UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION
2014
SAMPLE COSTS TO PRODUCE
BEANS

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

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UC COOPERATIVE EXTENSION
SAMPLE COSTS TO PRODUCE BEANS SINGLE-CROPPED
IN THE SACRAMENTO VALLEY-2014

STUDY CONTENTS

INTRODUCTION

Sample costs to produce single-cropped 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 (baby, vine and busy types) and blackeye 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, 530-752-3589, 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 through 7 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, 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, corn, safflower, sunflower, seed crops, processing tomatoes and wheat. Permanent crops such as almonds and walnuts could be planted on the remaining acreage as well.

In this study land is leased on a share-rent basis with the land owner receiving 20% of the gross returns from the dry bean crop. Land rent is based on the yield and price. The land rented includes developed wells and irrigation system. The grower owns a shop, shop tools, fuel tanks 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. Land leveling occurs every eighth year during October in preparation for another crop. The field is laser leveled to maintain irrigation efficiency. The cost of one eighth (12%) 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. Six rows of beds are listed per pass 30 inches apart in October. All operations are done on 100% of the acres unless otherwise noted.

Stand Establishment. In February, a post-emergence herbicide is applied for winter weed control. Dry beans are seeded in May with a starter fertilizer. Dry beans are planted at 70-120 pounds per acre depending on variety. Seeds are planted into moisture (pre-irrigated) and begin to emerge in five to seven days. There are several different bean varieties single-cropped in the Sacramento Valley including lima (baby, vine and bush) and blackeye beans. For this study 70 pounds per acre is seeded.

Fertilization. Nitrogen recommendations (N) range from 80-120 lbs/acre, depending on background nitrogen in the soil and irrigation water. A starter fertilizer of 8-24-6, 2% Zn is applied at planting at 8 lbs. nitrogen per acre (100 lbs. dry fertilizer or 10 gallons liquid fertilizer) and 24 lbs. of P_2O_5. In June aqua ammonia, (20-0-0) is side-dressed, (injected) at 100 pounds of nitrogen per acre. Cultivation for weed control also occurs during the side dress operation.

Irrigation. Dry beans are furrow irrigated with one pre-plant (6 acre-inches) and six irrigations (24 acre-inches) during the season. A total of 30 acre-inches of water is applied from April through September for a single crop. 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. During the winter a post-emergence herbicide, (Roundup ultra max) is used to control weeds. Pre-plant a tank mix of pre-emergence herbicides, (Treflan and Dual Magnum) are sprayed on the soil using a 20' boom and incorporated into the soil using an eight row power incorporator. In June cultivation for weed control and aqua ammonia is side-dressed into the soil on the same pass.

Insect and Disease Management. The two major pests of dry beans are spider mites and Lygus bugs. In some years aphids are problematic as well as corn earworms and armyworms that can severely damage developing pods.

Lygus and spider mites are treated in June with a tank mix of Epi-Mek and Warrior II. Brigade is applied during bloom through pod fill in (August) for aphids, lygus, mites, and worms. The first lygus/mite treatment is applied by ground sprayer and the Brigade insecticide application is a custom application 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 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 and raked into windrows in one pass and left to dry on top of the beds to dry. 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 12%-15% moisture.

Beans are cut, raked & windrowed at a rate of $35.00 per acre. Threshing/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. If blackeye beans are produced fumigation may be required and cost about $1.00 per cwt.

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

Yields. The crop yield used in this study is 25.0 cwt per acre, (1.25 tons/ac) at 12% moisture. The yield is after cleaning at the warehouse. Information is from CDFA Crop Statistics Report, 2012-2013, blackeye and baby lima bean varieties for California.

Returns. Due to the different varieties of beans grown, prices will vary. A selling price of a $50.00 per cwt is used to estimate income from the sale of these beans based on the blackeye, baby lima prices for California. From CDFA Crop Statistics Report, 2012-2013.

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 (hp) 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 $1,500 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.

*Office Expense***.** Office and business expenses are estimated at $50.00 per acre. These expenses include office supplies, communication systems, bookkeeping, accounting, legal fees and road maintenance.

Miscellaneous Costs. Included expenses are employee safety training as well as pesticide use and regulatory continuing education training, employee bonuses and additional materials and applications for unique fields or special conditions.

Field Supervisors' Salary. Supervisor salaries for beans include insurance, payroll taxes, benefits and bonuses. One third of the supervisors' time is allocated to beans. The costs used in this study are $42.50 per acre.

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 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;

[{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 or investment.

Interest Rate. The 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 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.

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.

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.

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

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UC COOPERATIVE EXTENSION

TABLE 1. COSTS PER ACRE TO PRODUCE BEANS (SINGLE 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:								
Laser Level 12% Acreage	0.00	0	0	0	0	20	20	
Finish Disc-2X	0.14	3	7	3	0	0	13	
List Beds-6 Row 30"	0.16	3	7	3	0	0	13	
Weed Control-Fallow Beds	0.07	1	0	0	17	0	19	
Shape Beds-Incorporate 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	0.90	25	31	13	91	20	180	
Cultural:								
Plant Beans-Starter Fertilizer	0.13	3	4	3	91	0	101	
Irrigation-Open Ditch 2X	0.17	3	9	3	0	0	15	
Irrigate 6X	0.60	53	6	2	130	0	191	
Irrigation-Close Ditch 2X	0.30	6	6	2	0	0	14	
Cultivate Side-Dress Fertilizer	0.13	3	5	2	75	0	85	
Insects-Lygus/Mites	0.08	2	2	1	24	0	27	
Insects-Aphids/Lygus/Mites/Worms	0.00	0	0	0	18	12	30	
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	1.40	71	32	12	338	12	465	
Harvest:								
Cut/Rake/Windrow Beans	0.00	0	0	0	0	35	35	
Thresh/Harvest Beans	0.00	0	0	0	0	88	88	
Haul Beans to Warehouse	0.00	0	0	0	0	8	8	
Land Rent 20% SC	0.00	0	0	0	250	0	250	
TOTAL HARVEST COSTS	0.00	0	0	0	250	130	380	
Post-Harvest:								
Clean/Bag/Store	0.00	0	0	0	0	145	145	
TOTAL POST-HARVEST COSTS	0.00	0	0	0	0	145	145	
Assessment:								
Assessment Fee	0.00	0	0	0	9	0	9	
TOTAL ASSESSMENT COSTS	0.00	0	0	0	9	0	9	
Interest on Operating Capital at 5.75%							17	
TOTAL OPERATING COSTS/ACRE	2	96	63	25	687	307	1,195	

UC COOPERATIVE EXTENSION

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	
Miscellaneous Costs							20	
Field Supervisor 1/3 Time							43	
Property Taxes							1	
Property Insurance							1	
Investment Repairs							1	
TOTAL CASH OVERHEAD COSTS/ACRE							116	
TOTAL CASH COSTS/ACRE							1,312	
NON-CASH OVERHEAD:		Per Producing Acre		Annual Cost Capital Recovery				
Shop Building		107		7			7	
Fuel Tanks & Pumps		15		1			1	
Shop Tools		13		1			1	
Closed Mix System		3		0			0	
Siphon Tubes		7		1			1	
GPS Sending Unit		4		0			0	
GPS Receiver		1		0			0	
Equipment		196		24			24	
TOTAL NON-CASH OVERHEAD COSTS		346		35			35	
TOTAL COSTS/ACRE							1,346	

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

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Beans (Single Crop) (Cwt) -Hundredweight	25	Cwt	50.00	1,250	
TOTAL GROSS RETURNS	25	Cwt		1,250	
OPERATING COSTS					
Fertilizer:				**102**	
8-24-6 2% Zn	8.00	lb/N	3.34	27	
20-0-0 (Aqua)	100.00	lb N	0.75	75	
Custom:				**307**	
Laser Level	0.12	Acre	165.00	20	
Air App Spray 10g	1.00	Acre	11.80	12	
Cut/Rake/Windrow	1.00	Acre	35.00	35	
Thresh/Harvest Beans	25.00	Cwt	3.50	88	
Hauling Beans	25.00	Cwt	0.30	8	
Clean/Bag/Store Beans	25.00	Cwt	5.80	145	
Insecticide:				**41**	
Epi-Mek 0.15EC	5.00	FlOz	3.50	18	
Warrior II	2.00	FlOz	3.05	6	
Brigade WSB	6.00	Oz	2.95	18	
Herbicide:				**58**	
Roundup Ultra Max	2.00	Pint	8.59	17	
Dual Magnum	1.50	Pint	22.58	34	
Treflan HFP	1.50	Pint	4.85	7	
Seed:				**64**	
Dry Bean Seed	70.00	Lb	0.92	64	
Irrigation:				**163**	
SV-Canal/District	30.00	AcIn	5.42	163	
Assessment:				**9**	
CDBB	25.00	Cwt	0.35	9	
Land Rent:				**250**	
Land Rent 20% SC	25.00	Cwt	10.00	250	
Labor				**96**	
Equipment Operator Labor	2.87	hrs	17.00	49	
Irrigation Labor	3.50	hrs	13.60	48	
Machinery				**88**	
Fuel-Gas	1.82	gal	3.90	7	
Fuel-Diesel	13.52	gal	4.12	56	
Lube				9	
Machinery Repair				16	
Interest on Operating Capital @ 5.75%				17	
TOTAL OPERATING COSTS/ACRE				1,196	
TOTAL OPERATING COSTS/CWT				48	
NET RETURNS ABOVE OPERATING COSTS				54	

UC COOPERATIVE EXTENSION

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	
Miscellaneous Costs				20	
Field Supervisor 1/3 Time				43	
Property Taxes				1	
Property Insurance				1	
Investment Repairs				1	
TOTAL CASH OVERHEAD COSTS/ACRE				116	
TOTAL CASH OVERHEAD COSTS/CWT				5	
TOTAL CASH COSTS/ACRE				1,312	
TOTAL CASH COSTS/CWT				52	
NET RETURNS ABOVE CASH COSTS				-62	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Shop Building				7	
Fuel Tanks & Pumps				1	
Shop Tools				1	
Closed Mix System				0	
Siphon Tubes				1	
GPS Sending Unit				0	
GPS Receiver				0	
Equipment				24	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				35	
TOTAL NON-CASH OVERHEAD COSTS/CWT				1	
TOTAL COST/ACRE				1,347	
TOTAL COST/CWT				54	
NET RETURNS ABOVE TOTAL COST				-97	

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

	OCT 13	NOV 13	DEC 13	JAN 14	FEB 14	MAR 14	APR 14	MAY 14	JUN 14	JUL 14	AUG 14	SEP 14	Total
Pre-Plant:													
Laser Level 12% Acreage	20												20
Finish Disc-2X	13												13
List Beds-6 Row 30"	13												13
Weed Control-Fallow Beds					19								19
Shape Beds-Incorporate Herbicide							57						57
Irrigation-Open Ditch 1X							8						8
Irrigation-Pre-Plant							43						43
Irrigation-Close Ditch 1X							7						7
TOTAL PRE-PLANT COSTS	46				19		115						180
Cultural:													
Plant Beans-Starter Fertilizer								101					101
Irrigation-Open Ditch 2X								8		8			15
Irrigate 6X								32	32	32	64	32	191
Irrigation-Close Ditch 2X									7			7	14
Cultivate Side-Dress Fertilizer									85				85
Insects-Lygus/Mites									27				27
Insects-Aphids/Lygus/Mites/Worms											30		30
3/4 Ton Pickup Truck	0	0	0	0	0	0	0	0	0	0	0	0	1
Service Truck	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL CULTURAL COSTS	0	0	0	0	0	0	0	140	151	39	93	39	465
Harvest:													
Cut/Rake/Windrow Beans												35	35
Thresh/Harvest Beans												88	88
Haul Beans to Warehouse												8	8
Land Rent 20% SC												250	250
TOTAL HARVEST COSTS	0	0	0	0	0	0	0	0	0	0	0	380	380
Post-Harvest:													
Clean/Bag/Store												145	145
TOTAL POST-HARVEST COSTS	0	0	0	0	0	0	0	0	0	0	0	145	145
Assessment:													
Assessment Fee												9	9
TOTAL ASSESSMENT COSTS	0	0	0	0	0	0	0	0	0	0	0	9	9
Interest on Operating Capital @ 5.75%	0	0	0	0	0	0	1	2	2	2	3	6	17
TOTAL OPERATING COSTS/ACRE	46	0	0	0	19	0	116	142	154	42	96	579	1,195
CASH OVERHEAD													
Liability Insurance													1
Office Expense													50
Miscellaneous Costs													20
Field Supervisor 1/3 Time	4	4	4	4	4	4	4	4	4	4	4	4	43
Property Taxes				0						0			1

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TABLE 3. CONTINUED

	OCT 13	NOV 13	DEC 13	JAN 14	FEB 14	MAR 14	APR 14	MAY 14	JUN 14	JUL 14	AUG 14	SEP 14	Total
Property Insurance				0						0			1
Investment Repairs	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL CASH OVERHEAD COSTS	4	4	4	4	4	4	4	4	4	4	4	4	116
TOTAL CASH COSTS/ACRE	50	4	4	5	23	4	120	145	157	46	100	582	1,312

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TABLE 4. RANGING ANALYSIS - BEANS (SINGLE CROP)

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

	YIELD (Cwt)						
	10.00	15.00	20.00	25.00	30.00	35.00	40.00
OPERATING COSTS/ACRE:							
Pre-Plant	180	180	180	180	180	180	180
Cultural	465	465	465	465	465	465	465
Harvest	152	228	304	380	456	532	608
Post-Harvest	58	87	116	145	174	203	232
Assessment	4	5	7	9	11	12	14
Interest on Operating Capital @ 5.75%	16	16	17	17	18	18	19
TOTAL OPERATING COSTS/ACRE	874	981	1,088	1,195	1,303	1,410	1,517
TOTAL OPERATING COSTS/CWT	87.36	65.39	54.41	47.81	43.42	40.28	37.93
CASH OVERHEAD COSTS/ACRE	118	118	118	118	118	118	118
TOTAL CASH COSTS/ACRE	992	1,099	1,207	1,314	1,421	1,528	1,636
TOTAL CASH COSTS/CWT	99.20	73.29	60.33	52.55	47.37	43.67	40.89
NON-CASH OVERHEAD COSTS/ACRE	35	35	35	35	35	35	35
TOTAL COSTS/ACRE	1,027	1,134	1,241	1,348	1,456	1,563	1,670
TOTAL COSTS/CWT	103.00	76.00	62.00	54.00	49.00	45.00	42.00

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

PRICE ($/cwt)	YIELD (Cwt /acre)						
Beans (Single Crop)	10.00	15.00	20.00	25.00	30.00	35.00	40.00
35.00	-524	-456	-388	-320	-253	-185	-117
40.00	-474	-381	-288	-195	-103	-10	83
45.00	-424	-306	-188	-70	47	165	283
50.00	-374	-231	-88	55	197	340	483
55.00	-324	-156	12	180	347	515	683
60.00	-274	-81	112	305	497	690	883
65.00	-224	-6	212	430	647	865	1,083

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

PRICE ($/cwt)	YIELD (Cwt /acre)						
Beans (Single Crop)	10.00	15.00	20.00	25.00	30.00	35.00	40.00
35.00	-642	-574	-507	-439	-371	-303	-236
40.00	-592	-499	-407	-314	-221	-128	-36
45.00	-542	-424	-307	-189	-71	47	164
50.00	-492	-349	-207	-64	79	222	364
55.00	-442	-274	-107	61	229	397	564
60.00	-392	-199	-7	186	379	572	764
65.00	-342	-124	93	311	529	747	964

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TABLE 4. RANGING ANALYSIS CONTINUED

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

PRICE ($/cwt)	YIELD (Cwt /acre)						
Beans (Single Crop)	10.00	15.00	20.00	25.00	30.00	35.00	40.00
35.00	-677	-609	-541	-473	-406	-338	-270
40.00	-627	-534	-441	-348	-256	-163	-70
45.00	-577	-459	-341	-223	-106	12	130
50.00	-527	-384	-241	-98	44	187	330
55.00	-477	-309	-141	27	194	362	530
60.00	-427	-234	-41	152	344	537	730
65.00	-377	-159	59	277	494	712	930

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

ANNUAL EQUIPMENT COSTS

						Cash Overhead		
Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Total
14	200 HP Crawler	229,338	10	67,743	23,892	1,099	1,485	26,476
14	155 HP 2WD Tractor	158,066	10	46,690	16,467	758	1,024	18,248
14	130 HP 2WD Tractor	123,000	10	36,332	12,814	590	797	14,200
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	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 6-Row	2,000	10	377	226	9	12	246
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	ATV 4WD	6,499	5	2,913	961	35	47	1,043
14	Rear Blade 8'	4,388	5	1,429	747	22	29	797
14	ATV Sprayer System	4,017	5	1,308	683	20	27	730
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	827,894	-	249,099	95,506	3,985	5,385	104,876
	60% of New Cost*	496,736	-	149,460	57,303	2,391	3,231	62,925

*Used to reflect a mix of new and used equipment

ANNUAL INVESTMENT COSTS

					Cash Overhead			
Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	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
Closed Mix System	4,412	10	441	529	18	24	221	792
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	225,317	-	13,197	16,566	882	1,193	1,990	20,631

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	100	Acre	1.00	100
Office Expense	100	Acre	50.00	5,000
Miscellaneous Costs	100	Acre	20.00	2,000
Field Supervisor 1/3 Time	100	Acre	42.50	4,250

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TABLE 6. HOURLY EQUIPMENT COSTS
BEANS (SINGLE CROP)

		Beans (Single 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	ATV 4WD	7	2000	0.29	0.01	0.01	0.59	3.90	4.48	4.80
14	200 HP Crawler	43	1600	8.96	0.41	0.56	13.27	47.82	61.10	71.02
14	92 HP 2WD Tractor	58	1200	3.47	0.16	0.22	5.89	18.61	24.51	28.35
14	155 HP 2WD Tractor	54	1200	8.23	0.38	0.51	12.92	37.06	49.98	59.10
14	130 HP 2WD Tractor	14	1200	6.41	0.29	0.40	10.39	31.08	41.47	48.57
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	70	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	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	ATV Sprayer System	7	300	1.37	0.04	0.05	1.10	0.00	1.10	2.56
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	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

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TABLE 7. OPERATIONS WITH EQUIPMENT & MATERIALS

BEANS (SINGLE CROP)

Operation	Operation Month	Tractor	Implement	Labor Type/ Material	Rate/ acre	Unit
Laser Level 12% Acre	Oct			Laser Level	0.12	Acre
Finish Disc-2X	Oct	200 HP Crawler	Finish Disc 25'	Equipment Operator Labor	0	hour
			Ring Roller 26'			
List Beds-6 Row 30"	Oct	155 HP 2WD Tractor	6 Row Lister-30" Bed	Equipment Operator Labor	0	hour
Weed Control-Fallow	Feb		ATV 4WD	Roundup Ultra Max	2.00	Pint
			ATV Sprayer System			
Shape Beds-Incorporator	Apr	155 HP 2WD Tractor	300 Gallon Saddle Tank	Equipment Operator Labor	0	hour
				Dual Magnum	1.50	Pint
			Bed Shaper 6-Row	Treflan HFP	1.50	Pint
Irrigation-Open Ditch	Apr	200 HP Crawler	Ditcher-V	Equipment Operator Labor	0	hour
Irrigation-Pre-Plant	Apr		1/2 Ton Pickup	Irrigation Labor	1	hour
				SV-Canal/District	6.00	AcIn
Irrigation-Close Ditch	Apr	92 HP 2WD Tractor	Rear Blade 8'	Equipment Operator Labor	0	hour
Plant Beans-Starter	May	130 HP 2WD Tractor	300 Gallon Saddle Tank	Equipment Operator Labor	0	hour
				8-24-6 2% Zn	8.00	lb/N
			6 Row-30" Bed Air Planter	Dry Bean Seed	70.00	lb
			Fertilizer Bar 6-Row			
Irrigation-Open Ditch	May	200 HP Crawler	Ditcher-V	Equipment Operator Labor	0	hour
	July	200 HP Crawler	Ditcher-V	Equipment Operator Labor	0	hour
Irrigate 6X	May		1/2 Ton Pickup	Irrigation Labor	1	hour
				SV-Canal/District	4.00	AcIn
	June		1/2 Ton Pickup	Irrigation Labor	1	hour
				SV-Canal/District	4.00	AcIn
	July		1/2 Ton Pickup	Irrigation Labor	1	hour
				SV-Canal/District	4.00	AcIn
	Aug		1/2 Ton Pickup	Irrigation Labor	1	hour
				SV-Canal/District	8.00	AcIn
	Sept		1/2 Ton Pickup	Irrigation Labor	1	hour
				SV-Canal/District	4.00	AcIn
Irrigation-Close Ditch	June	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
Cultivate Side-Dress	June	155 HP 2WD Tractor	300 Gallon Saddle Tank	Equipment Operator Labor	0	hour
				20-0-0 (Aqua)	100.00	lb/N
			Fertilizer Bar 6-Row			
			Cultivator 6-Row Sled			
Insects-Lygus/Mites	June	92 HP 2WD Tractor	300 Gallon Saddle Tank	Equipment Operator Labor	0	hour
				Epi-Mek 0.15EC	5.00	FlOz
			Spray Boom 25'	Warrior II	2.00	FlOz
Insects-Aphids/Lygus	Aug			Air App Spray 10g	1.00	Acre
				Brigade WSB	6.00	Oz
3/4 Ton Pickup Truck	Aug		3/4 Ton Pickup	Equipment Operator Labor	0	hour
Service Truck	Aug		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	25.00	Cwt
Haul Beans to Warehouse	Sept			Hauling Beans	25.00	Cwt
Land Rent 20% SC	Sept			Land Rent 20% SC	25.00	Cwt
Clean/Bag/Store	Sept			Clean/Bag/Store Beans	25.00	Cwt
Assessment Fee	Sept			CDBB	25.00	Cwt