
UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2013

SAMPLE COSTS
TO PRODUCE

BLACKEYE BEANS

Single Cropped



SAN JOAQUIN VALLEY – SOUTH

Tulare County

Prepared by:

Carol A. Frate

UC Cooperative Extension Farm Advisor, Tulare County

Karen M. Klonsky

UC Cooperative Extension Specialist, Department of Agricultural and Resource
Economics, UC Davis

Richard L. De Moura

Staff Research Associate, Department of Agricultural and Resource Economics,
UC Davis

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

SAMPLE COSTS TO PRODUCE BLACKEYE BEANS San Joaquin Valley – South 2013 Tulare County

STUDY CONTENTS

INTRODUCTION	2
ASSUMPTIONS	3
Production Cultural Practices and Material Inputs	3
Labor, Equipment and Interest.....	5
Cash Overhead.....	5
Non Cash Overhead.....	6
REFERENCES	8
Table 1. COSTS PER ACRE to PRODUCE BLACKEYE BEANS.....	9
Table 2. COSTS and RETURNS PER ACRE to PRODUCE BLACKEYE BEANS.....	10
Table 3. MONTHLY CASH COST PER ACRE to PRODUCE BLACKEYE BEANS	12
Table 4. RANGING ANALYSIS	13
Table 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT and OVERHEAD COSTS.....	14
Table 6. HOURLY EQUIPMENT COSTS	15
Table 7. OPERATIONS WITH EQUIPMENT & MATERIALS	16

INTRODUCTION

Sample costs to produce blackeye beans (*Vigna unguiculata*) in the southern San Joaquin Valley are shown in this study. The 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 the production practices considered typical for this crop and region, but will not apply to every farm situation. Sample costs for labor, materials, equipment and custom services are based on current figures. A “*Your Costs*” column in Tables 1 and 2 is provided to enter your costs.

The hypothetical farm operations, production practices, overhead, and calculations are described under the assumptions. For additional information or an explanation of calculations used in the study call the Department of Agricultural and Resource Economics, University of California, Davis, California, (530) 752-3589 or the local UC Cooperative Extension office.

Sample Cost of Production studies are available for many commodities. Current and archived studies can be downloaded from the department website <http://coststudies.ucdavis.edu>, requested through Agricultural and Resource Economics at 530-752-6887 or obtained from the local county UC Cooperative Extension offices.

The University of California is an affirmative action/equal opportunity employer

ASSUMPTIONS

The assumptions refer to Tables 1 to 7 and pertain to sample costs to produce blackeye beans in the southern San Joaquin Valley, Tulare County. The cultural practices described represent production operations and materials considered typical on a well-managed farm in the region. Costs, materials, and practices in this study will not apply to all farms. Timing of and types of cultural practices will vary among growers within the region and from season to season due to variables such as weather, soil, and insect and disease pressure. The study does not represent a specific farm and is intended as a guide only. **The use of trade names and cultural practices 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 or cultural practices.**

Farm. The hypothetical field and row-crop farm consists of 1,000 non-contiguous acres on which 80 acres are being planted to blackeye beans. Other crops grown on the acres in rotation with blackeye beans include small grains, winter forage, alfalfa hay, cotton, and field corn. Roads, equipment yard, irrigation system and farmstead are on 20 acres.

Production Cultural Practices and Material Inputs

Land Preparation. The ground is disced two times with a stubble disc, then disced two times with an offset or finishing disc to pulverize the surface and incorporate the preplant herbicide. Beds are listed and shaped.

Planting. In early-May the CB46 variety is planted on 30-inch beds into moisture with a 10-row planter at 32 pounds (.32 cwt) of seed per acre. The purchased seed is treated with fungicides to protect against seedling diseases. Although this is a single crop planting, it is a “double flush” crop needing about 130 days from planting to cutting.

Fertilization. Rhizobium, a nitrogen fixing bacteria, is added to the seed at planting. No other fertilizer is applied and is seldom required.

Irrigation. The field is furrow irrigated. An irrigation is made in April prior to planting (preirrigation). The next irrigation is made two to four weeks after planting. In this study the first irrigation is in early to mid-June followed by irrigations at approximately 10-day intervals beginning late June/early July and continuing until the last irrigation in mid-September. The grower can use either or both well and surface water. Well water is used at cost of \$6.25 per acre-inch or \$75 per acre-foot. Effective rainfall is not taken into account; therefore a total of 36-acre inches per year, including the preirrigation, are applied to the field. To facilitate cultural operations, drainage ditches at the end of the field are opened and closed as necessary.

Pest Management. The pesticides and rates mentioned in this cost study are listed in *UC Integrated Pest Management Guidelines, Dry Beans*. For information on other pesticides available, pest identification, monitoring, and management visit the UC IPM website at www.ipm.ucdavis.edu. For information and pesticide use permits, contact the local county agricultural commissioner's office. **Pesticides mentioned in this study are used to calculate rates and costs. Although the pesticides mentioned are commonly used by growers, many other pesticides are available. Check with your PCA, field crops farm advisor, and/or the UC IPM website for current recommendations.** Adjuvants are recommended for use with many pesticides for effective control, but adjuvants, their costs and their availability are not included in this study. Pesticide costs may vary by location, brand, and grower volume. Pesticide costs in this study are taken from a single dealer and shown as full retail.

Pest Control Adviser (PCA). Written recommendations are required for many commercially applied pesticides and are written by licensed pest control advisers. In addition the PCA will monitor the field for agronomic problems including pests, diseases, and nutritional status. Growers may hire private PCAs or receive the service as part of a service agreement with an agricultural chemical and fertilizer company. Costs for a private PCA are not included in this study.

Weeds. Prior to planting as a part of land preparation, Prowl H2O is applied with a boom attached to the front of a finish disc. The field is then disced lightly a second time to complete the Prowl incorporation. The field is cultivated with a 10-row cultivator before and after the first irrigation in June.

Insects. Lygus bugs (*Lygus hesperus*) are the main insect pest in blackeyes. The lygus bugs can cause reduced yields, affect maturity and seed quality. To control lygus, Warrior is sprayed by air (helicopter) in June at early bloom, and in July with Dimethoate. Armyworms may be a problem and are treated with Lannate in August. In some years, spider mites may need to be treated in some fields, but is not shown as a cost in this study.

Diseases. Seeds are treated at the warehouse with fungicides to protect against seedling diseases and the treatment is included in the seed cost. Fusarium wilt (*Fusarium oxysporum*) is a major disease of blackeyes and is controlled by planting resistant varieties.

Harvest. The crop is custom harvested. In mid to late September, the beans are cut below ground with bean knives attached to the belly of the tractor and then windrowed. Eight rows are cut in one pass. After one to three weeks of drying, when the plants are dry and the beans are around 12% moisture, the beans are threshed with a bean harvester, dumped into bulk trucks and delivered to the warehouse. Custom harvest costs are charged on field weight and/or per acre. Cutting and windrowing costs \$60 per acre. Threshing costs \$25 per acre plus \$3 per hundredweight (cwt). Hauling costs are estimated at \$0.65 per hundredweight.

Yield. Field weight includes trash, dirt, stones, immature and broken beans. The field weight in this study is 37-hundredweight. After cleaning, assuming an 8% clean out, the net yield is 34-hundredweight (rounded) of U.S. No. 1 beans.

Warehouse. The warehouse charges \$4.75 per hundredweight field weight to clean the beans, \$1.00 per hundredweight to fumigate, and \$0.04 per hundredweight to grade. Lot sizes vary, but are considered to be a set of doubles or 6 bobtails. A set of doubles is calculated to be 500 hundredweight and the grading cost in this study was converted to cost per hundredweight. After cleaning, charges are based on clean weight. Insurance cost \$0.40 per hundredweight, storage for up to one year cost \$0.75 per hundredweight, and bagging is paid by the buyer, but most purchases are bulk.

Returns. Based on current markets for U.S. No. 1 grade blackeyes, an estimated price of \$50 per hundredweight clean seed is used to calculate returns. Table 4 shows a range of yields over a range of returns for No. 1 beans. Visual quality is important in blackeye marketing, and sales are based on USDA grades. See *United States Standards for Beans*, a publication of the U.S. Department of Agriculture, Federal Grain Inspection Service.

Assessments/Fees. The California Dry Bean Advisory Board (CDBAB) assesses growers \$0.19 per clean hundredweight and the warehouses \$0.01. The Blackeye Council assesses \$0.07 per clean hundredweight. The CDBAB and Council assessments provide funds for marketing and research.

Labor, Equipment and Interest

Labor. Hourly wages for workers are \$13.00 for machine operators and \$10.00 per hour non-machine labor. Adding 40% for the employer's share of federal and state payroll taxes, insurance, and other possible benefits gives the labor rates shown of \$18.20 and \$14.00 per hour for machine labor and non-machine labor, respectively. Workers' compensation costs will vary among growers, but for this study the cost is based upon the average industry final rate as of January 1, 2012 (personal email from California Department of Insurance, unreferenced). Labor for operations involving machinery are 20% higher than the operation time given in Table 1 to account for the extra labor involved in equipment set up, moving, maintenance, work breaks, and field repair.

Equipment Operating Costs. Repair costs for all equipment are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by the American Society of Agricultural and Biological Engineers (ASABE). Fuel and lubrication costs are also determined by ASABE equations based on maximum power takeoff (PTO) horsepower, and fuel type. Prices for on-farm delivery of red dye diesel and gasoline are \$3.84 (excludes excise taxes) and \$4.07 per gallon, respectively. The cost includes a 2% local sales tax on diesel fuel, but does not include excise taxes. Gasoline costs include a 7.5% sales tax plus federal and state excise tax. Some federal and excise tax can be refunded for on-farm use when filing your income tax. The costs are based on Department of Energy (DOE) 2012 monthly data. The fuel, lube, 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 selected operation by the hours per acre. Tractor time is 10% higher than implement time for a given operation to account for setup, travel and down time.

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 4.75% per year. A nominal interest rate is the typical market cost of borrowed funds. The interest cost of post harvest operations is discounted back to the last harvest month using a negative interest charge. The interest rate is the basic rate provided by a farm lending agency as of January 2013.

Risk. The risks associated with crop production should not be minimized. While this study makes every effort to model a production system based on typical, real world practices, it cannot fully represent financial, agronomic and market risks, which affect profitability and economic viability. Growers may purchase Federal crop insurance for some crops to reduce the production risk associated with specific natural hazards.

Cash Overhead

Cash overhead consists of various cash expenses paid out during the year that are assigned to the whole farm, not to a particular operation.

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.

Insurance. Insurance for farm investments varies depending on the assets included and the amount of coverage. Property insurance provides coverage for property loss and is charged at 0.817% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$1,346 for the entire farm or \$1.37 per producing acre.

Office Expense. Office and business expenses for 1,000 acres are estimated at \$60 per producing acre. These expenses include office supplies, telephones, computers, internet access, accounting, legal fees, road maintenance, and miscellaneous cash overhead expenses. Costs are estimated and not based on any specific data.

Investment Repairs. Annual repairs on investments or capital recovery items that require maintenance are calculated as two percent of the purchase price

Non-Cash Overhead

Non-Cash overhead is calculated as the capital recovery cost for equipment and other farm investments.

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). 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 formula for the calculation of the annual capital recovery costs is $((\text{Purchase Price} - \text{Salvage Value}) \times \text{Capital Recovery Factor}) + (\text{Salvage Value} \times \text{Interest Rate})$.

Salvage Value. Salvage value is an estimate of the remaining value of an investment at the end of its useful life. For farm machinery the remaining value is a percentage of the new cost of the investment (Boehlje and Eidman). The percent remaining value is calculated from equations developed by the American Society of Agricultural Engineers (ASABE) based on equipment type and years of life. The life in years is estimated by dividing the wear out life, as given by ASABE, by the annual hours of use in the operation. For other investments including irrigation systems, buildings, and miscellaneous equipment, the value at the end of its useful life is zero. The salvage value for land is the purchase price because land does not depreciate. The purchase price and salvage value for 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. The amortization factor is a table value that corresponds to the interest rate and equipment life.

Interest Rate. The interest rate of 4.75% used to calculate capital recovery cost is the effective long term interest rate effective January 2013. The interest rate is provided by a local farm lending agency and will vary according to risk and amount of loan.

Irrigation system. Water cost varies across the San Joaquin Valley depending on the irrigation district and well characteristics. The farm has three 150 feet deep wells. Each well has a 75 horsepower electric pump that pumps from a 100-foot depth. The delivery system is an underground cement pipeline with alfalfa valves. A canal also runs through the ranch and is connected to the delivery system by gravity feed. The cost of the irrigation system includes refurbishment of the wells and the value of the delivery system. The cost is an estimate and not based on any irrigation company data.

Land. The price of the land includes an already developed well and irrigation system. Land suitable for bean production will vary widely in value across the region. Prices range from \$10,000 to \$15,000 per acre (2013 Trends & Leases). The land in this study is owned by the grower and is valued at \$12,000 per acre.

Building. The metal buildings are on a cement slab and comprise 2,400 square feet.

Storage Shed. A small shed used to store pesticides that is posted with warning signs and locked.

Tools. This includes shop tools, hand tools, and miscellaneous field tools such as pruning tools.

Fuel Tanks. 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.

Equipment. Farm equipment is purchased new or used, but 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. Annual ownership costs for equipment and other investments are shown in Table 5. 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.

REFERENCES

- American Society of Agricultural and Biological Engineers. 2006. *American Society of Agricultural and Biological Engineers Standards Yearbook*. Russell H. Hahn and Evelyn E. Rosentreter (ed.) St. Joseph, Missouri. 41st edition. www.asabe.org ASAE D497.5 Feb2006, Agricultural Machinery Management Data.
- American Society of Farm Managers and Rural Appraisers. 2013. *Trends in Agricultural Land & Lease Values*. California Chapter of the American Society of Farms Managers and Rural Appraisers. Woodbridge, CA.
- Boehlje, Michael D., and Vernon R. Eidman. 1984. *Farm Management*. John Wiley and Sons. New York, New York
- California State Board of Equalization. *Fuel Tax Division Tax Rates*. Internet accessed December 2012. <http://www.boe.ca.gov/sptaxprog/spftdrates.htm>
- Energy Information Administration. 2012. *Weekly Retail on Highway Diesel and Gasoline Prices*. Internet accessed January 2013. <http://www.eia.gov/petroleum/gasdiesel/>
- Frate, Carol A., Karen M. Klonsky, and Richard L. De Moura. 2008. *Sample Costs to Produce Blackeye Beans (Single Cropped)* San Joaquin Valley-South (Tulare County). UC Cooperative Extension. Department of Agricultural and Resource Economics, UC Davis. Davis, CA.
- Hall, Anthony E. and Carol A. Frate (ed.). 1996. *Blackeye Bean Production in California*. University of California, Division of Agriculture and Natural Resources. Oakland, CA. Publication 21518.
- University of California Statewide IPM Project. *UC Pest Management Guidelines, Beans*. 2012. University of California, Davis. CA. <http://www.ipm.ucdavis.edu>

For information concerning the above mentioned University of California publications contact UC DANR Communications Services at 1-800-994-8849, online at <http://danrcs.ucdavis.edu> or your local county UC Cooperative Extension office.

UC COOPERATIVE EXTENSION
SAN JOAQUIN VALLEY - SOUTH 2013

Table 1. COSTS PER ACRE TO PRODUCE BLACKEYE BEANS (single cropped)

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre					Total Cost	Your Cost
		Labor Cost	Fuel	Lube & Repairs	Material Cost	Custom/ Rent		
Cultural:								
Stubble Disc 2X	0.27	6	11	5	0	0	22	
Weed - Preplant (Prowl)	0.09	2	2	1	15	0	21	
Incorporate Herbicides	0.08	2	3	1	0	0	6	
List Beds	0.08	2	3	1	0	0	6	
Make Tail-Ditch	0.06	1	2	1	0	0	4	
Pre-irrigate	0.21	3	0	0	38	0	40	
Close Tail-Ditch	0.06	1	2	1	0	0	4	
Shape Beds	0.25	5	10	3	0	0	19	
Plant Bean (Seed+Rhizobium)	0.09	2	4	2	34	0	42	
Cultivate 2X	0.17	4	4	2	0	0	10	
Irrigate	1.60	22	0	0	188	0	210	
Insect-Lygas (Warrior)	0.00	0	0	0	20	12	32	
Insect-Lygas (Dimethoate)	0.00	0	0	0	7	12	19	
Insect-Worms (Lannate)	0.00	0	0	0	42	12	54	
Pickup Truck Use	1.15	25	16	4	0	0	45	
TOTAL Cultural COSTS	4.12	76	59	21	344	36	535	
Harvest:								
Cut & Windrow Beans	0.00	0	0	0	0	60	60	
Thresh Beans	0.00	0	0	0	0	136	136	
Haul Beans To Warehouse	0.00	0	0	0	0	24	24	
Clean, Fumigate, Grade	0.00	0	0	0	0	214	214	
Insurance, Storage,	0.00	0	0	0	0	34	34	
Assessment CDBAB + BE Council	0.00	0	0	0	9	0	9	
TOTAL Harvest COSTS	0.00	0	0	0	9	468	477	
Interest on Operating Capital @ 5.75%							9	
TOTAL OPERATING COSTS/ACRE	4.12	76	59	21	352	504	1,021	
CASH OVERHEAD:								
Liability Insurance							1	
Office							60	
Property Taxes							124	
Property Insurance							1	
Investment Repairs							6	
TOTAL CASH OVERHEAD							193	
TOTAL CASH COSTS/ACRE							1,214	
NON-CASH OVERHEAD:								
		Per producing Acre		Annual Cost Capital				
Building (2400sqft)		87		7			7	
Fuel Tanks/Aboveground		4		0			0	
Irrigation System		179		12			12	
Land-1000 acres		12,245		582			582	
Shop Tools		15		1			1	
Storage Bldg (chemicals)		8		1			1	
Equipment		581		56			56	
TOTAL NON-CASH OVERHEAD		13,118		659			659	
TOTAL COSTS/ACRE							1,872	

UC COOPERATIVE EXTENSION
SAN JOAQUIN VALLEY - SOUTH 2013

Table 2. COSTS AND RETURNS PER ACRE TO PRODUCE BLACKEYE BEANS (single cropped)

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Costs
GROSS RETURNS					
Blackeye #1	34.00	cwt	50.00	1,700	
TOTAL GROSS RETURNS	34.00	cwt		1,700	
OPERATING COSTS					
Custom:					504
Air Apply Hel 5gal	3.00	acre	12.00	36	
Cut & Windrow beans	1.00	acre	60.00	60	
Thresh-Basic Charge	1.00	acre	25.00	25	
Thresh-Weight Charge	37.00	cwt	3.00	111	
Haul Beans	37.00	cwt	0.65	24	
Clean Beans	37.00	cwt	4.75	176	
Fumigate Beans	37.00	cwt	1.00	37	
Grade Beans/lot	37.00	cwt	0.04	1	
Insurance	34.00	cwt	0.25	9	
Storage	34.00	cwt	0.75	26	
Seed:					32
CB46 Certified Seed	32.00	lb	1.00	32	
Inoculant:					2
Rhizobium Inoculant	0.32	pkg	7.19	2	
Herbicide:					15
Prowl H20	2.00	pint	7.62	15	
Insecticide:					69
Warrior II (with Zeon)	3.84	floz	5.25	20	
Dimethoate 2.67	1.50	pint	4.52	7	
Lannate SP	1.00	lb	42.05	42	
Water:					225
Water-Pumped	36.00	acin	6.25	225	
Assessment:					9
CA Dry Bean Advisory Board	34.00	cwt	0.19	6	
Blackeye Council	34.00	cwt	0.07	2	
Labor:					76
Equipment Operator Labor	2.77	hrs	18.20	50	
Non-Machine Labor	1.81	hrs	14.00	25	
Machinery:					79
Fuel-Gas	3.94	gal	4.07	16	
Fuel-Diesel	11.07	gal	3.84	43	
Lube				9	
Machinery Repair				12	
Interest on Operating Capital (5.75%)				9	
TOTAL OPERATING COSTS/ACRE				1,021	
NET RETURNS ABOVE OPERATING COSTS				679	
CASH OVERHEAD COSTS					
Liability Insurance				1	
Office				60	
Property Taxes				124	
Property Insurance				1	
Investment Repairs				6	
TOTAL CASH OVERHEAD COSTS/ACRE				193	
TOTAL CASH COSTS/ACRE				1,214	

UC COOPERATIVE EXTENSION
SAN JOAQUIN VALLEY - SOUTH 2013

Table 2. CONTINUED

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Costs
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Building (2400sqft)				7	
Fuel Tanks/Aboveground				0	
Irrigation System				12	
Land-1,000 acres				582	
Shop Tools				1	
Storage Bldg (chemicals)				1	
Equipment				56	
TOTAL NON-CASH OVERHEAD COSTS				659	
TOTAL COST/ACRE				1,872	
NET RETURNS ABOVE TOTAL COST				-172	

UC COOPERATIVE EXTENSION
SAN JOAQUIN VALLEY - SOUTH 2013

Table 3. MONTHLY CASH COSTS PER ACRE TO PRODUCE BLACK EYE BEANS (single cropped)

Beginning 04-13	APR	MAY	JUN	JUL	AUG	SEP	OCT	TOTAL
Ending 10-13	13	13	13	13	13	13	13	
Cultural:								
Stubble Disc 2X	22							22
Weed - Preplant (Prowl)	21							21
Incorporate Herbicides	6							6
List Beds	6							6
Make Tail-Ditch	1		1	1				4
Pre-irrigate	40							40
Close Tail-Ditch	1		1			1		4
Shape Beds		19						19
Plant Bean (Seed+Rhizobium)		42						42
Cultivate 2X			10					10
Irrigate			56	83	71			210
Insect-Lygyus (Warrior)			32					32
Insect-Lygyus (Dimethoate)				19				19
Insect-Worms (Lannate)					54			54
Pickup Truck Use	6	6	6	6	6	6	6	45
TOTAL Cultural COSTS	105	68	107	110	131	8	6	535
Harvest:								
Cut & Windrow Beans						60		60
Thresh Beans						136		136
Haul Beans To Warehouse						24		24
Clean, Fumigate, Grade							214	214
Insurance, Storage,							34	34
Assessment CDBAB + BE Council							9	9
TOTAL Harvest COSTS	0	0	0	0	0	220	257	477
Interest on Operating Capital (5.75%)	1	1	1	2	2	4	-1	9
TOTAL OPERATING COSTS/ACRE	106	68	108	112	134	231	262	1,021
CASH OVERHEAD								
Liability Insurance			1					1
Office			60					60
Property Taxes				62				124
Property Insurance				1				1
Investment Repairs	1	1	1	1	1	1	1	6
TOTAL CASH OVERHEAD COSTS	1	1	62	63	1	1	1	193
TOTAL CASH COSTS/ACRE	107	69	170	175	135	232	263	1,214

UC COOPERATIVE EXTENSION
SAN JOAQUIN VALLEY - SOUTH 2013

Table 4. RANGING ANALYSIS

COSTS PER ACRE AT VARYING YIELD TO PRODUCE BLACK EYE BEANS (single cropped)

	YIELD (cwt/acre)						
	25.00	28.00	31.00	34.00	37.00	40.00	43.00
OPERATING COSTS/ACRE:							
Cultural Cost	535	535	535	535	535	535	535
Harvest, warehousing, assessments	367	403	440	477	514	551	587
Interest on Operating Capital @ 5.75%	9	9	9	9	9	9	9
TOTAL OPERATING COSTS/ACRE	911	947	984	1,021	1,058	1,095	1,131
TOTAL OPERATING COSTS/CWT	36	34	32	30	29	27	26
CASH OVERHEAD COSTS/ACRE	193	193	193	193	193	193	193
TOTAL CASH COSTS/ACRE	1,104	1,140	1,177	1,214	1,251	1,287	1,324
TOTAL CASH COSTS/CWT	44	41	38	36	34	32	31
NON-CASH OVERHEAD COSTS/ACRE	659	659	659	659	659	659	659
TOTAL COSTS/ACRE	1,762	1,799	1,836	1,872	1,909	1,946	1,982
TOTAL COSTS/CWT	70	64	59	55	52	49	46

NET RETURNS PER ACRE ABOVE OPERATING COSTS

PRICE \$/cwt	YIELD (cwt/acre)						
	25.00	28.00	31.00	34.00	37.00	40.00	43.00
35.00	-36	33	101	169	237	305	374
40.00	89	173	256	339	422	505	589
45.00	214	313	411	509	607	705	804
50.00	339	453	566	679	792	905	1,019
55.00	464	593	721	849	977	1,105	1,234
60.00	589	733	876	1,019	1,162	1,305	1,449
65.00	714	873	1,031	1,189	1,347	1,505	1,664

NET RETURNS PER ACRE ABOVE CASH COSTS

PRICE \$/cwt	YIELD (cwt/acre)						
	25.00	28.00	31.00	34.00	37.00	40.00	43.00
35.00	-229	-160	-92	-24	44	113	181
40.00	-104	-20	63	146	229	313	396
45.00	21	120	218	316	414	513	611
50.00	146	260	373	486	599	713	826
55.00	271	400	528	656	784	913	1,041
60.00	396	540	683	826	969	1,113	1,256
65.00	521	680	838	996	1,154	1,313	1,471

NET RETURNS PER ACRE ABOVE TOTAL COSTS

PRICE \$/cwt	YIELD (cwt/acre)						
	25.00	28.00	31.00	34.00	37.00	40.00	43.00
35.00	-887	-819	-751	-682	-614	-546	-477
40.00	-762	-679	-596	-512	-429	-346	-262
45.00	-637	-539	-441	-342	-244	-146	-47
50.00	-512	-399	-286	-172	-59	54	168
55.00	-387	-259	-131	-2	126	254	383
60.00	-262	-119	24	168	311	454	598
65.00	-137	21	179	338	496	654	813

UC COOPERATIVE EXTENSION
SAN JOAQUIN VALLEY - SOUTH 2013

Table 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
						Insur- ance	Taxes	
13	110 hp 2wd Tractor	107,591	12	26,899	10,254	549	672	11,476
13	170 hp 4wd Tractor	164,469	12	41,119	15,675	840	1,028	17,542
13	Bed Shaper - 6 Row	13,292	15	1,276	1,199	60	73	1,331
13	Disc - Offset 21'	25,879	15	2,485	2,334	116	142	2,592
13	Disc - Stubble 16'	43,558	15	4,182	3,928	195	239	4,362
13	Ditcher - V	8,631	15	829	778	39	47	864
13	Pickup - Used	10,500	5	350	2,345	44	54	2,443
13	Pickup Truck - 1/2	30,000	5	5,600	5,863	145	178	6,186
13	Rear Blade - 8'	4,388	18	292	357	19	23	400
13	Saddle Tank 300Gal	3,218	10	569	366	15	19	400
13	Spray Boom - 25'	4,537	10	802	516	22	27	564
13	Lister - 10 Row	11,333	15	1,088	1,022	51	62	1,135
13	Planter - Air10Row	31,250	15	3,000	2,818	140	171	3,130
13	Cultivator-10 Row	6,875	15	660	620	31	38	689
TOTAL		465,521		89,151	48,076	2,266	2,773	53,115
60% of new cost*		279,313		53,491	28,845	1,360	1,664	31,869

*Used to reflect a mix of new and used equipment

ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead			Total
					Insur- ance	Taxes	Repairs	
INVESTMENT								
Building (2400sqft)	85,000	20	0	6,677	347	425	1,700	9,149
Fuel Tanks/Aboveground	3,500	20	0	275	14	18	70	377
Irrigation System	175,000	25	0	12,107	715	875	3,500	17,197
Land-1000 acres	12,000,000	50	12,000,000	570,000	0	120,000	0	690,000
Shop Tools	15,000	20	0	1,178	61	75	300	1,615
Storage Bldg (chemicals)	8,000	20	0	628	33	40	60	761
TOTAL INVESTMENT	12,286,500		12,000,000	590,866	1,170	121,433	5,630	719,099

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	980	acre	1.37	1,343
Office Expense	980	acre	60.00	58,800

UC COOPERATIVE EXTENSION
 SAN JOAQUIN VALLEY - SOUTH 2013
Table 6. HOURLY EQUIPMENT COSTS (single cropped)

Yr	Description	BEANS Hours Used	Total Hours Used	COSTS PER HOUR						
				Cash Overhead			Operating			
				Capital Recovery	Insur- ance	Taxes	Lube & Repairs	Fuel	Total Oper.	Total Costs/Hr.
13	110 hp 2wd Tractor	33	996	6.18	0.33	0.41	8.62	24.51	33.14	40.05
13	170 hp 4wd Tractor	68	1,326	7.09	0.38	0.47	10.01	37.89	47.89	55.83
13	Bed Shaper - 6 Row	20	123	5.85	0.29	0.36	2.93	0.00	2.93	9.42
13	Disc - Offset 21'	14	133	10.54	0.52	0.64	4.13	0.00	4.13	15.83
13	Disc - Stubble 16'	22	133	17.78	0.88	1.08	6.96	0.00	6.96	26.70
13	Ditcher - V	5	132	3.54	0.18	0.22	2.37	0.00	2.37	6.31
13	Pickup - Used	40	500	2.81	0.05	0.07	2.46	12.21	14.67	17.60
13	Pickup Truck - 1/2	52	666	5.28	0.13	0.16	3.13	15.26	18.39	23.96
13	Rear Blade - 8'	5	167	1.29	0.07	0.08	0.65	0.00	0.65	2.09
13	Saddle Tank 300Gal	7	149	1.47	0.06	0.08	0.87	0.00	0.87	2.48
13	Spray Boom - 25'	7	149	2.07	0.09	0.11	1.23	0.00	1.23	3.50
13	Lister - 10 Row	7	133	4.61	0.23	0.28	2.31	0.00	2.31	7.43
13	Planter - Air10Row	7	80	21.14	1.05	1.28	6.44	0.00	6.44	29.91
13	Cultivator-10 Row	13	133	2.80	0.14	0.17	1.40	0.00	1.40	4.51

UC COOPERATIVE EXTENSION
SAN JOAQUIN VALLEY - SOUTH 2013

Table 7. OPERATIONS WITH EQUIPMENT and MATERIALS (single cropped)

Operation	Operation Month	Tractor	Implement	Labor Type/ Material	Rate/ acre	Unit	
Stubble Disc 2X	Apr	170 hp 4wd Tractor	Disc - Stubble 16'	Equipment Operator Labor	0.32	hour	
Weed - Preplant (Prowl)	Apr	110 hp 2wd Tractor	Saddle Tank 300Gal	Equipment Operator Labor	0.11	hour	
			Spray Boom - 25'	Prowl H2O	2.00	pint	
Incorporate Herbicides	Apr	170 hp 4wd Tractor	Disc - Offset 21'	Equipment Operator Labor	0.10	hour	
	Apr	170 hp 4wd Tractor	Lister - 10 Row	Equipment Operator Labor	0.10	hour	
Make Tail-Ditch	Apr	110 hp 2wd Tractor	Ditcher - V	Equipment Operator Labor	0.02	hour	
	June	110 hp 2wd Tractor	Ditcher - V	Equipment Operator Labor	0.02	hour	
	July	110 hp 2wd Tractor	Ditcher - V	Equipment Operator Labor	0.02	hour	
Pre-irrigate	Apr			Non-Machine Labor	0.21	hour	
				Water-Pumped	6.00	acin	
Close Tail-Ditch	Apr	110 hp 2wd Tractor	Rear Blade - 8'	Equipment Operator Labor	0.02	hour	
	June	110 hp 2wd Tractor	Rear Blade - 8'	Equipment Operator Labor	0.02	hour	
	Sept	110 hp 2wd Tractor	Rear Blade - 8'	Equipment Operator Labor	0.02	hour	
Shape Beds	Apr	170 hp 4wd Tractor	Bed Shaper - 6 Row	Equipment Operator Labor	0.30	hour	
Plant Bean (Seed+Rhizobium)	Apr	170 hp 4wd Tractor	Planter - Air10Row	Equipment Operator Labor	0.11	hour	
				CB46 Certified Seed	32.00	lb	
				Rhizobium Inoculant	0.32	pkg	
Cultivate 2X	June	110 hp 2wd Tractor	Cultivator-10 Row	Equipment Operator Labor	0.10	hour	
	July	110 hp 2wd Tractor	Cultivator-10 Row	Equipment Operator Labor	0.10	hour	
Irrigate	June			Non-Machine Labor	0.20	hour	
				Water-Pumped	4.00	acin	
	June				Non-Machine Labor	0.20	hour
					Water-Pumped	4.00	acin
	July				Non-Machine Labor	0.20	hour
					Water-Pumped	4.00	acin
	July				Non-Machine Labor	0.20	hour
					Water-Pumped	4.00	acin
	July				Non-Machine Labor	0.20	hour
					Water-Pumped	4.00	acin
	Aug				Non-Machine Labor	0.20	hour
					Water-Pumped	4.00	acin
Aug				Non-Machine Labor	0.20	hour	
				Water-Pumped	4.00	acin	
Insect-Lygus (Warrior)	June			Warrior II (with Zeon)	3.84	floz	
				Air Apply Hel 5gal	1.00	acre	
Insect-Lygus (Dimethoate)	July			Dimethoate 2.67	1.50	pint	
				Air Apply Hel 5gal	1.00	acre	
Insect-Worms (Lannate)	Aug			Lannate SP	1.00	lb	
				Air Apply Hel 5gal	1.00	acre	
Pickup Truck Use	Aug		Pickup Truck - 1/2	Equipment Operator Labor	0.78	hour	
	Aug		Pickup - Used	Equipment Operator Labor	0.60	hour	