
UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2002

**SAMPLE COSTS
TO ESTABLISH AND PRODUCE
Boysenberries**



San Joaquin Valley-Northern
Stanislaus County

Edward J. Perry
Karen M. Klonsky

UC Cooperative Extension Farm Advisor, Stanislaus County
UC Cooperative Extension Specialist, Department of Agricultural and Resource
Economics, UC Davis

Jeffrey J. Shimada

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

Cooperator:

Ron Vella, Vella Farms, Modesto, CA

**SAMPLE COST TO ESTABLISH
AND PRODUCE BOYSENBERRIES**

**Drip Irrigation
SAN JOAQUIN VALLEY
Stanislaus County – 2002**

CONTENTS

INTRODUCTION.....	2
ASSUMPTIONS.....	3
Establishment Operating Costs.....	3
Production Operating Costs.....	5
Cash Overhead Costs.....	7
Non-Cash Overhead Costs.....	7
REFERENCES.....	9
Table 1. SAMPLE COSTS PER ACRE TO ESTABLISH BOYSENBERRIES.....	10
Table 2. COSTS PER ACRE TO PRODUCE BOYSENBERRIES.....	12
Table 3. COSTS AND RETURNS PER ACRE TO PRODUCE BOYSENBERRIES.....	13
Table 4. MONTHLY CASH COSTS – BOYSENBERRIES.....	14
Table 5. WHOLE FARM EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS.....	15
Table 6. HOURLY EQUIPMENT COSTS.....	16
Table 7. RANGING ANALYSIS.....	17

INTRODUCTION

Sample costs to establish and produce boysenberries under drip irrigation in the San Joaquin Valley – Stanislaus County are presented in this study. 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 production practices considered typical for the crop and area, but these same practices will not apply to every situation. The sample costs for labor, materials, equipment and custom services are based on current figures. A blank column, “*Your Costs*”, in Tables 2 and 3 is provided for entering 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 or your local UC Cooperative Extension office.

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

The University of California, Cooperative Extension in compliance with Titles VI and VII of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Sections 503 and 504 of the Rehabilitation Act of 1973 does not discriminate on the basis of race, religion, color, national origins, sex, mental or physical handicaps or age in any of its programs or activities, or with respect to any of its employment policies, practices or procedures. Nor does the University of California does not discriminate on the basis of ancestry, sexual orientation, marital status, citizenship, medical condition (as defined in section 12926 of the California Government Code) or because the individuals are disabled or Vietnam era veterans (as defined the Vietnam Era Veterans Readjustment Act of 1974 and Section of the California Government Code). Inquiries regarding this policy may be directed to the Affirmative Action Director, University of California, Agriculture and Natural Resources, 300 Lakeside Drive, Oakland, California 94612-3560, (510) 987-0097.

University of California and the United States Department of Agriculture, Federal Crop Insurance Program cooperating.

ASSUMPTIONS

The assumptions refer to Tables 1 to 7 and pertain to sample costs to establish and produce boysenberries in northern Stanislaus County of the San Joaquin Valley. Practices described are not University of California recommendations, but represent production practices and materials considered typical of a well-managed berry farm in the region. The costs, materials, and practices shown in this study will not be applicable to all situations. Establishment and cultural practices vary by grower and the differences can be significant. *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.*

Farm. The hypothetical farm is owned, managed and operated by the grower. The 40 contiguous acre farm consists of 15 acres of boysenberries, 15 acres of fruit trees, and 5 acres of strawberries and fresh market tomatoes. The remaining five acres consists of roads, irrigation systems, and farmstead.

Establishment Operating Costs (Table 1.)

Land Preparation. The boysenberries are planted on land previously in alfalfa. The land is disked and ripped twice, 18-24 inches deep, to break up hardpan, improve root and water penetration. Afterward, the ground is disked two times, triplaned and fumigated with methyl bromide. Operations done in the year prior to planting are shown in the first year. The ripping and methyl bromide application are custom hired.

Plants. Four-inch tissue cultured boysenberry plants are transplanted flat on 8 foot row spacing, 600 feet long. The plants are spaced 3-feet apart within the row for a plant population of 1,800 plants per acre. When the fruiting canes are long enough, they are hung and wrapped on a trellis system. Boysenberries will reach full production in the fourth year and will produce for several years, 10 years in this study.

Planting. Planting in this study starts in April and begins by marking and laying out the field plot. The trellis and drip irrigation systems are installed before planting begins. The drip lines are turned on prior to planting to pre-irrigate and mark the proper location for hand planting.

Trellis System. The trellis system is 4.5 feet tall with three wires. The first wire is placed 1.5 feet from the ground and will be used to hang the drip line. The second wire is positioned 1-foot above the first and the third is attached to the top of the stake posts. Only the top two wires will be used to wrap or hang the fruiting canes. The system in this study utilizes 2" x 2" Douglas fir stakes at 20-foot intervals with 6" round, pressure treated Douglas fir posts at row ends to anchor the wires.

The system is considered part of the planting since it will be removed when the boysenberry patch is no longer productive. Therefore it is included in the establishment cost. The trellis system and drip lines are installed prior to planting time.

Pruning/Wrapping. The first pruning during establishment begins in November. Pruning in this study includes pruning, tipping, and wrapping the fruiting canes on the trellis. Tipping, or removing the end of the canes promotes lateral growth, as canes not tipped will continue to elongate. The prunings are placed in between the plant rows and chopped with a shredder and disked.

Irrigation. A drip irrigation system is used in this study. The farm has a well with a 20 hp electric pump that irrigates all the crops on the farm. Growers in the area also have water districts that supply irrigation water during the season. No assumption is made about effective rainfall. During the production years, the grower will utilize irrigation water from the water district to supplement irrigation needs for flood irrigation. This irrigation occurs at fruit sizing in late May. The amount of water applied to the boysenberries each year varies depending on climatic and soil conditions.

Pest Management. The pesticides and rates mentioned in this cost study as well as other materials available are listed in *UC Integrated Pest Management Guidelines-Caneberries*. Pesticides mentioned in the study are commonly used, but are not recommendations.

Insects. Insects that can cause economic loss for boysenberries are red berry mites, thrips, raspberry horntail, cutworm, whitefly, aphids, leafhoppers, and the omnivorous leaf roller.

Diseases. Boysenberry patches can be susceptible to many diseases during its establishment and productive years. These diseases that can affect boysenberry productivity are verticillium wilt, crown gall, powdery mildew, septoria cane and leaf spot, cane dieback, botrytis, yellow rust and downy mildew (dry berry disease). Methyl bromide soil fumigation prior to planting will aid in keeping verticillium wilt and crown gall under control.

Weeds. The practice of methyl bromide fumigation prior to planting a new boysenberry patch will suppress existing weeds, seeds, nematodes and soil borne pathogens. The row centers are cultivated once during the establishment year. The berry rows are strip sprayed with a residual herbicide such as Devrinol 50 DF in January of the following year. Summer weed control along the berry rows are controlled with a single hand hoeing.

Fertilization. A total of 220 pounds of nitrogen fertilizer will be applied during the establishment year. Five pounds of CAN 17 fertilizer is injected through the drip irrigation system weekly from planting time until September. After pruning and wrapping the primary fruiting canes in November, 100 pounds of UN 32 is applied.

Harvesting. During the first year, no berries are harvested. Harvest begins in the second year and the crop is hand harvested. Hauling to the market and processor is the responsibility of the grower.

Yield. Typical annual yields for boysenberries in Stanislaus County are shown in Table A.

Year:	1	2	3	4
Tons/Ac:	0	5	10	12

Production Operating Costs

(Tables 2 – 7)

Pruning. The pruning operation begins immediately after harvest season ends in July. The old fruiting canes, which produced the previous crop, are removed and placed in the centers and chopped with a brush shredder and disked. The new fruiting canes are tipped and then wrapped on the trellis. Also a winter pruning is performed in November. Winter pruning consists of removing unwanted lateral growth below the bottom wire and trellising additional fruiting canes formerly too short to hang earlier.

Irrigation. The drip irrigation system is the primary method of irrigation for the berries during the season with the exception of a single flood irrigation in May, when the berries are in the sizing or swelling stage. When flood irrigating, the producer will contract water from the local irrigation district. No assumption is made about effective rainfall. Irrigation begins in February and ends in November after winter pruning. In this study, it is assumed the producer will use a total of 3.5 acre-foot of water at a cost of \$130/acre.

Fertilization. Boysenberries require in excess of 200 pounds of actual nitrogen per acre during the year. Fifteen pounds of nitrogen (UN 32 fertilizer) is applied every other week in the months of April, May, June, and August. In July, after the pruning operation, 50 pounds of total material of 4-10-10 fertilizer is applied. Another application of UN 32 is applied in November after winter pruning is completed. All fertilizer applications are injected through the drip irrigation system.

Pest Management. The pesticides and rates mentioned in this cost study are listed in *UC Integrated Pest Management Guidelines-Caneberries*. **Pesticides mentioned in the study are not recommendations, but those commonly used in the region.** 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.

Pest Control Advisor (PCA). Written recommendations are required for many pesticides and are made by licensed pest control advisors. In addition the PCA will monitor the field for agronomic problems including pests and nutrition. Growers may hire private PCA's or receive the service as part of a service agreement with an agricultural chemical and fertilizer company. The private PCA in this study monitors the field for agronomic problems, pest, and diseases.

Weeds. In this berry patch, weeds are controlled with Devrinol 50 DF applied as a 4-foot strip spray during January. Additional weed control is accomplished with a shallow pass with a rototiller and a single hand hoeing.

Insects. Red berry mites are controlled when the boysenberry's first shoot are 2" long. Two applications of liquid lime sulfur are applied in March to control the mites. If left uncontrolled, red berry mite damage results in abnormal ripening of the fruit. The grower applies liquid lime sulfur with a tractor and pull-tank sprayer. Other insects that can cause economic loss are thrips, raspberry horntail, cutworms, whitefly, aphids, leafhoppers, and omnivorous leaf roller, but are not included in this study.

Diseases. A copper spray is applied in December for control or prevention of blight diseases, such as septoria cane and leaf spot. If approved by the local agricultural commissioner's office, a fungicide (Aliette), is applied for control of downy mildew in May.

Harvest. Boysenberry harvest period is relatively short and runs from mid-June to early July. The crew will hand harvest the berries every 4 days until the conclusion of the season. Boysenberries are picked only during the morning hours of the day, as the berries become soft in the afternoon heat. The picking crew fills small crates with approximately 6.5 pounds of berries for fresh market and 14 pounds of berries for processing. The berries are shipped to the market or processor the same day, as shelf-life is less than two days.

Yields. Yield maturity is reached in the fourth year. An assumed yield of 12 tons per acre is used to calculate returns in the production years. Typical yield range for boysenberries grown from tissue-cultured stock is 10-12 tons per acre. Annual yields are measured in tons as shown in Table A.

Returns. Return prices per pound for boysenberries are \$1.60 per pound processed (frozen) and \$2.30 per pound retail. Use of return prices for boysenberries is for calculating net returns to growers at different yields and price as shown in Table 7. An average price of \$3,900 per ton for boysenberries is used in this study. The grower will retail (fresh market) 50% of the crop and process the remaining 50%. A processing charge of \$0.25 per pound is charged to the grower for individual quick freezing (IQF).

Pickup. The grower uses the pickup for business and personal use. The assumed business use is 12,000 miles per year for the ranch.

Labor. Hourly wages for workers are \$10.50 for machine operators and \$6.75 per hour non-machine labor. Adding 34% for the employers share of federal and state payroll taxes, insurance, and other possible benefits gives the labor rates shown of \$14.07 and \$9.05 per hour for machine labor and non-machine labor, respectively. Labor for operations involving machinery are 20% higher than the operation time given in Table 2 to account for the extra labor involved in equipment set up, moving, maintenance, work breaks, and field repair.

Equipment Operating Costs. Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by ASAE. Fuel and lubrication costs are also determined by ASAE equations based on maximum PTO horsepower, and fuel type. Prices for on-farm delivery of diesel and gasoline are \$1.26 and \$1.51 per gallon, respectively. The fuel, lube, and repair cost per acre for each operation in Table 2 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 7.40% 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.

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.

Cash Overhead Costs

(Tables 1-7)

Cash overhead consists of various cash expenses paid out during the year that are assigned to the whole farm and not to a particular operation. These costs include property taxes, interest on operating capital, office expense, liability and property insurance, sanitation services, equipment repairs, and management.

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 0.660% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$504 for the entire farm.

Office Expense. Office and business expenses are estimated at \$300 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, shop and office utilities, and miscellaneous administrative charges.

Sanitation Services. Sanitation services provide two portable toilets for the farm and cost the farm \$3,600 annually. The cost includes two double toilets units with washbasins, delivery and 12 months of weekly service.

Investment Repairs. Annual maintenance is calculated as 2 percent of the purchase price.

Non-Cash Overhead Costs

Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments. Farm equipment in the region is purchased new or used.

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). 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 (tractors and implements) 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 (ASAE) based on equipment type and years of life. The life in years is estimated by dividing the wear out life, as given by ASAE by the annual hours of use in this 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 used and the life of the machine.

Interest Rate. The interest rate of 6.41% used to calculate capital recovery cost is the USDA-ERS's ten-year average of California's agricultural sector long-run rate of return to production assets from current income. It is used to reflect the long-term realized rate of return to these specialized resources that can only be used effectively in the agricultural sector. In other words, the next best alternative use for these resources is in another agricultural enterprise.

Establishment Cost. Costs to establish the boysenberry patch are used to determine capital recovery expenses, depreciation, and interest on investment for the production years. Establishment cost is the sum of the costs for land preparation, trellis system, boysenberry plants, planting, cash overhead and production expenses for growing the berries the first year. The Total Accumulated Net Cash Cost on Table 1, in the second year represents the establishment cost. For this study the cost is \$7,345 per acre or \$110,1756/7/2002 for the 15-acre boysenberry patch. The establishment cost is spread over the remaining 9 years of the 10 years the boysenberries are in production.

Irrigation System. The irrigation system is assumed to have a well that has been refurbished. A new pump, motor, and filtration/injector station is being installed along with the drip irrigation system during planting. The well, 20 hp electric motor, pump, filtration station, fertilizer injector system, drip lines and the labor to install the components are included in the irrigation system cost. Water is pumped from a 300-foot depth. The irrigation system is considered an improvement to the property and has a 25-year life.

Land. Bare land is valued at \$8,000 per acre.

Building. The shop building is a 40'X 60' metal building on a cement slab.

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

Fuel Tanks. 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.

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 Tables 3 and 8. 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 Farm Managers and Rural Appraisers. 2001. *Trends in Agricultural Land & Lease Values*. California Chapter of the American Society of Farm Managers and Rural Appraisers. Woodbridge, CA.
- American Society of Agricultural Engineers. 1994. *American Society of Agricultural Engineers Standards Yearbook*. Russell H. Hahn and Evelyn E. Rosentreter (ed.) St. Joseph, MO. 41st edition.
- Boelje, Michael D., and Vernon R. Eidman. 1984. *Farm Management*. John Wiley and Sons. New York, NY.
- Browne, Todd. 1990. Growing and Marketing Boysenberry in California. Field Manager, Knott's Berry Farm Foods, Unpublished.
- La Vine, Paul D. 1977. Growing Boysenberries and Olallie Blackberries. Leaflet 2441. Division of Agricultural Sciences, University of California.
- Statewide IPM Project. 2000. "UC Pest Management Guidelines, Caneberries". In M. L. Flint (ed.) *UC IPM Pest Management Guidelines*. Pub. 3339. IPM Education and Publication. University of California, Division of Agriculture and Natural Resources. Oakland, CA.
- United States Department of Agriculture-Economic Reporting Service. *Farm Financial Ratios Indicating Solvency and Profitability 1960 – 99, California*. 2001.
www.ers.usda.gov/data/farbalancesheet/fbsdmu.htm. Internet; accessed January 4, 2002.

For information concerning the above or other University of California publications, contact UC DANR Communications Services at 1-800-994-8849, online at www.ucop.edu, or your local county UC Cooperative Extension office.

UC COOPERATIVE EXTENSION
Table 1. SAMPLE COSTS PER ACRE TO ESTABLISH BOYSENBERRY
 SAN JOAQUIN VALLEY NORTH – Stanislaus County 2002

Year:	Cost Per Acre	
	1st	2nd
Tons Per Acre:	0.0	5.0
Planting Costs:		
Land Preparation - Disc 1X	6	0
Land Preparation-Rip 2X:Custom	24	0
Land Preparation - Disc 2X	12	0
Land Preparation – Triplane 2X	11	0
Land Preparation – Fumigate	2,200	0
Install Trellis System	670	0
Install Drip Irrigation System	584	0
Plant boysenberry transplants	65	0
Boysenberry Transplants @ \$1.00 each	1,800	0
Pre-irrigate	14	0
TOTAL PLANTING COSTS	5,386	0
Cultural Costs:		
Fertilizer	59	69
Hand Weeding	5	5
Roto-till Alley way	10	10
Weed Control – Herbicide	0	29
Insect Control – Miticide	28	37
Disease Control – Fungicide	75	75
Irrigate – Drip	137	140
Irrigate – Flood	0	1
Prune/Tip/Wrap Fruiting Canes	0	2,407
Shred Pruning	0	5
Disk – 1X	0	5
Winter Pruning	724	724
Shred Pruning	5	5
Disk – 1X	5	5
Disease Control – Copper Spray	20	20
Pickup Truck Use	29	29
TOTAL CULTURAL COSTS	1,097	3,548
Harvest Costs:		
Hand Harvest Berries-Fresh	0	1,994
Hand Harvest Berries-Processing (Frozen)	0	1,753
Haul Berries to Market/Processing	0	24
Freezing-Individual Quick Freeze (IQF)	0	1,250
TOTAL HARVEST COSTS	0	5,021
Interest On Operating Capital @ 7.40%	413	261
TOTAL OPERATING COSTS/ACRE	6,896	8,830

UC COOPERATIVE EXTENSION

Table 1. - continued

Year	Cost Per Acre	
	1st	2nd
Tons Per Acre	0.0	5.0
Cash Overhead Costs:		
Office Expense	300	300
Sanitation Fees	90	90
Liability Insurance	13	13
Property Taxes	31	25
Property Insurance	19	15
Investment Repairs	172	172
TOTAL CASH OVERHEAD COSTS	625	615
TOTAL CASH COSTS/ACRE	7,521	9,445
INCOME/ACRE FROM PRODUCTION		9,621
NET CASH COSTS/ACRE FOR THE YEAR	7,521	9,445
PROFIT/ACRE ABOVE CASH COSTS		176
ACCUMULATED NET CASH COSTS/ACRE	7,521	7,345
Non-Cash Overhead Costs:		
Capital Recovery Cost:		
Shop Building	131	131
Shop Tools	29	29
Fuel Tank & Pump	43	43
Well w/20 hp Pump	63	40
Drip Irrigation System	40	69
Berry Crop Establishment	0	63
Land @ \$8,000/Acre	13	13
Equipment	179	28
TOTAL INTEREST ON INVESTMENT	498	416
TOTAL COST/ACRE FOR THE YEAR	8,019	9,861
INCOME/ACRE FROM PRODUCTION		176
TOTAL NET COST/ACRE FOR THE YEAR	8,019	9,685
TOTAL ACCUMULATED NET COST/ACRE	8,019	17,704

UC COOPERATIVE EXTENSION
Table 2. COSTS PER ACRE to PRODUCE BOYSENBERRY
 SAN JOAQUIN VALLEY NORTH – Stanislaus County 2002

Operation	Operation Time (Hrs/A)	Cash and Labor Cost per acre					Total Cost	Your Cost
		Labor Cost	Fuel,Lube & Repairs	Material Cost	Custom/ Rent			
Cultural:								
Roto-till Alley way	0.40	7	3	0	0	10		
Weed Control-Herbicide	0.39	7	3	20	0	29		
Irrigate-Drip	0.00	0	0	66	0	66		
Hand Weeding	0.53	5	0	0	0	5		
Insect Control-Miticide	0.78	13	5	19	0	37		
Fertilize/Drip Irrigate	0.00	0	0	99	0	99		
Disease Control-Fungicide	0.39	7	3	66	0	75		
Irrigate-Flood	0.00	0	0	1	0	1		
Prune/Tip/Wrap	266.00	2,407	0	0	0	2,407		
Shred Prunings	0.37	6	3	0	0	9		
Disk-1X	0.43	7	3	0	0	10		
Winter pruning	79.99	724	0	0	0	724		
Drip Irrigation/Fertilize UN32	0.00	0	0	35	0	35		
Disease Control-Copper Spray	0.39	7	3	10	0	20		
Pickup Truck Use	1.33	23	7	0	0	29		
TOTAL CULTURAL COSTS	351.01	3,212	28	316	0	3,556		
Harvest:								
Pick Berries by Hand-Retail	144.00	1,303	0	1,663	0	2,966		
Pick Berries by Hand-Process	144.00	1,303	0	1,073	0	2,376		
Haul Berries to Market/Process	1.00	17	7	0	0	24		
Processing:Freezing (IQF)	0.00	0	0	3,000	0	3,000		
TOTAL HARVEST COSTS	289.00	2,623	7	5,736	0	8,366		
Interest on operating capital @7.40%						281		
TOTAL OPERATING COSTS/ACRE		5,835	36	6,051	0	12,203		
TOTAL OPERATING COSTS/TON						2,034		
CASH OVERHEAD:								
Liability Insurance						13		
Office Expense						300		
Sanitation Facility						90		
Property Taxes						25		
Property Insurance						15		
Investment Repairs						172		
TOTAL CASH OVERHEAD COSTS						614		
TOTAL CASH COSTS/ACRE						12,817		
TOTAL CASH COSTS/TON						2,136		
NON-CASH OVERHEAD:								
		Per producing		Annual Cost				
Investment		Acre		Capital Recovery				
Shop Building		1,500		131		131		
Shop Tools		327		29		29		
Fuel Tanks & Pumps		496		43		43		
Drip Irrigation System		497		40		40		
Berry Crop Establishment		502		69		69		
Well w/20 hp Pump		775		63		63		
Land		200		13		13		
Equipment		214		29		29		
TOTAL NON-CASH OVERHEAD COSTS		4,510		418		418		
TOTAL COSTS/ACRE						13,235		
TOTAL COSTS/TON						2,206		

UC COOPERATIVE EXTENSION
Table 3. COSTS AND RETURNS PER ACRE to PRODUCE BOYSENBERRY
 SAN JOAQUIN VALLEY NORTH – Stanislaus County 2002

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Retail-Fresh Market	6.00	ton	4,600.00	27,600	
Process-Frozen	6.00	ton	3,200.00	19,200	
TOTAL GROSS RETURNS FOR BOYSENBERRY				46,800	
OPERATING COSTS					
Herbicide:					
Devrinol 50 DF	2.00	lb	10.02	20	
Irrigation:					
Water-Drip Irrigation	3.36	acft	39.00	131	
Water-Flood Irrigation	0.22	acft	5.00	1	
Miticide:					
Liquid Lime Sulfur	15.00	gal	1.25	19	
Fertilizer:					
UN 32	69.80	gal	0.92	64	
4-10-10	4.76	lb N	0.98	5	
Fungicide:					
Aliette WDG	5.00	lb	13.11	66	
Kocide 101	4.00	lb	2.59	10	
Harvest:					
Tray w/12 shells	1,848.00	flat	0.90	1,663	
Plastic Crate:Processing	858.00	crate	1.25	1,073	
Process:Freezing	12,000.00	lb	0.25	3,000	
Labor (machine)	6.59	hrs	14.07	93	
Labor (non-machine)	634.52	hrs	9.05	5,742	
Fuel - Gas	5.17	gal	1.51	8	
Fuel - Diesel	9.37	gal	1.26	12	
Lube				3	
Machinery Repair				13	
Interest on Operating Capital @ 7.40%				281	
TOTAL OPERATING COSTS/ACRE				12,203	
TOTAL OPERATING COSTS/TON				2,034	
NET RETURNS ABOVE OPERATING COSTS				34,597	
CASH OVERHEAD COSTS:					
Liability Insurance				13	
Office Expense				300	
Sanitation Facility				90	
Property Taxes				25	
Property Insurance				15	
Investment Repairs				172	
TOTAL CASH OVERHEAD COSTS/ACRE				614	
TOTAL CASH COSTS/ACRE				12,817	
TOTAL CASH COSTS/TON				2,136	
NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY):					
Shop Building				131	
Shop Tools				29	
Fuel Tanks & Pumps				43	
Drip Irrigation System				40	
Berry Crop Establishment				69	
Well w/20 hp Pump				63	
Land				13	
Equipment				29	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				418	
TOTAL COSTS/ACRE				13,235	
NET RETURNS ABOVE TOTAL COSTS				33,565	

UC COOPERATIVE EXTENSION
Table 4. MONTHLY CASH COSTS PER ACRE to PRODUCE BOYSENBERRY
 SAN JOAQUIN VALLEY NORTH – Stanislaus County 2002

Beginning JUL 01 Ending JUN 02	JUL 01	AUG 01	SEP 01	OCT 01	NOV 01	DEC 01	JAN 02	FEB 02	MAR 02	APR 02	MAY 02	JUN 02	TOTAL
Cultural:													
Roto-till Alley way							10						10
Weed Control-Herbicide							29						29
Irrigate-Drip	9	9		9				9	9	9		9	66
Hand Weeding									5				5
Insect Control-Miticide									19	19			37
Fertilize/Drip Irrigate	14	17	17							17	17	17	99
Disease Control-Fungicide										75			75
Irrigate-Flood											1		1
Prune/Tip/Wrap	2,407												2,407
Shred Prunings	5				5								9
Disk-1X	5				5								10
Winter Pruning					724								724
Drip Irrigation/Fertilize					35								35
Disease Control-Copper Spray						20							20
Pickup Truck Use	2	2	2	2	2	2	2	2	2	2	2	2	29
TOTAL CULTURAL COSTS	2,443	29	20	12	771	22	41	12	35	122	21	29	3,556
Harvest:													
Pick Berries by Hand-Retail												2,966	2,966
Pick Berries by Hand-Process (Frozen)												2,376	2,376
Haul Berries to Market/Process												24	24
Processing:Freezing (IQF)												3,000	3,000
TOTAL HARVEST COSTS												8,366	8,366
Interest on Operating Capital	15	15	15	15	20	20	21	21	21	22	22	22	281
TOTAL OPERATING COSTS/ACRE	2,458	44	35	27	791	42	62	32	56	144	42	8,468	12,203
TOTAL OPERATING COSTS/TON	410	7	6	5	132	7	10	5	9	24	7	1,411	2,034
OVERHEAD:													
Liability Insurance							13						13
Office Expense	25	25	25	25	25	25	25	25	25	25	25	25	300
Sanitation Facility	8	8	8	8	8	8	8	8	8	8	8	8	90
Property Taxes	13						13						25
Property Insurance				8						8			15
Investment Repairs	14	14	14	14	14	14	14	14	14	14	14	14	172
TOTAL CASH OVERHEAD COSTS	59	47	47	54	47	47	72	47	47	54	47	47	614
TOTAL CASH COSTS/ACRE	2,517	91	82	82	838	89	134	79	103	199	89	8,515	12,817
TOTAL CASH COSTS/TON	419	15	14	14	140	15	22	13	17	33	15	1,419	2,136

UC COOPERATIVE EXTENSION
 Table 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT,
 and BUSINESS OVERHEAD COSTS
 SAN JOAQUIN VALLEY NORTH – Stanislaus County 2002

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
						Insur- ance	Taxes	
02	1/2 Ton Pickup	20,565	5	9,217	3,315	98	149	3,562
02	1 Ton Pickup	30,000	7	11,380	4,114	137	207	4,457
02	Disk-5 ft	2,500	10	442	313	10	15	338
02	JD 5320N Tractor	28,000	10	8,271	3,263	120	181	3,564
02	Rotavator-5 ft	3,719	10	658	466	14	22	503
02	Shredder-5 ft	3,837	10	679	481	15	23	518
02	Sprayer-Pull 300gl	4,900	10	867	614	19	29	662
TOTAL		93,521		31,514	12,566	413	625	13,604
60% of New Cost *		56,113		18,908	7,540	248	375	8,163

*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								
Berry Crop Establishment	7,524	10		1,042	25	38	0	1,105
Drip Irrigation System	19,880	25		1,616	66	99	2,035	3,816
Fuel Tanks & Pumps	19,835	20	1,984	1,736	72	109	397	2,314
Land	8,000	25	8,000	513	0	80	0	593
Shop Building	60,000	20	6,000	5,250	218	330	1,200	6,998
Shop Tools	13,072	20	1,307	1,144	47	72	131	1,394
Well w/20 hp Pump	31,000	25		2,520	102	155	3,100	5,878
TOTAL INVESTMENT	159,311		17,291	13,822	530	883	6,863	22,098

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	40	acre	12.60	504
Office Expense	40	acre	300.00	12,000
Sanitation Facility	40	acre	90.00	3,600

UC COOPERATIVE EXTENSION
Table 6. HOURLY EQUIPMENT COSTS
 SAN JOAQUIN VALLEY NORTH - STANISLAUS COUNTY 2002

Yr	Description	Actual Hours Used	COSTS PER HOUR						Total Costs/Hr.
			Capital Recovery	Cash Overhead		Operating			
				Insur- ance	Taxes	Repairs	Fuel & Lube	Total Oper.	
02	1/2 Ton Pickup	380.00	5.23	0.16	0.24	1.52	3.47	4.99	10.62
02	1 Ton Pickup	250.00	9.87	0.33	0.50	2.76	4.34	7.10	17.80
02	Disk-5 ft	189.40	0.99	0.03	0.05	0.4	0.00	0.40	1.47
02	JD 5320N	1,168.10	1.68	0.06	0.09	1.27	3.91	5.18	7.01
02	Rotavator-5 ft	140.10	2.00	0.06	0.09	1.08	0.00	1.08	3.23
02	Shredder-5 ft	190.50	1.51	0.05	0.07	1.82	0.00	1.82	3.45
02	Sprayer-Pull 300gl	149.30	2.47	0.08	0.12	1.31	0.00	1.31	3.97

UC COOPERATIVE EXTENSION
Table 7. RANGING ANALYSIS
 SAN JOAQUIN VALLEY NORTH – Stanislaus County 2002

COSTS PER ACRE AT VARYING YIELD TO PRODUCE BOYSENBERRY

	YIELD (tons/acre)						
	6.00	8.00	10.00	12.00	13.00	14.00	15.00
OPERATING COSTS/ACRE:							
Cultural Cost	3,556	3,556	3,556	3,556	3,556	3,556	3,556
Harvest Cost	8,366	11,155	13,943	16,732	18,127	19,521	20,915
Interest on operating capital	281	298	315	332	341	349	358
TOTAL OPERATING COSTS/ACRE	12,203	15,009	17,815	20,620	22,023	23,426	24,829
TOTAL OPERATING COSTS/TON	1,017	938	891	859	847	837	828
CASH OVERHEAD COSTS/ACRE							
TOTAL CASH COSTS/ACRE	12,817	15,623	18,429	21,236	22,639	24,042	25,445
TOTAL CASH COSTS/TON	1,068	976	921	885	871	859	848
NON-CASH OVERHEAD COSTS/ACRE							
TOTAL COSTS/ACRE	13,235	16,044	18,853	21,662	23,067	24,471	25,875
TOTAL COSTS/TON	1,103	1,003	943	903	887	874	863

NET RETURNS PER ACRE ABOVE OPERATING COSTS for BOYSENBERRY

PRICE (\$/ton)		YIELD (tons/acre)						
Retail		6.0	8.0	10.0	12.0	13.0	14.0	15.0
	Process	6.0	8.0	10.0	12.0	13.0	14.0	15.0
3,700	2,300	23,797	32,991	42,185	51,380	55,977	60,574	65,171
4,000	2,600	27,397	37,791	48,185	58,580	63,777	68,974	74,171
4,300	2,900	30,997	42,591	54,185	65,780	71,577	77,374	83,171
4,600	3,200	34,597	47,391	60,185	72,980	79,377	85,774	92,171
4,750	3,350	36,397	49,791	63,185	76,580	83,277	89,974	96,671
4,900	3,500	38,197	52,191	66,185	80,180	87,177	94,174	101,171
5,150	3,650	40,597	55,391	70,185	84,980	92,377	99,774	107,171

NET RETURNS PER ACRE ABOVE CASH COSTS for BOYSENBERRY

PRICE (\$/ton)		YIELD (tons/acre)						
Retail		6.0	8.0	10.0	12.0	13.0	14.0	15.0
	Process	6.0	8.0	10.0	12.0	13.0	14.0	15.0
3,700	2,300	23,183	32,377	41,571	50,764	55,361	59,958	64,555
4,000	2,600	26,783	37,177	47,571	57,964	63,161	68,358	73,555
4,300	2,900	30,383	41,977	53,571	65,164	70,961	76,758	82,555
4,600	3,200	33,983	46,777	59,571	72,364	78,761	85,158	91,555
4,750	3,350	35,783	49,177	62,571	75,964	82,661	89,358	96,055
4,900	3,500	37,583	51,577	65,571	79,564	86,561	93,558	100,555
5,150	3,650	39,983	54,777	69,571	84,364	91,761	99,158	106,555

NET RETURNS PER ACRE ABOVE TOTAL COSTS for BOYSENBERRY

PRICE (\$/ton)		YIELD (tons/acre)						
Retail		6.0	8.0	10.0	12.0	13.0	14.0	15.0
	Process	6.0	8.0	10.0	12.0	13.0	14.0	15.0
3,700	2,300	22,765	31,956	41,147	50,338	54,933	59,529	64,125
4,000	2,600	26,365	36,756	47,147	57,538	62,733	67,929	73,125
4,300	2,900	29,965	41,556	53,147	64,738	70,533	76,329	82,125
4,600	3,200	33,565	46,356	59,147	71,938	78,333	84,729	91,125
4,750	3,350	35,365	48,756	62,147	75,538	82,233	88,929	95,625
4,900	3,500	37,165	51,156	65,147	79,138	86,133	93,129	100,125
5,150	3,650	39,565	54,356	69,147	83,938	91,333	98,729	106,125