC	100	Acre	25.00	2,500
Miscellaneous Costs 50% DC	100	Acre	10.00	1,000
Field Supervisor 1/6 Time	100	Acre	21.25	2,125

UC COOPERATIVE EXTENSION

TABLE 6. HOURLY EQUIPMENT COSTS BEANS (DOUBLE CROP)

		Beans (Double Crop)	Total		Cash Overhead		Operating			
Yr	Description	Hours Used	Hours Used	Capital Recovery	Insur-ance	Taxes	Lube& Repairs	Fuel	Total Oper.	Total Costs/Hr.
14	200 HP Crawler	43	1600	8.96	0.41	0.56	13.27	47.82	61.10	71.02
14	425 HP Crawler	12	1600	13.28	0.61	0.83	24.29	101.62	125.91	140.63
14	155 HP2WD Tractor	68	1200	8.23	0.38	0.51	12.92	37.06	49.98	59.10
14	92 HP 2WD Tractor	58	1200	3.47	0.16	0.22	5.89	18.61	24.51	28.35
14	Rear Blade 8'	45	600	0.75	0.02	0.03	0.69	0.00	0.69	1.48
14	1/2 Ton Pickup	50	400	5.32	0.19	0.26	3.25	9.75	13.00	18.78
14	Ditcher-V	25	400	2.20	0.06	0.09	2.53	0.00	2.53	4.88
14	6 Row Lister-30" Bed	16	400	5.15	0.15	0.20	4.23	0.00	4.23	9.73
14	Finish Disc 25'	14	400	12.45	0.36	0.48	8.31	0.00	8.31	21.60
14	Stubble Disc 18'	11	400	14.04	0.40	0.55	9.37	0.00	9.37	24.36
14	3/4 Ton Pickup	5	400	6.21	0.23	0.30	2.09	0.00	2.09	8.83
14	300 Gallon Saddle Tank	54	300	1.09	0.03	0.04	0.88	0.00	0.88	2.05
14	Spray Boom 25'	8	300	1.24	0.04	0.05	0.99	0.00	0.99	2.31
14	Fertilizer Bar 6-Row	25	200	0.68	0.03	0.04	0.00	0.00	0.00	0.74
14	Bed Shaper 6-Row	21	200	4.53	0.17	0.23	2.85	0.00	2.85	7.79
14	Ring Roller 26'	14	200	2.98	0.11	0.15	1.00	0.00	1.00	4.26
14	Cultivator 6-Row Sled	13	200	1.87	0.07	0.10	1.17	0.00	1.17	3.21
14	Rice Roller 18'	11	200	5.31	0.20	0.27	1.78	0.00	1.78	7.57
14	Service Truck	4	200	12.06	0.56	0.75	3.73	0.00	3.73	17.10
14	6 Row-30" Bed Air Planter	13	150	14.30	0.55	0.74	8.67	0.00	8.67	24.26

TABLE 7. OPERATIONS WITH EQUIPMENT & MATERIALS BEANS (DOUBLE CROP)

Operation	Operation Month	Tractor	Implement	Labor Type/ Material	Rate/ acre	Unit
Stubble Disc & Roll	June	425 HP Crawler	Stubble Disc 18'	Equipment Operator Labor	0	hour
			Rice Roller 18'			
Finish Disc & Roll 2X	June	200 HP Crawler	Finish Disc 25'	Equipment Operator Labor	0	hour
			Ring Roller 26'			
List 6 Row-30" Beds	June	155 HP2WD Tractor	6 Row Lister-30" Bed			
Bed Shape Pre-Plant	June	155 HP2WD Tractor	300 Gallon Saddle Tank	Dual Magnum	1.50	Pint
			Bed Shaper 6-Row	Treflan HFP	1.50	Pint
Irrigation-Open Ditch	June	200 HP Crawler	Ditcher-V	Equipment Operator Labor	0	hour
Irrigation-Pre-Plant	June		1/2 Ton Pickup	Irrigation Labor	1	hour
				SV-Canal/District	6.00	AcIn
Irrigation-Close Ditch	June	92 HP 2WD Tractor	Rear Blade 8'	Equipment Operator Labor	0	hour
Plant Beans Starter Fert	June	155 HP2WD Tractor	6 Row-30" Bed Air Planter	Equipment Operator Labor	0	hour
				Dry Bean Seed	75.00	lb
			300 Gallon Saddle Tank	8-24-6 2% Zn	8.00	lb/N
			Fertilizer Bar 6-Row			
Cultivate Side-Dress Fert	June	155 HP2WD Tractor	300 Gallon Saddle Tank	Equipment Operator Labor	0	hour
				20-0-0 (Aqua)	90.00	lb/N
			Cultivator 6-Row Sled			
			Fertilizer Bar 6-Row			
Irrigation-Open Ditch	July	200 HP Crawler	Ditcher-V	Equipment Operator Labor	0	hour
	Aug	200 HP Crawler	Ditcher-V	Equipment Operator Labor	0	hour
Irrigate-4X	July		1/2 Ton Pickup	Irrigation Labor	1	hour
				SV-Canal/District	5.50	AcIn
	Aug		1/2 Ton Pickup	Irrigation Labor	1	hour
				SV-Canal/District	11.00	AcIn
	Sept		1/2 Ton Pickup	Irrigation Labor	1	hour
				SV-Canal/District	5.50	AcIn
Irrigation-Close Ditch	July	92 HP 2WD Tractor	Rear Blade 8'	Equipment Operator Labor	0	hour
	Sept	92 HP 2WD Tractor	Rear Blade 8'	Equipment Operator Labor	0	hour
Insects-Lygus/Mites	July	92 HP 2WD Tractor	300 Gallon Saddle Tank	Equipment Operator Labor	0	hour
				Brigade WSB	6.00	Oz
			Spray Boom 25'	Air App Spray 10g	1.00	Acre
3/4 Ton Pickup Truck	July		3/4 Ton Pickup	Equipment Operator Labor	0	hour
Service Truck	July		Service Truck	Equipment Operator Labor	0	hour
Cut/Rake/Windrow Beans	Sept			Cut/Rake/Windrow	1.00	Acre
Thresh/Harvest Beans	Sept			Thresh/Harvest Beans	22.50	Cwt
Haul Beans	Sept			Hauling Beans	22.50	Cwt
Land Rent 16%	Sept			Land Rent 16% DC	22.50	Cwt
Clean/Bag/Store Bean	Oct			Clean/Bag/Store Beans	22.50	Cwt
Assessment	Oct			CDBB	22.50	Cwt