UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2003

SAMPLE COSTS TO PRODUCE FRESH MARKET RASPBERRIES

Central Coast
Santa Cruz and Monterey Counties

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INTRODUCTION

The sample costs to produce raspberries in Santa Cruz and Monterey Counties are presented 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. The practices described are based on production procedures considered typical for this crop and area, and may therefore not apply to every farm. Sample costs for labor, materials, equipment and custom services are based on current figures. A blank column, "*Your Cost*", is provided to enter your actual costs on the tables at the end of this report.

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

Sample Cost of Production studies for many commodities from 1931 to the present are available and can be requested through the Department of Agricultural and Resource Economics, UC Davis, (530) 752-1515. Current studies may also be downloaded from the department Web site http://coststudies.ucdavis.edu or obtained from selected county UC Cooperative Extension offices.

ASSUMPTIONS

The following assumptions refer to calculations in the tables shown at the end of the report and pertain to sample costs to establish and produce raspberries in Santa Cruz and Monterey Counties. Practices described represent methods considered typical for raspberry production in the Central Coast Region. The costs, practices, and materials will not be applicable to all situations every production year. Cultural practices, materials, and raspberry production costs vary by grower and region, and differences can be significant. The practices and inputs used in the cost study serve as a guide only. ***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 farm consists of 45 contiguous acres of land. Raspberries are planted on 15 acres and other berries and vegetables occupy the remaining 25 acres. Roads, the irrigation system and farmstead account for five acres.

Establishment Cultural Practices and Material Inputs

Raspberries are a perennial crop that, when well managed, can produce for up to 20 years. However, in California, raspberries are managed as a biennial crop, the intent of which is to keep production and economic returns high. In this study we consider costs and returns associated with the establishment of a raspberry crop along with costs and returns for a single production cycle. The establishment costs comprise the seven months from August to February of the following calendar year. That is, from land preparation to the installation of the trellis and drip irrigation systems. The production cycle goes from March to October for each of the two years. We assume that the grower rents the land at a cost of $1,800 per acre per year, and that he/she owns the equipment and machinery.

Land Preparation. Land is prepared for planting by first subsoiling in August, followed by disking and rototilling four to five times. Five to six tons of well composted manure are applied and incorporated into soil at the same time as disking operations. Beds are then listed and shaped. Four hundred pounds of 15-15-15 are band applied before planting. During the growing season, the grower applies additional fertilizer through a drip irrigation system as detailed below.

Soil Fumigation and Weed Control. The soil is fumigated with a combination of Telone and chloropicrin to manage pests, which can include diseases, arthropods and weed seeds. This operation is performed after the soil has been subsoiled, disked and rototilled and approximately three weeks prior to planting. A custom operator performs the fumigation using a rate of 14 gallons per acre of Telone and 200 pounds per acre of chloropicrin. The cost of this application ranges from $1,400 to $1,500 per acre.

Planting. Several raspberry varieties are planted in the region, however, no specific variety is assumed in this study. The price depends on the variety selected and on the existence of a storage charge; for this study the cost per plant is $0.45. Planting is performed by hand, at an estimated labor cost of $121 per acre.

Raspberries are generally transplanted in November. Transplants are grown on 10 foot rows with a between plant spacing of 18 inches for a total plant density of 2,900 plants per acre. Leader buds and root suckers, which grow from the crown and roots, will fill in the spaces in between plants during the growing season.

Raspberries are classified as floricane, or summer bearing, and primocane, or fall bearing varieties. Floricane-bearing raspberries grow vegetatively during the first season, and bear fruit during the second season. After harvest, canes that produced fruit should be removed

leaving the new canes that will produce fruit to be harvested in the following year. Because of the cost and effort of maintaining the floricane-bearing varieties vegetatively for the first season, many growers opt for primocane varieties, which produce fruit bearing canes every year starting from the fall of the first growing year. This study assumes that the grower uses primocane-bearing varieties.

Irrigation. After transplanting, a temporary sprinkler irrigation system is set-up, with the crop irrigated for three weeks, then removed. This is because overhead irrigation may increase the incidence of fruit rot and other diseases as the crop matures. During the winter, crop growth is generally dependent on seasonal rains, but later in the season a drip irrigation system is installed and used to irrigate the crop henceforth. The drip system is tied to the lower wire of the trellis with emitters placed every 18 inches.

This study assumes that the farm has a well with a 40 HP electric pump. Water is pumped through a filtration station into main lines. Reusable telescoping lateral lines are buried at the edge of the raspberry field and are connected to the main and drip lines. The cost of water includes pumping costs and labor, which is included as a cultural cost in Tables 1 and 3. The life of the irrigation system is estimated to be 25 years for the pump and filtration system, but the drip tape is discarded after the second harvest. Growers producing within the Pajaro Valley Water Management Agency (PVWMA) district are charged an additional $80 per acre-foot augmentation fee for all pumped (well-drawn) water.

Trellising. The trellis system consists of at least four wires; two located 20 inches from the ground, and another two at 54 inches from the ground. Two-inch posts separated 15 feet and four-inch end posts that anchor them, support the wires. Cost of materials is as follows: two-inch by eight-foot pressure treated posts at $2.48 each; four-inch by seven-foot pressure treated ending posts at $5.40 each; 16 gauge trellising wire at $5.00 per 1,000 feet; line post clips at $0.12 per post. The total cost (materials plus labor) of installing the trellis was estimated at $1,057 per acre. Because trellis materials can be used for six years, this cost is included in non-cash or investment overhead. However, labor cost is considered part of the establishment cost. Total labor was estimated at 41 hours per acre.

Production Cultural Practices and Material Inputs

Irrigation. Depending on effective rainfall and available soil moisture plants are irrigated using from between one-half and one-inch of water per week for the remainder of the growing season. Total irrigation water during the season is approximately two acre-feet.

Fertilization. In season fertilizers are applied through the drip system. In order to decide the rate to be applied, soil analysis is conducted in the spring before starting land operations. Leaf analyses are also performed around mid-season to determine the nutritional needs of the plants. It is recommended that plants receive liquid fertilizer via irrigation system through the growing season on a schedule of every 7 to 14 days. A common liquid fertilizer is 15-10-30, although a variety of formulations are commercially available. Care must be taken so as not to apply too much nitrogen at one time because fruit can become soft at harvest time when overfertilized.

Pests and diseases. Fungicides are applied in the spring to control diseases such as yellow rust (five pounds per acre copper sulfate), Botrytis (Elevate 1.5 lb per acre) and powdery mildew (2.5 gallons per acre of wettable sulfur). Potassium salts of fatty acids, such as Insecticidal Soap 49F at 3 gallons per acre, and Diazinon 50 W at two pounds per acre may also be used for control of various arthropods.

Weed control. For this study, weed control is performed by hand (hoeing). Alternately, a grower may chose to pass a disc harrow during spring and summer. The use of a disc harrow to cultivate weeds between rows is a delicate operation because of the risk posed to injuring the raspberries' shallow root system. Because of the buildup of weeds and weed seed over time, hand weeding becomes particularly important in the second year. In drip irrigated fields, the space between plants is of concern, since the space between rows is unwatered.

Pollination. Bees are needed for pollination, at a rate of two hives per acre. Bee hives are set up by a contractor in winter and removed by the end of that season. The cost is $25 each.

Harvest. For hand harvesting, six to eight people per acre are needed through the harvesting season. Harvest season starts in August and extends through October, and may be longer if the crop is grown using protective tunnels. Raspberries are harvested by hand weekly at a cost of $4.00 per flat.[1] The fruit is picked using one gallon buckets and then field sorted and packed under a shade structure into 12 one-half pint plastic clam shells per flat. The fruit is then transported to a cooler, where the grower pays $0.85 per flat for cooling services.

Yields and returns. This study assumes a baseline marketable yield of 2,500 7-pound flats per acre, which is equivalent to 8.75 tons per acre. The expected unit price is $10 per flat. The estimated return provides a basis for a range of yields and prices shown in Table 6 where various costs and returns are presented for different price-yield scenarios. This analysis shows that, based on market and crop conditions, grower returns above total costs can range from a net loss of roughly $8 per flat, or -$7,962 per acre, to a net gain of $4.13 per flat, or $16,541 per acre.

Post harvest pruning / Post harvest clean up. After the first harvest, the dead canes or those that have fruited, are pruned out by hand, at 40 hours per acre. Part of the pruning operation will include adjustment of the primocanes in the trellis for the following year if the field is left in place. Canes left on the ground are then disked and incorporated into the soil. By the end of the second year the crop is completely removed, as well as the drip tape and the trellis system. Trellis and drip tape removal is done by hand and canes are disked to prepare land for a subsequent crop, which could be raspberries or a different crop if the grower has set a regular rotation in this field. The postharvest clean up operation takes approximately 18 hours per acre to be completed. For simplicity purposes the cost of pruning after the first harvest and the cost of the final clean up operation are averaged over the two production years and included as part of the cost of production in Table 2.

Labor, Equipment, and Interest Costs

Labor. Hourly wages for workers are $11.50 for machine operators, $ 7.50 per hour for field labor. Adding 34% for the employers share of federal and state payroll taxes, insurance, and other possible benefits gives the labor rates shown of $15.40 per hour for machine operator, $10.05 per hour for field labor. At harvest, the pickers get a piece rate of $4.00 per flat. Labor for operations involving machinery are 20% higher than the operation time given in

[1] This is an average seasonal cost. At early season, labor cost is higher, between $4.50 and $5.00 a flat.

the Table to account for the extra labor involved in equipment set up, moving, maintenance, work breaks, and repair.

Equipment. Equipment costs are composed of three parts: non-cash overhead, cash overhead, and operating costs. Both of the overhead factors are discussed in the next sections. The operating costs consist of fuel, lubrication, and repairs. The fuel, lube, and repair cost per acre for each operation in Tables 1 and 2 is determined by multiplying the total hourly operating cost 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 (operation time) for a given operation to account for fueling, moving equipment, and setup time.

Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by the American Society of Agricultural Engineers (ASAE). Fuel and lubrication costs are also determined by ASAE equations based on maximum PTO horsepower, and type of fuel used. Prices for on-farm delivery of diesel and gasoline are $1.40 and $1.70 per gallon, respectively.

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 rate for borrowed funds. It is assumed the operating loan goes through harvest, therefore the post-harvest operation costs are discounted back to the harvest month using a negative interest charge.

Risk. The risks associated with producing and marketing raspberries are considered high. 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 that affect the profitability and economic viability of raspberry production.

Overhead Costs

Cash Overhead. Cash overhead consists of various cash expenses paid out during the year that are assigned to the whole farm and not to a particular operation. These costs include property taxes, office expense, liability and property insurance, sanitation services, and equipment repairs. Employee benefits, insurance, and payroll taxes are included in labor costs and not in overhead (see Labor).

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 0.666% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs $509 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, road maintenance, utilities, and miscellaneous expenses.

Sanitation Services. Sanitation services provide a double portable toilet and single toilet with washing equipment and cost the farm $2,700 annually.

Non-Cash Overhead

Non-cash overhead, shown on an annual per acre basis is calculated as the capital recovery cost for equipment and other farm investments.

Farm equipment. Farm equipment on raspberry farms is purchased new or used; this study shows the current purchase price for new equipment. The new purchase price is adjusted to 60% to indicate a mix of new and used equipment. Annual ownership costs are shown in Table 5.

*Capital Recovery Cost*s. 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 ((Purchase Price – Salvage Value) x Capital Recovery Factor) + (Salvage Value x Interest Rate).

*Salvage Valu*e. 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 (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 and purchase price for land are the same 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 United States Department of Agriculture-Economic Reporting Service's (USDA-ERS) ten year average of California's agricultural sector real 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, not including inflation. In other words, the next best alternative use for these resources is in another agricultural enterprise.

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Table 1. SAMPLE COSTS PER ACRE TO ESTABLISH RASPBERRIES

CENTRAL COAST REGION – Monterey and Santa Cruz Counties, 2003

	Operation	Cash and Labor Cost per Acre					
Operation	Time (Hrs/A)	Labor Cost	Fuel,Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Cultural:							
Soil analysis	0.00	-	-	-	35	35	
Subsoil 1x	0.39	7	4	-	-	11	
Disk 3x	0.52	10	5	-	-	15	
Rototill 1x	0.65	12	6	-	-	18	
Fertilization	0.67	12	7	222	-	241	
Fumigate	0.00	-	-	-	1,500	1,500	
Shape beds	0.43	8	4	-	-	12	
Plant	12.00	121	-	1,305	-	1,426	
Sprinklers setup/remove	2.00	58	14	-	-	72	
Irrigation	1.00	10	-	23	20	53	
Trellis setup	1.00	420	7	-	-	427	
Drip system setup	0.52	30	4	163	-	197	
Set up shades	0.45	5	-	25	-	30	
Use ATV	0.38	7	1	-	-	8	
Use pick-up 1/2 ton	2.33	43	14	-	-	57	
TOTAL CULTURAL COSTS	21.34	743	66	1,738	1,555	4,101	
Interest on operating capital @ 7.40%						112	
TOTAL OPERATING COSTS/ACRE		743	66	1,738	1,555	4,213	
CASH OVERHEAD: (7-month period)							
Liability insurance						13	
Office expenses						175	
Sanitation facilities						39	
Land rent						1,050	
Property taxes						22	
Property insurance						14	
Investment repairs						24	
TOTAL CASH OVERHEAD COSTS						1,337	
TOTAL ACCUMULATED CASH COSTS/ACRE						5,550	

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Table 2. SAMPLE COSTS PER ACRE TO PRODUCE RASPBERRIES

CENTRAL COAST REGION – Monterey and Santa Cruz Counties, 2003

Operation	Operation Time (Hrs/A)	Cash and Labor Cost per Acre: Labor Cost	Fuel,Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Pollination	0.00	-	-	-	50	50	
Irrigation	23.80	239	-	180	160	579	
Insect control	1.84	34	14	124	-	172	
Weed control	18.00	181	-	-	-	181	
Leaf analysis	0.00	-	-	-	75	75	
Fertilization	0.00	-	-	350	-	350	
Disease control	4.58	85	34	241	-	360	
Pruning / Clean up	0.34	308	3	-	-	311	
Use ATV	0.75	14	1	-	-	15	
Use pick-up 1/2 ton	5.00	92	30	-	-	122	
TOTAL CULTURAL COSTS	54.31	953	82	895	285	2,215	
Harvest:						-	
Harvest (piece rate)		10,000	-	4,350	-	14,350	
Haul fruit	5.00	344	42			386	
Cooling services		-	-	-	2,125	2,125	
TOTAL HARVEST COSTS		10,344	42	4,350	2,125	16,861	
Interest on operating capital @ 7.40%						284	
TOTAL OPERATING COSTS/ACRE		11,297	124	5,245	2,410	19,360	
CASH OVERHEAD:							
Liability insurance						13	
Office expenses						300	
Sanitation facilities						68	
Land rent						1,800	
Property taxes						47	
Property insurance						32	
Investment repairs						46	
TOTAL CASH OVERHEAD COSTS						2,305	
TOTAL CASH COSTS/ACRE						21,666	
NON-CASH OVERHEAD: Investment	Per producing acre			Annual Cost - Capital Recovery			
Buildings		1,229		111		111	
Raspberries, established		5,550		3,045		3,045	
Trellis system		42		9		9	
Shop, hand tools		315		32		32	
Pump and well		680		55		55	
Irrigation system		364		30		30	
Equipment		2,206		273		273	
TOTAL NON-CASH OVERHEAD COSTS		10,386		3,555		3,555	
TOTAL COSTS/ACRE						25,221	

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Table 3- COST and RETURNS PER ACRE TO PRODUCE RASPBERRIES

CENTRAL COAST REGION – Monterey and Santa Cruz Counties, 2003

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your cost
GROSS RETURNS					
First harvest	2,500	flat	$10.00	$25,000	
OPERATING COSTS					
Custom:					
Hives-each	2	each	25.00	50	
Leaf analysis	1	each	75.00	75	
Irrigation:					
Water - Pumped	24	acin	7.50	180	
Water - PVWMA fee	24	acin	6.67	160	
Insecticide:					
Diazinon 50W 2x	4	lb	4.67	19	
Insecticidal Soap	6	gal	17.58	105	
Fertilizer:					
15-10-30 soluble	600	lb	0.58	350	
Fungicide:					
Sulfur DF 4x	40	lb	0.71	28	
Copper sulfate 2x	10	lb	2.18	22	
Elevate 4x	6	lb	31.77	191	
Harvest:					
Flats, Clamshells	2,500	each	1.73	4,325	
Buckets	10	each	2.50	25	
Pick fruit (piece rate)	2,500	each	4.00	10,000	
Contract:					
Cooling services	2,500	flat	0.85	2,125	
Labor (machine)	21	hrs	15.40	324	
Labor (non-machine)	97	hrs	10.05	973	
Fuel - Gas	24	gal	1.70	40	
Fuel - Diesel	20	gal	1.40	29	
Lube				10	
Machinery repair				45	
Interest on operating capital @ 7.40%				284	
TOTAL OPERATING COSTS/ACRE				19,360	
NET RETURNS ABOVE OPERATING COSTS				5,640	

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Table 4 – MONTHLY EXPENDITURES PER ACRE TO PRODUCE RASPBERRIES

CENTRAL COAST REGION – Monterey and Santa Cruz Counties, 2003

Beginning Nov 01	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	TOTAL
Ending OCT 02	01	01	02	02	02	02	02	02	02	02	02	02	
Cultural:													
Pollination					50								50
Irrigation					72	72	72	97	97	97	72		579
Insect control							86	86					172
Hoeing							91	91					181
Leaf analysis							75						75
Fertilization					50	50	50	50	50	50	50		350
Fungicide						120	120	120					360
Clean up												311	311
Use ATV	1	1	1	1	1	1	1	1	1	1	1	1	15
Use Pick-up 1/2 ton	10	10	10	10	10	10	10	10	10	10	10	10	122
TOTAL CULTURAL COSTS	11	11	11	11	185	254	505	454	158	158	134	322	2,215
Harvest:													
Harvest										4,305	7,175	2,870	14,350
Haul fruit										116	193	77	386
Cooling services										638	1,063	425	2,125
TOTAL HARVEST COSTS										5,058	8,431	3,372	16,861
Interest on oper. capital	0	0	0	0	1	3	6	9	10	42	95	118	284
TOTAL OPERATING COSTS/ACRE	11	12	12	12	185	257	511	463	168	5,258	8,659	3,812	19,361
OVERHEAD:													
Liability Insurance			13										13
Office expenses	25	25	25	25	25	25	25	25	25	25	25	25	300
Sanitation facilities	6	6	6	6	6	6	6	6	6	6	6	6	68
Land rent	150	150	150	150	150	150	150	150	150	150	150	150	1,800
Property Taxes			47										45
Property Insurance			32										30
Investment Repairs	4	4	4	4	4	4	4	4	4	4	4	4	43
TOTAL CASH OVERHEAD COSTS	184	184	276	184	184	184	184	184	184	184	184	184	2,305
TOTAL CASH COSTS/ACRE	196	196	288	196	369	441	696	648	352	5,442	8,843	3,996	21,663

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Table 5- WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT and BUSINESS OVERHEAD COSTS TO PRODUCE RASPBERRIES

CENTRAL COAST REGION – Monterey and Santa Cruz Counties, 2003

ANNUAL EQUIPMENT COSTS

					Cash Overhead		
Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Total
55HP 2WD Tractor	32,269	12	8,068	3,469	134	202	3,805
75HP 2WD Tractor	37,000	15	7,203	3,612	147	221	3,981
ATV 4WD	7,430	7	2,818	1,019	34	51	1,104
Disc Harrow 5'	1,878	15	180	191	7	10	208
Orch.Sprayer 300 G	8,000	10	1,415	1,003	31	47	1,081
Pickup truck 1/2 T	24,500	5	12,000	3,770	122	183	4,074
Truck 1-ton	36,000	5	20,000	5,123	186	280	5,589
Total	147,077		51,684	18,187	662	994	19,843
* 60% of new value	88,246		31,010	10,912	397	596	11,906

(*) Used to reflect a combination of new and used equipment

ANNUAL INVESTMENT COSTS

		Years	Salvage	Capital	Cash Overhead			
Investment	Price	life	value	recovery	Insurance	Taxes	Repairs	Total
Buildings	49,162	20		4,430	164	246	983	5,822
Irrigation system	14,550	25		1,183	48	73	150	1,454
Pump and well	27,200	25		2,211	91	136	272	2,710
Shop, hand tools	12,600	15	1,260	1,280	46	69	250	1,645
Establishment raspberries	83,250	2		45,669	277	416	0	46,362
Trellis	630	6		130	2	3	63	198
Total	187,392		1,260	54,903	628	943	1,718	58,192

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Land rent	45	acre	1,800	81,000
Liability insurance	40	acre	12.73	509
Office expenses	40	acre	300	12,000
Sanitation facilities	1	each	2,700	2,700

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Table 6. RANGING ANALYSIS, RASPBERRIES

CENTRAL COAST REGION – Monterey and Santa Cruz Counties, 2003

	YIELD (FLATS/ACRE)						
	1,000	1,500	2,000	2,500	3,000	3,500	4,000
OPERATING COSTS/ACRE:							
Cultural Cost	2,215	2,215	2,215	2,215	2,215	2,215	2,215
Harvest Cost	6,744	10,117	13,489	16,861	20,233	23,605	26,978
Interest on operating capital	153	197	241	285	328	372	416
TOTAL OPERATING COSTS/ACRE	9,112	12,529	15,945	19,361	22,776	26,192	29,609
TOTAL OPERATING COSTS/FLAT	9.11	8.35	7.97	7.74	7.59	7.48	7.40
CASH OVERHEAD COSTS/ACRE	2,305	2,305	2,305	2,305	2,305	2,305	2,305
TOTAL CASH COSTS/ACRE	11,417	14,834	18,250	21,666	25,081	28,497	31,914
TOTAL CASH COSTS/FLAT	11.42	9.89	9.12	8.67	8.36	8.14	7.98
NON-CASH OVERHEAD COSTS/ACRE	3,545	3,545	3,545	3,545	3,545	3,545	3,545
TOTAL COSTS/ACRE	14,962	18,379	21,795	25,211	28,626	32,042	35,459
TOTAL COSTS/FLAT	14.96	12.25	10.90	10.08	9.54	9.15	8.86

NET RETURNS PER ACRE ABOVE OPERATING COSTS, RASPBERRIES

	YIELD (FLATS/ACRE)						
Price ($/tray)	1,000	1,500	2,000	2,500	3,000	3,500	4,000
7.00	(2,112)	(2,029)	(1,945)	(1,861)	(1,776)	(1,692)	(1,609)
8.00	(1,112)	(529)	55	640	1,224	1,808	2,391
9.00	(112)	971	2,055	3,140	4,224	5,308	6,391
10.00	888	2,471	4,055	5,640	7,224	8,808	10,391
11.00	1,888	3,971	6,055	8,140	10,224	12,308	14,391
12.00	2,888	5,471	8,055	10,640	13,224	15,808	18,391
13.00	3,888	6,971	10,055	13,140	16,224	19,308	22,391

NOTE: Numbers in parenthesis indicate operating losses

NET RETURNS PER ACRE ABOVE CASH COSTS, RASPBERRIES

	YIELD (FLATS/ACRE)						
Price ($/tray)	1,000	1,500	2,000	2,500	3,000	3,500	4,000
7.00	(4,417)	(4,334)	(4,250)	(4,166)	(4,081)	(3,997)	(3,914)
8.00	(3,417)	(2,834)	(2,250)	(1,666)	(1,081)	(497)	86
9.00	(2,417)	(1,334)	(250)	835	1,919	3,003	4,086
10.00	(1,417)	166	1,750	3,335	4,919	6,503	8,086
11.00	(417)	1,666	3,750	5,835	7,919	10,003	12,086
12.00	583	3,166	5,750	8,335	10,919	13,503	16,086
13.00	1,583	4,666	7,750	10,835	13,919	17,003	20,086

NOTE: Numbers in parenthesis indicate cash losses

NET RETURNS PER ACRE ABOVE TOTAL COSTS, RASPBERRIES

	YIELD (FLATS/ACRE)						
Price ($/tray)	1,000	1,500	2,000	2,500	3,000	3,500	4,000
7.00	(7,962)	(7,879)	(7,795)	(7,711)	(7,626)	(7,542)	(7,459)
8.00	(6,962)	(6,379)	(5,795)	(5,211)	(4,626)	(4,042)	(3,459)
9.00	(5,962)	(4,879)	(3,795)	(2,711)	(1,626)	(542)	541
10.00	(4,962)	(3,379)	(1,795)	(211)	1,374	2,958	4,541
11.00	(3,962)	(1,879)	205	2,290	4,374	6,458	8,541
12.00	(2,962)	(379)	2,205	4,790	7,374	9,958	12,541
13.00	(1,962)	1,121	4,205	7,290	10,374	13,458	16,541

NOTE: Numbers in parenthesis indicate net losses