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**UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION**

**2012**

**SAMPLE COSTS TO PRODUCE  
FRESH MARKET RASPBERRIES**

**Primocane Bearing**



**Central Coast Region**

Santa Cruz, Monterey and San Benito Counties

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# UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

## SAMPLE COSTS TO PRODUCE FRESH MARKET RASPBERRIES - PRIMOCANE BEARING Central Coast Region – Santa Cruz, Monterey & San Benito Counties 2012

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### INTRODUCTION

Sample costs to produce raspberries in Santa Cruz, Monterey and San Benito 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 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 Tables 2, 4, 5, 8 and 9.

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, UC Cooperative Extension Santa Cruz County: Mark Bolda (831) 763-8025 or Laura Tourte (831) 763-8005.

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

## ASSUMPTIONS

The following assumptions refer to calculations in Tables 1 to 15 and pertain to sample costs to establish and produce fresh market primocane bearing raspberries in the Central Coast Region - Santa Cruz, Monterey and San Benito Counties. Practices described represent methods considered typical for raspberry production in the 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 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 farm consists of 30 contiguous acres of land. Raspberries are planted on 15 acres. Vegetables and other row crops are planted on 12 acres; roads, the irrigation system and farmstead account for three acres. Some growers will make arrangements with other operations in the area to ensure rotation of berry and vegetable crops. The grower rents the land for \$2,300 per acre per year, and owns the equipment and machinery.

### **Establishment Year: Cultural Practices and Material Inputs** Tables 1, 2 & 3

Raspberries are a perennial crop that, when well managed, can produce for up to five years in this region. However, 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 primocane bearing raspberry crop, along with costs and returns for two production and harvest cycles.

**Crop Cycle Summary.** For Central Coast raspberries, the complete crop cycle is based on the calendar year as follows. Crop establishment occurs during the first calendar year (five months from August to December) and includes planting. The first production and harvest season occurs in the second calendar year (January to December) and is referred to as Production Year 1 in this study. The second production and harvest season occurs in the third calendar year (January to July) and is referred to as Production Year 2. The full raspberry crop cycle is completed following Production Year 2 when postharvest operations and preparation of the field for the next crop take place.

**Land Preparation.** Land is prepared for planting in late summer (August) by disking and incorporating biomass from a previously planted cover crop into the soil (please see cover crop section below). The field is then ripped three feet deep, disked, ring rolled and land planed. Six tons of well composted greenwaste is applied and incorporated into the soil at the same time as the disking operations. Following these operations the field is again land planed, then chiseled, and sprinkler irrigated if soil moisture is not adequate. The field is also fumigated with a combination of Telone and chloropicrin for pest management purposes. Cost for a solid, tarped fumigation is estimated at \$3,000 per acre. After fumigation, the field is disked again and rototilled, if necessary, to break cloddy soils. Beds are then listed and shaped.

**Fertilization.** Fertilizers and application rates are decided upon based on soil sampling and analysis, which is performed prior to land preparation. In addition to the composted greenwaste mentioned above, 300 pounds of an NPK fertilizer blend (18-8-13) is band applied before planting during the crop establishment year. During Production Years 1 and 2, additional fertilizers are applied, which are discussed later in the study and shown on corresponding tables.

**Planting.** Several raspberry varieties are planted in the region, however, no specific variety is assumed in this study. The price of roots (plant stock) depends on the variety selected and on possible storage charges; for this study the cost for raspberry plant stock is \$6.50 per pound. This price falls within the range of \$6 to \$7 per pound for purchases of 1,000 pounds or more. Raspberries are planted by hand in late November (they can be planted as late as March) in rows using a 7-foot spacing. Labor is estimated at 20 person-hours to plant 260 pounds of plant stock per acre.

**Irrigation.** In years with deficient fall and winter rains and therefore deficient soil moisture, a sprinkler irrigation system is set up after planting and two acre inches of water are applied. The sprinkler system is then removed from the field.

### **Production Years 1 and 2: Cultural Practices and Material Inputs**

Tables 4 - 15

**Trellising.** Each acre of the raspberry production operation is assumed to be 300 feet long and 145 feet wide, with 20 crop rows per acre using a 7-foot row spacing. A trellis system is installed in March of Production Year 1; the total cost (materials plus labor) is estimated at \$3,105 per acre. Installation labor is estimated at 41 hours per acre. Because trellis materials can be used for six years, this cost is included in the non-cash or investment overhead costs and amortized accordingly. Two wooden stakes 2-inches wide and 7-feet long are placed every 18 feet. Two end posts are used for every row, each end post is 4-inch diameter (round) and eight feet long. All wood is treated. Each row has 12 wires with no staples: four wires 18 inches from ground; four wires 30 inches from ground and another four wires 5 feet from ground. Wire is 16 gauge and wound around supports when needed.

**Irrigation.** A drip irrigation system is installed in Production Year 1 to irrigate the raspberry crop as needed during Production Years 1 and 2. The drip line is tied to the lower wire of the trellis with emitters placed every 6-inches. Depending on effective rainfall and available soil moisture, plants in Production Year 1 are irrigated from March through October using between one-half to one-inch of water per week. Total water use in Production Year 1 is estimated at 32 acre-inches per acre. The cost of pumped water is \$22.50 per acre inch, for a total of \$270 per acre foot. In Production Year 2, the field is irrigated from March to July using 20 acre-inches of water per acre. The drip line is removed and disposed of as part of postharvest operations after the last harvest in Production Year 2. The total amount and cost of water may differ substantially from farm to farm depending on factors such as climatic conditions, soil type, well depth, and irrigation district cost.

**Fertilization.** In this study a total of four leaf analyses are performed, two in Production Year 1 and two in Production Year 2. Leaf analyses determine the nutritional needs of the plants. Liquid fertilizers are applied through the drip system during both production years roughly every 7 - 14 days. A variety of fertilizers are commercially available. In Production Year 1, alternating weekly fertilizer applications of CN9, UN32, CAN17 and ammonium sulfate are made from March through July (vegetative growth phase) and 20-20-20 and 10-30-30 from August through October (flowering/fruit phase). In Production Year 2, alternating weekly fertilizer applications of CN9, UN32, CAN17 and 21-0-0 are made in March (vegetative phase) and 20-20-20 and 10-30-30 from April to July (flowering/fruit phase).

**Tunnels.** In July of Production Year 1, tunnels (also called hoop houses) are constructed over the planted raspberries. Each tunnel structure is 21 feet wide (covering three rows) and 300 feet long and consists of a line of anchor posts spaced 10 feet apart on both sides of the tunnel. It is bridged by a metal frame formed from a metal tube 28 feet long. Once constructed, this metal frame is covered with a 5 mil thick semi-clear plastic and tied down with rope. There are struts on either side of the tunnel to maintain tension for the length of the structure. At the end of harvest in late October (Production Year 1), the plastic cover is taken down and

secured or stored along the anchors. The cover is unfurled and put over the tunnel structures again in March of Production Year 2. At the termination of Production Year 2 harvest, all tunnel structures are removed from the field for reuse in a subsequent crop. The labor for tunnel structure installation is included in the Production Year 1 costs.

**Pest Management.** The pesticides and rates mentioned in this cost study are listed in *UC Integrated Pest Management Guidelines, Caneberries*. For information on other pesticides available, pest identification, monitoring, and management visit the UC IPM website at [www.ipm.ucdavis.edu](http://www.ipm.ucdavis.edu) or contact your local UCCE farm advisor. Information and pesticide use permits are available through the local county agricultural commissioner's office. Pesticides mentioned in this study are used to calculate rates and costs. Although growers commonly use the pesticides mentioned, other pesticides are available. Spray adjuvants are recommended for use with many pesticides, but are not included in this study. Pesticide costs vary by location, brand, and grower volume. The pesticide costs in this study are gathered from various dealers and shown as full retail.

*Pest Control Adviser (PCA).* A PCA monitors the field during Production Years 1 and 2 for pest problems and nutritional status. Growers may hire private consultants on a per acre basis or receive the service as part of an agreement with an agricultural chemical and fertilizer company. In this study costs for a PCA are included in both production years at \$100 per acre per year.

*Weeds.* Weeds are managed with hand hoeing when necessary. In January, February and March of Production Year 1 and 2, a labor cost of \$300 and \$150 per acre, respectively, to manage weeds is included in this study. Alternately, growers may choose to use a combination disk harrow in accessible rows and hand labor in anchor rows during spring and summer.

*Insects (Arthropods).* Insects controlled are worms, leaf rollers, aphid, leafhoppers, mites, and thrips. In Production Year 1 the crop is treated in July with Dipel and Mustang, twice in August with Dipel and twice with Mustang and once with Savey, and in September with Malathion. In Production Year 2 the crop is treated in March with Dipel, Mustang and Malathion, in April with Dipel and Mustang, in June with Success.

*Diseases.* In Production Year 1, Pristine is applied (with the Dipel and Mustang) in July to control Botrytis.

**Pollination.** Bees are necessary for raspberry pollination. The cost of two hives per acre is included in this study and estimated at \$30 per hive or \$60 per acre. Hives are set out by a contractor in July of Production Year 1 for three months and again in April of Production Year 2 for two months.

**Harvest.** Production Year 1 harvest begins in August of the second calendar year and extends through October. Production Year 2 harvest is performed during May, June and July of the third calendar year. Raspberries are harvested by hand every few days at an average seasonal piece rate cost of \$4.00 per tray. Crew size and number of crews may vary through the season depending upon the yield. Harvest rate per picker ranges from one to five trays per hour, with the lower rate occurring early and late in the season. The fruit is picked using one gallon buckets. It is then field sorted and packed into a tray containing 12 six ounce plastic clam shells. Each full tray weighs 4.5 pounds. A packing and sorting wagon/trailer with a stainless steel table top and a shade structure is pulled by a small tractor to the picking area. The wagon is managed by the supervisor. Harvesters consist of one crew of 36 who hand pick the berries, a crew supervisor and a checker-loader who records the trays picked by each crewmember and who also loads the trays on the pallets on the truck. The truck holds up to two pallets with 144 trays per pallet and assumes a one hour round trip to deliver the fruit to the cooler. For this study, it is assumed that the truck makes at least one trip per day. To keep fruit at an

optimal postharvest temperature, the truck may make deliveries to the cooler with less than full loads. The cooler charges \$0.50 per tray for cooling services.

*Yields and Returns.* This study estimates an average marketable yield for the summer to fall harvest of Production Year 1 at 4,500 four and one-half pound trays per acre, which is equivalent to approximately 10 tons of fruit per acre. Production Year 2 average marketable yield is estimated at 5,000 trays, or roughly 11 tons of fruit per acre. The estimated unit price is \$15 per tray based on current Salinas-Watsonville shipping point prices from the USDA Agricultural Marketing Service. Prices range from a low of \$10 to a high of \$20 depending on market conditions. Estimated returns for a range of yields and prices are shown on Table 7 and 11.

**Cover Crop.** In November of Production Year 1 (following the first harvest), Merced Rye is planted as a cover crop in 4-foot swaths in crop row middles for assistance with weed management and erosion control. Cover crop growth is dependent on fall and winter rains. The cover crop is mowed in March of Production Year 2 to reduce the above ground biomass.

**Prune.** In January of Production Year 2, raspberry plants are pruned by hand to remove dead canes and canes that have fruited. Part of the pruning operation will include adjustment of primocanes in the trellis system. Labor is estimated at 35 hours per acre. Pruned canes are left on the ground and shredded during the cover crop mowing in March that is mentioned above. To enhance yield in Production Year 2, newly emerging canes are suppressed with a Shark herbicide application in February and then clipped by hand in April and May. Labor for this operation is estimated at 35 hours per acre. The Shark herbicide also helps with weed control in cane rows.

Subsequent operations for Production Year 2, including irrigation, fertilization, pest management and harvest are discussed above.

**Tunnel/Trellis Removal and Post Harvest Operations.** Following harvest of the Production Year 2 crop, raspberry plants/canes are removed from the field, as are the tunnel, trellis, and drip systems. The trellis materials may be reusable, but the drip tape is not and is disposed of. All postharvest (field clean up) operations are performed by hand. Above ground biomass, including any residual canes and vegetative growth from the cover crop, are disked to prepare the land for a subsequent crop. Raspberries, another berry crop, or a vegetable crop may be planted depending on a grower's rotation scheme. Total labor associated with postharvest operations and tunnel/trellis removal is estimated at 143 hours per acre.

### **Labor, Equipment, and Interest Costs**

**Pickup/ATV.** It is assumed that a pickup is used for business and personal use. The ATV is also used to check the field, monitor the irrigation, and other miscellaneous use. Time and mileage use for the pickup and ATV operations are estimated and included in various cost tables.

**Labor.** The basic hourly wage for equipment operators is \$14.25 per hour and for general labor is \$9.00 per hour. At harvest, the pickers receive piece rate pay of \$4.00 per tray. This is an average seasonal piece rate cost. At the beginning of the season due to lower yields, the piece rate is higher (\$4.50 to \$5.00) than during the peak season. Adding payroll overhead of 34% to the hourly wage gives labor rates of \$19.10 for equipment operators and \$12.06 per hour for general labor. The overhead includes the employers' share of federal and California state payroll taxes, workers' compensation insurance for truck crops (code 0172), and a percentage for other possible benefits. Workers' compensation insurance costs will vary among growers, but for this study the cost is based upon the average industry final rate as of January 1, 2012 (California Department of Insurance). Labor for

operations involving machinery are 20% higher than the operation time given in Tables 4 and 8 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 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 diesel and gasoline are \$3.82 and \$3.43 per gallon, respectively. The price is based on Department of Energy 2011 monthly reports. The cost may include a 2.5% local sales tax on diesel fuel and 7.5% sales tax on gasoline. Gasoline also includes federal and state excise tax, which are refundable for on-farm use when filing your income tax. The fuel, lube, and repair cost per acre for each operation in Tables 4 and 8 is determined by multiplying the total hourly operating cost in Table 13 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 5.75% per year as of January 1, 2012. Rate is based on data from a farm lending agency. 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 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 all risk associated with agriculture, including financial, production, market, legal, and human resource risks that ultimately affect the profitability and economic viability of raspberries.

### **Cash Overhead Costs**

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. **Costs not associated with the entire year are prorated.**

**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 vary depending on the assets included and the amount of coverage. Property insurance provides coverage for property loss and is charged at 0.775% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$587 for the entire farm.

**Office Expense.** Office and business expenses are estimated at \$325 per producing acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road maintenance, utilities, and miscellaneous expenses.

**Land Rent.** Rent per acre is estimated at \$2,300 per acre per year for the 30-acres or \$2,555 per acre per producing acre (27 acres).

**Sanitation Services.** Sanitation services provide a double portable toilet and single toilet with washing equipment and cost the raspberries \$3,320 annually for 8 months of service (\$221 per acre).

**Food Safety Program.** Many growers of fresh market commodities such as raspberries now incorporate and participate in food safety programs for their operations. Part of a food safety program is participation in third party (independent) audits, that are done to accommodate buyer requests and to enhance marketability of the crop. Costs will vary depending upon farm or inspection circumstances. For this study, costs for the farm are estimated at \$25 per acre and \$750 per year.

**Regulatory Programs.** Costs for compliance with regulatory programs such as water and air quality are estimated to be \$50 per acre or \$1,500 per year. Costs for regulatory programs will vary depending on the size of the farming operation and the direction and implementation requirements of regulatory agencies.

### **Non-Cash Overhead Costs**

Non-cash overhead, shown on an annual per acre basis, 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 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 and Biological 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 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 12.

*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 4.75% is used to calculate capital recovery. The rate will vary depending upon the size of the loan and other lending agency conditions. It is the suggested rate for the farm lending agencies basic loan as of January 1, 2012.

**Tunnels.** Some tunnel structure materials are used for more than one complete raspberry cropping cycle. For example, steel parts last for 10 years, while plastic coverings last for only for 3 years. A total of seven 21 feet wide by 300 feet long tunnel structures are constructed per acre. Additional information about tunnels is located in the section Production Years 1 and 2: Cultural Practices and Material Inputs.



**Trellis.** The trellis system has a life of six years and is removed at the end of Production Year 2; it can be used in subsequent raspberry crop plantings. Additional information about the trellis system is located in the section Production Years 1 and 2: Cultural Practices and Material Inputs.

**Shop/Field Tools.** Shop, hand, and various small field tools are included in these costs. Tools vary considerably from farm to farm. The cost included in this study is representative and not specific to a particular inventory.

**Irrigation Pump & Well.** This study assumes that the grower refurbished the 40 HP electric pump and well that services the farm. In general growers in the region are responsible for the portion above the ground such as the pump, and the landowner is responsible for what is below ground such as the well running dry.

**Drip Irrigation System.** The drip irrigation system is used in both production years. It includes a filtration system and laterals that connect to the drip line. Water is pumped through the filtration station into the main lines. Reusable telescoping lateral lines are buried at the edge of the raspberry field and are connected to the main and drip lines. Additional information about the drip system is located in the section Production Years 1 and 2: Cultural Practices and Material Inputs.

**Sprinkler Pipe.** The sprinkler pipe is estimated to be sufficient for five acre irrigation sets. The pipe is hand movable and may be used on all farm crops. The pipe may be used during establishment right after planting when moisture is inadequate and then removed.

**Establishment Cost.** Costs to establish raspberry plants 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 labor, drip tape, planting, plants, cash overhead and expenses for establishing the canes. The costs cover a five month period from August to December. The Total Cash Cost on Table 1 and 2 represents the establishment cost. For this study the cost is \$7,581 per acre or \$113,715 for the 15-acre field. The establishment cost is recovered in the first production year.

**Equipment Costs.** Farm equipment is generally purchased as a combination of both new or used machinery. This study shows the current purchase price for new equipment, adjusted to 60% to indicate a mix of new and used equipment. Annual ownership costs for equipment and other investments are in the Whole Farm Equipment, Investment and Business Overhead Tables. Equipment costs are composed of three parts: non-cash overhead, cash overhead, and operating costs. The first two 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.

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UC COOPERATIVE EXTENSION  
 CENTRAL COAST - Santa Cruz, Monterey and San Benito Counties 2012  
**Table 1. COSTS TO ESTABLISH A RASPBERRY PLANTING & PRODUCE RASPBERRIES SUMMARY**

	Cost Per Acre			
	Year:	Establish	Prod Yr 1	Prod Yr 2
4.5 Pound Trays:		4,500	5,000	
Planting Costs:				
Land Preparation/Planting Costs		6,033		
<b>TOTAL PLANTING COSTS</b>		<b>6,033</b>		
Cultural Costs:				
Cultural Costs		5,120	4,847	
<b>TOTAL CULTURAL COSTS</b>		<b>5,120</b>	<b>4,847</b>	
Harvest Costs:				
Pick/Pack/Haul/Cool/Sell		35,172	39,447	
<b>TOTAL HARVEST COSTS</b>		<b>35,172</b>	<b>39,447</b>	
Interest On Operating Capital @ 5.75%	84	417	420	
<b>TOTAL OPERATING COSTS/ACRE</b>	<b>6,117</b>	<b>40,709</b>	<b>44,714</b>	
Cash Overhead Costs:				
Rent, Insurance, Taxes, etc.	1,465	3,445	1,761	
<b>TOTAL CASH OVERHEAD COSTS</b>	<b>1,465</b>	<b>3,445</b>	<b>1,761</b>	
<b>TOTAL CASH COSTS/ACRE</b>	<b>7,581</b>	<b>44,154</b>	<b>46,475</b>	
<b>INCOME/ACRE FROM PRODUCTION</b>		<b>67,500</b>	<b>75,000</b>	
<b>NET CASH COSTS/ACRE FOR THE YEAR</b>	<b>7,581</b>			
<b>NET RETURNS/ACRE ABOVE CASH COSTS</b>		23,346	28,525	
<b>ACCUMULATED NET CASH COSTS/ACRE</b>	<b>7,581</b>			
Non-Cash Overhead (Capital Recovery Cost):				
Investments/Equipment	178	3,142	1,735	
<b>TOTAL NON-CASH OVERHEAD COST/ACRE</b>	<b>178</b>	<b>3,142</b>	<b>1,735</b>	
<b>TOTAL COST/ACRE FOR THE YEAR</b>	<b>7,759</b>	<b>47,296</b>	<b>48,210</b>	
<b>INCOME/ACRE FROM PRODUCTION</b>		<b>67,500</b>	<b>75,000</b>	
<b>TOTAL NET COST/ACRE FOR THE YEAR</b>	<b>7,759</b>			
<b>NET RETURNS/ACRE ABOVE TOTAL COST</b>		20,204	26,790	
<b>TOTAL ACCUMULATED NET/ACRE</b>	<b>-7,759</b>	<b>12,445</b>	<b>39,235</b>	

UC COOPERATIVE EXTENSION  
CENTRAL COAST - Santa Cruz, Monterey and San Benito Counties 2012

**Table 2. COSTS PER ACRE TO ESTABLISH RASPBERRIES**

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre					Total Cost	Your Cost
		Labor Cost	Fuel	Lube & Repairs	Material Cost	Custom/ Rent		
Other:								
Soil Samples 2/15 acre	0.07	2	0	0	0	10	12	
Land Prep: Disc cover crop 3X	0.52	12	7	3	0	0	22	
Land Prep: Rip 3' deep 3X	1.46	33	45	14	0	0	92	
Land Prep: Disc & Ringroll 3X	0.52	12	7	3	0	0	22	
Land Prep: Landplane	0.35	8	11	4	0	0	23	
Fertilize: (Compost)	0.34	8	5	3	246	0	261	
Fertilize: Disc (incorporate compost)	0.17	4	2	1	0	0	7	
Land Prep: Chisel	0.19	4	6	2	0	0	12	
Fumigate (Telone, Chloropicrin)	0.00	0	0	0	0	3,000	3,000	
Fumigate: Remove plastic	0.00	0	0	0	0	125	125	
Land Prep: Disc	0.17	4	2	1	0	0	7	
Land Prep: Rototill	0.32	7	5	2	0	0	14	
Land Prep: List beds	0.15	3	5	1	0	0	9	
Fertilize: Preplant (18-8-13)	0.24	6	2	2	234	0	244	
Land Prep: Shape beds	0.15	3	5	1	0	0	9	
Plant: Raspberries	20.00	241	0	0	1,690	0	1,931	
Sprinkler setup/remove	2.00	70	20	8	0	0	98	
Irrigate: Sprinkle (2" water)	1.00	12	0	0	45	0	57	
ATV	0.38	9	1	0	0	0	10	
Pickup	2.33	53	18	6	0	0	77	
<b>TOTAL Other COSTS</b>	<b>30.34</b>	<b>492</b>	<b>140</b>	<b>51</b>	<b>2,215</b>	<b>3,135</b>	<b>6,033</b>	
<b>Interest on Operating Capital @ 5.75%</b>							<b>84</b>	
<b>TOTAL OPERATING COSTS/ACRE</b>	<b>30.34</b>	<b>492</b>	<b>140</b>	<b>51</b>	<b>2,215</b>	<b>3,135</b>	<b>6,117</b>	
<b>CASH OVERHEAD:</b>								
Land Rent							1,150	
Liability Insurance							11	
Office Expense							163	
Sanitation Fee							111	
Property Taxes							7	
Property Insurance							6	
Investment Repairs							18	
<b>TOTAL CASH OVERHEAD COSTS/ACRE</b>							<b>1,465</b>	
<b>TOTAL CASH COSTS/ACRE</b>							<b>7,581</b>	
<b>NON-CASH OVERHEAD:</b>								
		<u>Per producing Acre</u>		<u>Annual Cost Capital Recovery</u>				
Pump and Well		741		51			51	
Shop/Hand Tools		241		22			22	
Sprinkler Pipe		130		17			17	
Equipment		802		88			88	
<b>TOTAL NON-CASH OVERHEAD COSTS</b>		<b>1,913</b>		<b>178</b>			<b>178</b>	
<b>TOTAL COSTS/ACRE</b>							<b>7,759</b>	

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**Table 3. MATERIAL COSTS PER ACRE TO ESTABLISH RASPBERRIES**

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre
<b>OPERATING COSTS</b>				
<b>Fertilizer:</b>				<b>480</b>
Compost (Greenwaste)	6.00	ton	41.00	246
18-08-13	300.00	lb	0.78	234
<b>Water:</b>				<b>45</b>
Water-Pumped	2.00	acin	22.50	45
<b>Custom:</b>				<b>3,135</b>
Soil Analysis	0.13	each	75.00	10
Fumigate: Application Solid, (Tarp, Chloropicrin, Telone)	1.00	acre	3,000.00	3,000
Plastic Removal	1.00	acre	125.00	125
<b>Plants/Seeds:</b>				<b>1,690</b>
Raspberry Plant Stock	260.00	lb	6.50	1,690
<b>Labor:</b>				<b>492</b>
Equipment Operator Labor	11.21	hrs	19.10	214
Non-Machine Labor	23.00	hrs	12.06	277
<b>Machinery:</b>				<b>191</b>
Fuel-Gas	4.96	gal	3.82	19
Fuel-Diesel	35.37	gal	3.43	121
Lube				21
Machinery Repair				30
Interest on Operating Capital (5.75%)				84
<b>TOTAL OPERATING COSTS/ACRE</b>				<b>6,117</b>
<b>NET RETURNS ABOVE OPERATING COSTS</b>				<b>-6,117</b>
<b>CASH OVERHEAD COSTS</b>				
Land Rent				1,150
Liability Insurance				11
Office Expense				163
Sanitation Fee				111
Property Taxes				7
Property Insurance				6
Investment Repairs				18
<b>TOTAL CASH OVERHEAD COSTS/ACRE</b>				<b>1,465</b>
<b>TOTAL CASH COSTS/ACRE</b>				<b>7,581</b>
<b>NON-CASH OVERHEAD COSTS (Capital Recovery)</b>				
Pump and Well				51
Shop/Hand Tools				22
Sprinkler Pipe				17
Equipment				88
<b>TOTAL NON-CASH OVERHEAD COSTS</b>				<b>178</b>
<b>TOTAL COST/ACRE</b>				<b>7,759</b>
<b>NET RETURNS ABOVE TOTAL COST</b>				<b>-7,759</b>

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**Table 4. COSTS PER ACRE TO PRODUCE RASPBERRIES: Production Year 1**

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre					Total Cost	Your Cost
		Labor Cost	Fuel	Lube & Repairs	Material Cost	Custom/ Rent		
<b>Cultural:</b>								
Weed: Hand weed	0.00	0	0	0	0	300	300	
Trellis: Install (Labor only)	41.00	505	10	4	0	0	519	
Drip System (Tape & Labor)	20.52	253	5	2	240	0	500	
Irrigate: (water & labor)	3.20	38	0	0	720	0	758	
Fertilize: (CN9, UN32, CAN17, 21-0-0)	0.60	7	0	0	110	0	117	
Fungicide: Botrytis (Pristine). Insect: Worm, Leafroller (Dipel, Mustang)	0.65	15	7	3	105	0	130	
Tunnels: Construct (metal up)	100.00	1,056	0	0	0	0	1,056	
Tunnels: Plastic up	25.00	302	0	0	0	0	302	
Pollinate: Bee Hives (2 for 3 months)	0.00	0	0	0	0	60	60	
Fertilize: Soil Sample 2/15 Ac	0.00	0	0	0	0	10	10	
Insect: Mite (Dipel, Mustang, Savey)	0.65	15	7	3	150	0	175	
Insect: Worm, Leafroller (Dipel, Mustang)	0.65	15	7	3	26	0	51	
Fertilize: Tissue sample 2/15 Ac	0.00	0	0	0	0	10	10	
Fertilize: (20-20-20, 10-30-30)	0.36	4	0	0	585	0	589	
Insect: Aphid, Leafhopper, Mite, Thrip, (Malathion)	0.00	0	0	0	16	0	16	
Tunnels: Plastic Down	25.00	302	0	0	0	0	302	
Cover Crop: Plant (Merced Rye)	0.34	8	3	2	25	0	38	
PCA	0.00	0	0	0	0	100	100	
ATV	0.38	9	1	0	0	0	10	
Pickup	2.33	53	18	6	0	0	77	
<b>TOTAL Cultural COSTS</b>	<b>220.69</b>	<b>2,582</b>	<b>58</b>	<b>23</b>	<b>1,978</b>	<b>480</b>	<b>5,120</b>	
<b>Harvest:</b>								
Pick and Pack Berries	83.33	1,005	0	0	7,785	18,000	26,790	
Haul Berries to Cooler	23.43	537	90	106	0	0	732	
Cooler Charge	0.00	0	0	0	0	2,250	2,250	
Sales Charge 8%	0.00	0	0	0	0	5,400	5,400	
<b>TOTAL Harvest COSTS</b>	<b>106.76</b>	<b>1,542</b>	<b>90</b>	<b>106</b>	<b>7,785</b>	<b>25,650</b>	<b>35,172</b>	
<b>Interest on Operating Capital @ 5.75%</b>							<b>417</b>	
<b>TOTAL OPERATING COSTS/ACRE</b>	<b>327.45</b>	<b>4,124</b>	<b>147</b>	<b>129</b>	<b>9,763</b>	<b>26,130</b>	<b>40,709</b>	
<b>CASH OVERHEAD:</b>								
Land Rent							2,300	
Liability Insurance							22	
Office Expense							325	
Sanitation Fee							221	
Food Safety Audit							25	
Regulatory Programs							50	
Property Taxes							93	
Property Insurance							75	
Investment Repairs							334	
<b>TOTAL CASH OVERHEAD COSTS/ACRE</b>							<b>3,445</b>	
<b>TOTAL CASH COSTS/ACRE</b>							<b>44,154</b>	
<b>NON-CASH OVERHEAD:</b>								
		Per producing Acres		Annual Cost Capital Recovery				
Shop/Hand Tools		481		43			43	
Plastic Sheeting for Tunnels		2,800		1,023			1,023	
Metal (support items) for Tunnel		8,000		1,024			1,024	
Irrigation System		1,200		83			83	
Pump and Well		1,481		103			103	
Trellis (materials)		2,586		505			505	
Wagon/Trailer-Sorting Packing		667		85			85	
Equipment		1,941		276			276	
<b>TOTAL NON-CASH OVERHEAD COSTS</b>		<b>19,156</b>		<b>3,142</b>			<b>3,142</b>	
<b>TOTAL COSTS/ACRE</b>							<b>47,296</b>	

**\*Growing Costs (Total Cash – Harvest): \$44,154 - \$35,172 = \$8,982**

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**Table 5. COSTS AND RETURNS PER ACRE TO PRODUCE RASPBERRIES: Production Year 1**

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
<b>GROSS RETURNS</b>					
Raspberries (4.5 lb tray)	4,500	tray	15.00	67,500	
<b>TOTAL GROSS RETURNS</b>	4,500	tray		67,500	
<b>OPERATING COSTS</b>					
<b>Fungicide:</b>					<b>79</b>
Pristine	21.00	oz	3.77	79	
<b>Insecticide:</b>					<b>219</b>
Dipel	3.00	lb	16.51	50	
Mustang	12.90	floz	2.25	29	
Savey 50WP	6.00	oz	20.69	124	
Malathion 5EC	3.00	pint	5.28	16	
<b>Fertilizer:</b>					<b>695</b>
CN9	244.00	lb	0.16	39	
UN32	60.00	lb	0.27	16	
CAN17	126.40	lb	0.19	24	
21-0-0 Soluble	100.00	lb	0.31	31	
20-20-20	150.00	lb	1.10	165	
10-30-30	300.00	lb	1.40	420	
<b>Water:</b>					<b>960</b>
Drip Tape	6,000	foot	0.04	240	
Water-Pumped	32.00	acin	22.50	720	
<b>Custom:</b>					<b>26,130</b>
Weed	3.00	acre	100.00	300	
Bee Hives	2.00	each	30.00	60	
Soil Analysis	0.13	each	75.00	10	
Leaf Analysis	0.13	each	75.00	10	
PCA	1.00	acre	100.00	100	
Piece Rate	4,500	tray	4.00	18,000	
Cooler (cost per tray)	4,500	tray	0.50	2,250	
Sales 8% gross	4,500	tray	1.20	5,400	
<b>Harvest:</b>					<b>7,785</b>
Clamshell, 12 Unit	4,500	each	1.73	7,785	
<b>Plants/Seeds:</b>					<b>25</b>
Merced Rye	46.00	lb	0.55	25	
<b>Labor:</b>					<b>4,124</b>
Equipment Operator Labor	35.95	hrs	19.10	687	
Non-Machine Labor	297.49	hrs	12.06	3,437	
<b>Machinery:</b>					<b>276</b>
Fuel-Gas	28.34	gal	3.82	108	
Fuel-Diesel	11.34	gal	3.43	39	
Lube				22	
Machinery Repair				107	
Interest on Operating Capital (5.75%)				417	
<b>TOTAL OPERATING COSTS/ACRE</b>				40,709	
<b>NET RETURNS ABOVE OPERATING COSTS</b>				26,791	
<b>CASH OVERHEAD COSTS</b>					
Land Rent				2,300	
Liability Insurance				22	
Office Expense				325	
Sanitation Fee				221	
Food Safety Audit				25	
Regulatory Programs				50	
Property Taxes				93	
Property Insurance				75	
Investment Repairs				334	
<b>TOTAL CASH OVERHEAD COSTS/ACRE</b>				3,445	
<b>TOTAL CASH COSTS/ACRE</b>				44,154	

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**Table 5. CONTINUED**

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
<b>NON-CASH OVERHEAD COSTS (Capital Recovery)</b>					
Shop/Hand Tools				43	
Plastic Sheeting for Tunnels				1,023	
Metal (support items) for Tunnel				1,024	
Irrigation System				83	
Pump and Well				103	
Trellis (materials)				505	
Wagon/Trailer-Sorting Packing				85	
Equipment				276	
<b>TOTAL NON-CASH OVERHEAD COSTS</b>				<b>3,142</b>	
<b>TOTAL COST/ACRE</b>				<b>47,296</b>	
<b>TOTAL COST/ tray</b>				<b>10.51</b>	
<b>NET RETURNS ABOVE TOTAL COST</b>				<b>20,204</b>	



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**Table 6. MONTHLY CASH COSTS PER ACRE TO PRODUCE RASPBERRIES; Production Year 1**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Beginning 01-11													
Ending 12-11	11	11	11	11	11	11	11	11	11	11	11	11	
Cultural:													
Weed: Hand weed	100	100	100										300
Trellis: Install (Labor only)			519										519
Drip System (Tape & Labor)			500										500
Irrigate: (water & labor)			95										758
Fertilize: (GN9, UN32, CAN17, 21-0-0)			24	24	24	24	24						117
Fungicide: Botrytis (Pristine), Insect:Worm, Leafroller (Dipel)							130						130
Tunnels: Construct (metal up)							1,056						1,056
Tunnels: Plastic up							302						302
Pollinate: Bee Hives (2 for 3 months)							60						60
Fertilize: Soil Sample 2/15 Ac							10						10
Insect: Mite (Dipel, Mustang, Savey)								175					175
Insect: Worm, Leafroller (Dipel, Mustang)								51					51
Fertilize: Tissue sample 2/15 Ac								10					10
Fertilize: (20-20-20, 10-30-30)								196					589
Insect: Aphid, Leafhopper; Mite, Thrip, (Malathion)									16				16
Tunnels: Plastic Down										302			302
Cover Crop: Plant (Merced Rye)											38		38
PCA	9	9	9	9	9	9	9	9	9	9	9	9	100
ATV	1	1	1	1	1	1	1	1	1	1	1	1	10
Pickup	6	6	6	6	6	6	6	6	6	6	6	6	77
<b>TOTAL Cultural COSTS</b>	<b>116</b>	<b>116</b>	<b>1,254</b>	<b>135</b>	<b>135</b>	<b>135</b>	<b>1,692</b>	<b>544</b>	<b>323</b>	<b>609</b>	<b>55</b>	<b>6</b>	<b>5,120</b>
Harvest:													
Pick and Pack Berries							8,924	8,948	8,918				26,790
Haul Berries to Cooler							244	245	244				732
Cooler Charge									2,250				2,250
Sales Charge 8%										5,400			5,400
<b>TOTAL Harvest COSTS</b>							<b>9,168</b>	<b>9,193</b>	<b>16,812</b>				<b>35,172</b>
Interest on Operating Capital (5.75%)	1	1	7	8	8	9	17	64	109	193	0	0	417
<b>TOTAL OPERATING COSTS/ACRE</b>	<b>117</b>	<b>118</b>	<b>1,262</b>	<b>143</b>	<b>143</b>	<b>144</b>	<b>1,709</b>	<b>9,775</b>	<b>9,625</b>	<b>17,614</b>	<b>54</b>	<b>6</b>	<b>40,709</b>
<b>CASH OVERHEAD</b>													
Land Rent	2,300												2,300
Liability Insurance	22												22
Office Expense	27	27	27	27	27	27	27	27	27	27	27	27	325
Sanitation Fee	20	20	20	20	20	20	20	20	20	20	20	20	221
Food Safety Audit	2	2	2	2	2	2	2	2	2	2	2	2	25
Regulatory Programs	5	5	5	5	5	5	5	5	5	5	5	5	50
Property Taxes							47						47
Property Insurance	75												75
Investment Repairs	28	28	28	28	28	28	28	28	28	28	28	28	334
<b>TOTAL CASH OVERHEAD COSTS</b>	<b>2,478</b>	<b>82</b>	<b>82</b>	<b>128</b>	<b>82</b>	<b>82</b>	<b>82</b>	<b>82</b>	<b>82</b>	<b>82</b>	<b>82</b>	<b>101</b>	<b>3,445</b>
<b>TOTAL CASH COSTS/ACRE</b>	<b>2,595</b>	<b>199</b>	<b>1,343</b>	<b>271</b>	<b>225</b>	<b>226</b>	<b>1,791</b>	<b>9,857</b>	<b>9,707</b>	<b>17,696</b>	<b>136</b>	<b>108</b>	<b>44,154</b>

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**Table 7. RANGING ANALYSIS: Production Year 1**

COST PER ACRE AT VARYING YIELDS TO PRODUCE RASPBERRIES

	YIELD (trays/acre)						
	3,000	3,500	4,000	4,500	5,000	5,500	6,000
<b>OPERATING COSTS:</b>							
Cultural	5,120	5,120	5,120	5,120	5,120	5,120	5,120
Harvest (pick, pack, haul, cool, sell)	23,692	27,519	31,346	35,172	38,999	42,826	46,652
Interest on operating capital @ 5.75%	319	352	384	417	449	482	515
<b>TOTAL OPERATING COSTS/ACRE</b>	<b>29,131</b>	<b>32,991</b>	<b>36,850</b>	<b>40,709</b>	<b>44,568</b>	<b>48,428</b>	<b>52,287</b>
Total Operating Costs/tray	9.71	9.43	9.21	9.05	8.91	8.81	8.71
<b>CASH OVERHEAD COSTS/ACRE</b>	<b>3,445</b>	<b>3,445</b>	<b>3,445</b>	<b>3,445</b>	<b>3,445</b>	<b>3,445</b>	<b>3,445</b>
<b>TOTAL CASH COSTS/ACRE</b>	<b>32,576</b>	<b>36,435</b>	<b>40,295</b>	<b>44,154</b>	<b>48,013</b>	<b>51,873</b>	<b>55,732</b>
Total Cash Costs/tray	10.86	10.41	10.07	9.81	9.60	9.43	9.29
<b>NON-CASH OVERHEAD COSTS/ACRE</b>	<b>3,142</b>	<b>3,142</b>	<b>3,142</b>	<b>3,142</b>	<b>3,142</b>	<b>3,142</b>	<b>3,142</b>
<b>TOTAL COSTS/ACRE</b>	<b>35,718</b>	<b>39,578</b>	<b>43,437</b>	<b>47,296</b>	<b>51,155</b>	<b>55,015</b>	<b>58,874</b>
Total Costs/tray	11.91	11.31	10.86	10.51	10.23	10.00	9.81

NET RETURNS PER ACRE ABOVE OPERATING COSTS

PRICE	YIELD(trays/acre)						
	3,000	3,500	4,000	4,500	5,000	5,500	6,000
\$/tray							
10	869	2,009	3,150	4,291	5,432	6,572	7,713
12	6,869	9,009	11,150	13,291	15,432	17,572	19,713
14	12,869	16,009	19,150	22,291	25,432	28,572	31,713
15	15,869	19,509	23,150	26,791	30,432	34,072	37,713
16	18,869	23,009	27,150	31,291	35,432	39,572	43,713
18	24,869	30,009	35,150	40,291	45,432	50,572	55,713
20	30,869	37,009	43,150	49,291	55,432	61,572	67,713

NET RETURNS PER ACRE ABOVE CASH COSTS

PRICE	YIELD(trays/acre)						
	3,000	3,500	4,000	4,500	5,000	5,500	6,000
\$/tray							
10	-2,576	-1,436	-295	846	1,987	3,127	4,268
12	3,424	5,565	7,705	9,846	11,987	14,127	16,268
14	9,424	12,565	15,705	18,846	21,987	25,127	28,268
15	12,424	16,065	19,705	23,346	26,987	30,627	34,268
16	15,424	19,565	23,705	27,846	31,987	36,127	40,268
18	21,424	26,565	31,705	36,846	41,987	47,127	52,268
20	27,424	33,565	39,705	45,846	51,987	58,127	64,268

NET RETURNS PER ACRE ABOVE TOTAL COSTS

PRICE	YIELD(trays/acre)						
	3,000	3,500	4,000	4,500	5,000	5,500	6,000
\$/tray							
10	-5,718	-4,578	-3,437	-2,296	-1,155	-15	1,126
12	282	2,422	4,563	6,704	8,845	10,985	13,126
14	6,282	9,422	12,563	15,704	18,845	21,985	25,126
15	9,282	12,922	16,563	20,204	23,845	27,485	31,126
16	12,282	16,422	20,563	24,704	28,845	32,985	37,126
18	18,282	23,422	28,563	33,704	38,845	43,985	49,126
20	24,282	30,422	36,563	42,704	48,845	54,985	61,126

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**Table 8. COSTS PER ACRE TO PRODUCE RASPBERRIES: Production Year 2**

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre					Total Cost	Your Cost
		Labor Cost	Fuel	Lube & Repairs	Material Cost	Custom/Rent		
<b>Cultural:</b>								
Prune: Hand	35.00	422	0	0	0	0	422	
Weed: Hand weed	0.00	0	0	0	0	150	150	
Prune: Primocane Suppression (Shark)	0.65	15	7	3	36	0	61	
Prune: Hand (clip)	35.00	422	0	0	0	0	422	
Cover Crop: Mow	0.21	5	2	1	0	0	8	
Fertilize: Soil Test 2/15 ac	0.00	0	0	0	0	10	10	
Irrigate: (water & labor)	2.00	24	0	0	450	0	474	
Fertilize: (CN9, UN32, CAN17, 21-0-0)	0.12	1	0	0	110	0	112	
Insect: Worm (Dipel) Leaf roller (Mustang)	0.65	15	7	3	26	0	51	
Insect: Aphid, Leafhopper, Mite, Thrip (Malathion)	0.65	15	7	3	16	0	41	
Tunnels: Plastic rolled up	25.00	302	0	0	0	0	302	
Pollinate: 2 Hives (2 months)	0.00	0	0	0	0	60	60	
Fertilize: (20-20-20, 10-30-30)	0.48	6	0	0	585	0	591	
Insect: (Dipel, Mustang)	0.65	15	7	3	26	0	51	
Fertilize: Leaf Analysis 2/15 ac	0.00	0	0	0	0	10	10	
Insect: Worm (Success)	0.65	15	7	3	38	0	55	
Tunnels/Trellis: Remove	125.00	1,508	0	0	0	0	1,508	
Postharvest Cleanup	18.17	221	5	2	0	0	228	
PCA	0.00	0	0	0	0	100	100	
ATV	0.75	17	2	1	0	0	20	
Pickup	5.00	115	38	12	0	0	165	
<b>TOTAL Cultural COSTS</b>	<b>249.61</b>	<b>3,117</b>	<b>81</b>	<b>32</b>	<b>1,288</b>	<b>330</b>	<b>4,847</b>	
<b>Harvest:</b>								
Harvest (+ foreman & checker)	100.00	1,206	0	0	8,650	20,000	29,856	
Haul	28.13	645	322	124	0	0	1,091	
Cooling	0.00	0	0	0	0	2,500	2,500	
Sales 8% gross	0.00	0	0	0	0	6,000	6,000	
<b>TOTAL Harvest COSTS</b>	<b>128.13</b>	<b>1,851</b>	<b>322</b>	<b>124</b>	<b>8,650</b>	<b>28,500</b>	<b>39,447</b>	
Interest on Operating Capital @ 5.75%							420	
<b>TOTAL OPERATING COSTS/ACRE</b>	<b>377.74</b>	<b>4,968</b>	<b>403</b>	<b>156</b>	<b>9,938</b>	<b>28,830</b>	<b>44,714</b>	
<b>CASH OVERHEAD:</b>								
Food Safety Audit							25	
Regulatory Programs							50	
Land Rent							1,150	
Liability Insurance							11	
Office Expense							163	
Sanitation Fee							111	
Property Taxes							47	
Property Insurance							38	
Investment Repairs							167	
<b>TOTAL CASH OVERHEAD COSTS/ACRE</b>							<b>1,761</b>	
<b>TOTAL CASH COSTS/ACRE</b>							<b>46,475</b>	
<b>NON-CASH OVERHEAD:</b>								
		Per producing Acre		Annual Cost		Capital Recovery		
Irrigation System		600		42		42		
Pump and Well		741		51		51		
Shop/Hand Tools		241		22		22		
Trellis (materials)		1,293		253		253		
Plastic Sheeting for Tunnels		1,400		512		512		
Metal (support items) for Tunnel		4,000		512		512		
Wagon/Trailer-Sorting Packing		333		43		43		
Equipment		2,304		301		301		
<b>TOTAL NON-CASH OVERHEAD COSTS</b>		<b>10,911</b>		<b>1,735</b>		<b>1,735</b>		
<b>TOTAL COSTS/ACRE</b>							<b>48,210</b>	

\*Growing Costs (Total Cash – Harvest): \$46,475 - \$39,447 = \$7,028

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**Table 9. COSTS AND RETURNS PER ACRE TO PRODUCE RASPBERRIES: Production Year 2**

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
<b>GROSS RETURNS</b>					
Raspberries 4.5 lb tray	5,000	tray	15.00	75,000	
<b>TOTAL GROSS RETURNS</b>	5,000	tray		75,000	
<b>OPERATING COSTS</b>					
<b>Herbicide:</b>					<b>36</b>
Shark EW	3.66	floz	9.92	36	
<b>Insecticide:</b>					<b>106</b>
Dipel	2.00	lb	16.51	33	
Mustang	8.60	floz	2.25	19	
Malathion 5EC	3.00	pint	5.28	16	
Success	5.00	floz	7.58	38	
<b>Fertilizer:</b>					<b>695</b>
CN9	244.00	lb	0.16	39	
UN32	60.00	lb	0.27	16	
CAN17	126.40	lb	0.19	24	
21-0-0 Soluble	100.00	lb	0.31	31	
20-20-20	150.00	lb	1.10	165	
10-30-30	300.00	lb	1.40	420	
<b>Water:</b>					<b>450</b>
Water-Pumped	20.00	acin	22.50	450	
<b>Custom:</b>					<b>28,830</b>
Weed	3.00	acre	50.00	150	
Soil Analysis	0.13	each	75.00	10	
Bee Hives	2.00	each	30.00	60	
Leaf Analysis	0.13	each	75.00	10	
Piece Rate (picking)	5,000	tray	4.00	20,000	
Cooler (cost per tray)	5,000	tray	0.50	2,500	
Sales 8% gross	5,000	tray	1.20	6,000	
PCA	1.00	acre	100.00	100	
<b>Harvest:</b>					<b>8,650</b>
Clamshell, 12 Unit	5,000	each	1.73	8,650	
<b>Labor:</b>					<b>4,959</b>
Equipment Operator Labor	45.04	hrs	19.10	851	
Non-Machine Labor	340.60	hrs	12.06	4,108	
<b>Machinery:</b>					<b>553</b>
Fuel-Gas	94.89	gal	3.82	362	
Fuel-Diesel	11.87	gal	3.43	41	
Lube				60	
Machinery Repair				95	
Interest on Operating Capital (5.75%)				420	
<b>TOTAL OPERATING COSTS/ACRE</b>				44,714	
<b>NET RETURNS ABOVE OPERATING COSTS</b>				30,286	
<b>CASH OVERHEAD COSTS</b>					
Food Safety Audit				25	
Regulatory Programs				50	
Land Rent				1,150	
Liability Insurance				11	
Office Expense				163	
Sanitation Fee				111	
Property Taxes				47	
Property Insurance				38	
Investment Repairs				167	
<b>TOTAL CASH OVERHEAD COSTS/ACRE</b>				1,761	
<b>TOTAL CASH COSTS/ACRE</b>				46,475	

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**Table 9. CONTINUED**

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Irrigation System				42	
Pump and Well				51	
Shop/Hand Tools				22	
Trellis (materials)				253	
Plastic Sheeting for Tunnels				512	
Metal (support items) for Tunnel				512	
Wagon/Trailer-Sorting Packing				43	
Equipment				301	
<b>TOTAL NON-CASH OVERHEAD COSTS</b>				<b>1,735</b>	
<b>TOTAL COST/ACRE</b>				<b>48,210</b>	
<b>TOTAL COST/ each</b>				<b>9.64</b>	
<b>NET RETURNS ABOVE TOTAL COST</b>				<b>26,790</b>	

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**Table 10. MONTHLY CASH COSTS PER ACRE TO PRODUCE RASPBERRIES: Production Yr 2**

Beginning 01-12	JAN	FEB	MAR	APR	MAY	JUN	JUL	TOTAL
Ending 07-12	12	12	12	12	12	12	12	
<b>Cultural:</b>								
Prune: Hand	422							422
Weed: Hand weed	50	50	50					150
Prune: Primocane Suppression (Shark)		61						61
Cover Crop: Mow			8					8
Fertilize: Soil Test 2/15 ac			10					10
Irrigate: (water & labor)			95	95	95	95	95	474
Fertilize: (CN9, UN32, CAN17, 21-0-0)			112					112
Insect: Worm (Dipel) Leaf roller (Mustang)			51					51
Insect: Aphid, Leafhopper,Mite, Thrip (Malathion)			41					41
Tunnels: Plastic rolled up			302					302
Pollinate: 2 Hives (2 months)				60				60
Fertilize: (20-20-20, 10-30-30)				148	148	148	148	591
Prune: Hand (clip)				211	211			422
Insect: (Dipel, Mustang)				51				51
Fertilize: Leaf Analysis 2/15 ac					10			10
Insect: Worm (Success)						63		63
Tunnels/Trellis; Remove							1,508	1,508
Postharvest Cleanup							228	228
PCA	14	14	14	14	14	14	14	100
ATV	3	3	3	3	3	3	3	20
Pickup	24	24	24	24	24	24	24	165
<b>TOTAL Cultural COSTS</b>	<b>513</b>	<b>152</b>	<b>708</b>	<b>605</b>	<b>504</b>	<b>346</b>	<b>2,019</b>	<b>4,847</b>
<b>Harvest:</b>								
Harvest (+foreman & checker)					9,954	9,955	9,948	29,856
Haul					363	364	363	1,091
Cooling					834	834	833	2,500
Sales 8% gross							6,000	6,000
<b>TOTAL Harvest COSTS</b>					<b>11,150</b>	<b>11,152</b>	<b>17,144</b>	<b>39,447</b>
Interest on Operating Capital (5.75%)	2	3	7	9	65	120	212	420
<b>TOTAL OPERATING COSTS/ACRE</b>	<b>515</b>	<b>155</b>	<b>715</b>	<b>615</b>	<b>11,720</b>	<b>11,619</b>	<b>19,375</b>	<b>44,714</b>
<b>CASH OVERHEAD</b>								
Food Safety Audit	4	4	4	4	4	4	4	25
Regulatory Programs	7	7	7	7	7	7	7	50
Land Rent	164	164	164	164	164	164	164	1,150
Liability Insurance	11							11
Office Expense	23	23	23	23	23	23	23	163
Sanitation Fee	16	16	16	16	16	16	16	111
Property Taxes		24				24		47
Property Insurance	38							38
Investment Repairs	24	24	24	24	24	24	24	167
<b>TOTAL CASH OVERHEAD COSTS</b>	<b>287</b>	<b>262</b>	<b>238</b>	<b>238</b>	<b>238</b>	<b>262</b>	<b>238</b>	<b>1,761</b>
<b>TOTAL CASH COSTS/ACRE</b>	<b>802</b>	<b>417</b>	<b>953</b>	<b>853</b>	<b>11,958</b>	<b>11,880</b>	<b>19,613</b>	<b>46,475</b>

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**Table 11. RANGING ANALYSIS: Production Year 2**

COST PER ACRE AT VARYING YIELDS TO PRODUCE RASPBERRIES

	YIELD (trays/acre)						
	3,500	4,000	4,500	5,000	5,500	6,000	6,500
<b>OPERATING COSTS:</b>							
Cultural	4,847	4,847	4,847	4,847	4,847	4,847	4,847
Harvest: Pick, Pack, Haul, Cool, Sell	29,413	32,758	36,102	39,447	42,792	46,137	49,481
Interest on operating capital @ 5.75%	327	358	389	420	451	482	513
<b>TOTAL OPERATING COSTS/ACRE</b>	<b>34,587</b>	<b>37,962</b>	<b>41,338</b>	<b>44,714</b>	<b>48,090</b>	<b>51,465</b>	<b>54,841</b>
Total Operating Costs/tray	9.88	9.49	9.19	8.94	8.74	8.58	8.44
<b>CASH OVERHEAD COSTS/ACRE</b>	<b>1,761</b>	<b>1,761</b>	<b>1,761</b>	<b>1,761</b>	<b>1,761</b>	<b>1,761</b>	<b>1,761</b>
<b>TOTAL CASH COSTS/ACRE</b>	<b>36,348</b>	<b>39,724</b>	<b>43,100</b>	<b>46,475</b>	<b>49,851</b>	<b>53,227</b>	<b>56,603</b>
Total Cash Costs/tray	10.39	9.93	9.58	9.3	9.06	8.87	8.71
<b>NON-CASH OVERHEAD</b>	<b>1,735</b>	<b>1,735</b>	<b>1,735</b>	<b>1,735</b>	<b>1,735</b>	<b>1,735</b>	<b>1,735</b>
<b>TOTAL COSTS/ACRE</b>	<b>38,083</b>	<b>41,458</b>	<b>44,834</b>	<b>48,210</b>	<b>51,586</b>	<b>54,961</b>	<b>58,337</b>
Total Costs/tray	10.88	10.36	9.96	9.64	9.38	9.16	8.97

NET RETURNS PER ACRE ABOVE OPERATING COSTS

PRICE \$/ tray	YIELD(trays/acre)						
	3,500	4,000	4,500	5,000	5,500	6,000	6,500
10	413	2,038	3,662	5,286	6,910	8,535	10,159
12	7,413	10,038	12,662	15,286	17,910	20,535	23,159
14	14,413	18,038	21,662	25,286	28,910	32,535	36,159
15	17,913	22,038	26,162	30,286	34,410	38,535	42,659
16	21,413	26,038	30,662	35,286	39,910	44,535	49,159
18	28,413	34,038	39,662	45,286	50,910	56,535	62,159
20	35,413	42,038	48,662	55,286	61,910	68,535	75,159

NET RETURNS PER ACRE ABOVE CASH COSTS

PRICE \$/ tray	YIELD(trays/acre)						
	3,500	4,000	4,500	5,000	5,500	6,000	6,500
10	-1,348	276	1,900	3,525	5,149	6,773	8,398
12	5,652	8,276	10,900	13,525	16,149	18,773	21,398
14	12,652	16,276	19,900	23,525	27,149	30,773	34,398
15	16,152	20,276	24,400	28,525	32,649	36,773	40,898
16	19,652	24,276	28,900	33,525	38,149	42,773	47,398
18	26,652	32,276	37,900	43,525	49,149	54,773	60,398
20	33,652	40,276	46,900	53,525	60,149	66,773	73,398

NET RETURNS PER ACRE ABOVE TOTAL COSTS

PRICE \$/ tray	YIELD(trays/acre)						
	3,500	4,000	4,500	5,000	5,500	6,000	6,500
10	-3,083	-1,458	166	1,790	3,414	5,039	6,663
12	3,917	6,542	9,166	11,790	14,414	17,039	19,663
14	10,917	14,542	18,166	21,790	25,414	29,039	32,663
15	14,417	18,542	22,666	26,790	30,914	35,039	39,163
16	17,917	22,542	27,166	31,790	36,414	41,039	45,663
18	24,917	30,542	36,166	41,790	47,414	53,039	58,663
20	31,917	38,542	45,166	51,790	58,414	65,039	71,663

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**Table 12. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD**

**ANNUAL EQUIPMENT COSTS: Production Year 1**

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
						Insur- ance	Taxes	
11	55HP 2WD Tractor	37,609	12	9,403	3,584	189	235	4,008
11	ATV 4WD	7,430	7	2,818	924	41	51	1,016
11	Pickup 1/2 Ton	26,000	5	11,653	3,845	151	188	4,184
11	Trailer	2,300	20	120	177	10	12	199
11	Vine Sprayer 100g 3 pt	10,500	10	1,857	1,194	50	62	1,305
11	Grain drill 4'	7,000	15	672	631	31	38	700
11	Truck 2 Ton	40,000	5	17,927	5,915	233	290	6,437
TOTAL		130,839		44,450	16,269	704	876	17,850
60% of new cost*		78,503		26,670	9,762	422	526	10,710

\*Used to reflect a mix of new and used equipment

**ANNUAL EQUIPMENT COSTS: Production Year 2**

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur- ance	Taxes	Total
12	ATV 4WD	7,430	7	2,818	924	41	51	1,016
12	Pickup 1/2 Ton	26,000	5	11,653	3,845	151	188	4,184
12	Truck 1 Ton	36,000	5	20,000	4,620	225	280	5,125
12	Vine Sprayer 100g 3 pt	10,500	10	1,857	1,194	50	62	1,305
12	Mower (flail) 5'	6,500	10	1,149	739	31	38	808
12	Disc Offset 10'	11,855	15	1,138	1,069	52	65	1,186
12	140HP MFWD Tractor	146,000	15	28,424	12,487	700	872	14,060
TOTAL		281,894		76,442	28,462	1,439	1,792	31,692
60% of new cost*		169,136		45,865	17,077	863	1,075	19,015

\*Used to reflect a mix of new and used equipment

**ANNUAL INVESTMENT COSTS: Production Years 1 and 2**

Description	Total Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead			Total
					Insur- ance	Taxes	Repairs	
<b>INVESTMENT</b>								
Shop/Hand Tools	13,000	15	1,260	1,172	57	71	252	1,552
Plastic Sheeting for Tunnels	42,000	3	0	15,351	169	210	840	16,569
Metal (support items) for Tunnel	120,000	10	0	15,352	482	600	2,400	18,834
Irrigation System	18,000	25	0	1,245	72	90	300	1,708
Pump and Well	40,000	25	0	2,767	161	200	598	3,726
Trellis (materials)	38,788	6	0	7,581	156	194	795	8,726
Wagon/Trailer-Sorting Packing	10,000	10	0	1,279	40	50	200	1,570
TOTAL INVESTMENT	281,788		1,260	44,748	1,136	1,415	5,385	52,685

**ANNUAL BUSINESS OVERHEAD COSTS  
 Production Years 1 and 2**

Description	Units/		Price/ Unit	Total Cost
	Farm	Unit		
Food Safety	30	acre	25.00	750
Regulatory	30	acre	50.00	1,500
Land Rent	30	acre	2,300.00	69,000
Liability	27	acre	21.74	587
Office Expense	27	acre	325.00	8,775
Sanitation Fee	15	acre	221.33	3,320



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**Table 13. HOURLY EQUIPMENT COSTS: Production Year 1**

Yr Description	BERRIES Hours Used	Total Hours Used	COSTS PER HOUR							Total Costs/Hr.
			Capital Recovery	Cash Overhead			Operating			
				Insur- ance	Taxes	Lube & Repairs	Fuel	Total Oper.		
11 55HP 2WD Tractor	63	1,023	2.10	0.11	0.14	3.07	9.26	12.34	14.69	
11 ATV 4WD	6	285	1.95	0.09	0.11	0.93	2.55	3.48	5.62	
11 Pickup 1/2 Ton	35	133	17.35	0.68	0.85	2.4	7.64	10.04	28.92	
11 Trailer	23	143	0.74	0.04	0.05	0.36	0.00	0.36	1.19	
11 Vine Sprayer 100g 3	29	92	7.79	0.32	0.40	2.25	0.00	2.25	10.76	
11 Grain drill 4'	5	100	3.79	0.18	0.23	1.84	0.00	1.84	6.05	
11 Truck 2 Ton	351	400	8.87	0.35	0.43	4.52	3.82	8.34	18.00	

**HOURLY EQUIPMENT COSTS: Production Year 2**

Yr Description	BERRIES Hours Used	Total Hours Used	COSTS PER HOUR							Total Costs/Hr.
			Capital Recovery	Cash Overhead			Operating			
				Insur- ance	Taxes	Lube & Repairs	Fuel	Total Oper.		
12 55HP 2WD Tractor	57	951	2.26	0.12	0.15	3.20	9.26	12.46	14.99	
12 ATV 4WD	11	285	1.94	0.09	0.11	0.93	2.55	3.48	5.61	
12 Pickup 1/2 Ton	75	130	17.74	0.70	0.87	2.42	7.64	10.06	29.37	
12 Truck 1 Ton	422	422	6.57	0.32	0.40	3.00	11.46	14.46	21.74	
12 Vine Sprayer 100g 3	49	156	4.60	0.19	0.24	1.33	0.00	1.33	6.36	
12 Mower (flail) 5'	3	200	2.22	0.09	0.11	3.17	0.00	3.17	5.59	
12 Disc Offset 10'	3	133	4.82	0.24	0.29	1.89	0.00	1.89	7.24	
12 140HP MFWD	3	1066	7.03	0.39	0.49	7.90	27.87	35.77	43.68	

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**Table 14. OPERATIONS WITH EQUIPMENT & MATERIALS: Production Year 1**

Operation	Operation Month	Tractor	Labor Type/ Implement	Rate/ Material	acre	Unit	
Weed: Hand weed 3X	Jan			Weed PY1	1.00	acre	
	Feb			Weed PY1	1.00	acre	
	Mar			Weed PY1	1.00	acre	
Trellis: Install (Labor only)	Mar	55HP 2WD Tractor	Trailer	Non-Machine Labor	40.00	hours	
Drip System (Tape & Labor)	Mar	55HP 2WD Tractor	Trailer	Non-Machine Labor	20.00	hours	
				Drip Tape	6,000.00	foot	
Irrigate: (water & labor)	Mar			Non-Machine Labor	0.40	hour	
				Water-Pumped	4.00	acin	
	Apr			Non-Machine Labor	0.40	hour	
				Water-Pumped	4.00	acin	
	May			Non-Machine Labor	0.40	hour	
				Water-Pumped	4.00	acin	
	June			Non-Machine Labor	0.40	hour	
				Water-Pumped	4.00	acin	
	July			Non-Machine Labor	0.40	hour	
				Water-Pumped	4.00	acin	
Aug			Non-Machine Labor	0.40	hour		
			Water-Pumped	4.00	acin		
Sept			Non-Machine Labor	0.40	hour		
			Water-Pumped	4.00	acin		
Oct			Non-Machine Labor	0.40	hour		
			Water-Pumped	4.00	acin		
Fertilize: CN9 UN32 CAN17 21-0-0	Mar			Non-Machine Labor	0.12	hour	
				CN9	48.80	lb	
				UN32	12.00	lb	
				CAN17	25.28	lb	
	Apr				21-0-0 Soluble	20.00	lb
					Non-Machine Labor	0.12	hour
					CN9	48.80	lb
					UN32	12.00	lb
	May				CAN17	25.28	lb
					21-0-0 Soluble	20.00	lb
					Non-Machine Labor	0.12	hour
					CN9	48.80	lb
	June				UN32	12.00	lb
					CAN17	25.28	lb
					21-0-0 Soluble	20.00	lb
					Non-Machine Labor	0.12	hour
	July				CN9	48.80	lb
					UN32	12.00	lb
					CAN17	25.28	lb
					21-0-0 Soluble	20.00	lb
	Fungicide: Bot Insect:Wrm LR	July	55HP 2WD Tractor	Vine Sprayer 100g 3 pt	Equipment Operator Labor	0.78	hour
					Pristine	21.00	oz
					Dipel	1.00	lb
					Mustang	4.30	floz

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**Table 14. CONTINUED**

Operation	Operation Month	Tractor	Labor Type/ Implement	Rate/ Material	acre	Unit
Tunnels: Construct (metal up)	July			Non-Machine Labor	100.00	hours
Tunnels: Plastic up	July			Non-Machine Labor	25.00	hours
Pollinate: Bee Hives (2 for 3 mo)	July					
Fertilize: Soil Sample 2/15 Ac	July			Soil Analysis	0.13	each
Insect: Mite (Dipel Mustang Save)	Aug	55HP 2WD Tractor	Vine Sprayer 100g 3 pt	Equipment Operator Labor	0.78	hour
				Dipel	1.00	lb
				Mustang	4.30	floz
				Savey 50WP	6.00	oz
Insect: Wrm Lfroller (Dipel Must)	Aug	55HP 2WD Tractor	Vine Sprayer 100g 3 pt	Equipment Operator Labor	0.78	hour
				Dipel	1.00	lb
				Mustang	4.30	floz
Fertilize: Tissue sample 2/15 A	Aug			Leaf Analysis	0.13	each
Fertilize: 20-20-20 10-30-30	Aug			Non-Machine Labor	0.12	hour
				20-20-20	50.00	lb
				10-30-30	100.00	lb
	Sept			Non-Machine Labor	0.12	hour
				20-20-20	50.00	lb
				10-30-30	100.00	lb
	Oct			Non-Machine Labor	0.12	hour
				20-20-20	50.00	lb
				10-30-30	100.00	lb
Insect: Aphd LH mite thrip Malat	Sept			Malathion 5EC	3.00	pint
Tunnels: Plastic Down	Oct			Non-Machine Labor	25.00	hours
Cover Crop: Plant (Merced Rye)4'	Nov	55HP 2WD Tractor	Grain drill 4'	Equipment Operator Labor	0.40	hour
				Merced Rye	46.00	lb
PCA	Nov			PCA	1.00	acre
ATV	Nov		ATV 4WD	Equipment Operator Labor	0.46	hour
Pickup	Nov		Pickup 1/2 Ton	Equipment Operator Labor	2.80	hours
Pick and Pack Berries	Aug			Non-Machine Labor	27.75	hours
				Clamshell, 12 Unit	1,499.00	each
				Piece Rate	1,499.00	each
	Sept			Non-Machine Labor	27.83	hours
				Clamshell, 12 Unit	1,503.00	each
				Piece Rate	1,503.00	each
	Oct			Non-Machine Labor	27.75	hours
				Clamshell, 12 Unit	1,498.00	each
				Piece Rate	1,498.00	each
Haul Berries to Cooler	Aug		Truck 2 Ton	Equipment Operator Labor	9.36	hours
	Sept		Truck 2 Ton	Equipment Operator Labor	9.40	hours
	Oct		Truck 2 Ton	Equipment Operator Labor	9.36	hours
Cooler Charge	Oct			Cooler (cost per tray)	4,500.00	each
Sales Charge 8%	Oct			Sales 8% gross	4,500.00	each
	Sept		Truck 2 Ton	Equipment Operator Labor	9.40	hours
	Oct		Truck 2 Ton	Equipment Operator Labor	9.36	hours
Cooler Charge	Oct			Cooler (cost per tray)	4,500.00	each
Sales Charge 8%	Oct			Sales 8% gross	4,500.00	each

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**Table 15. OPERATIONS WITH EQUIPMENT & MATERIALS: Production Year 2**

Operation	Operation Month	Tractor	Implement	Labor Type/ Material	Rate/ acre	Unit
Prune: Hand (floricane)	Jan			Non-Machine Labor	35.00	hours
Weed: Hand 3X	Jan			Weed	1.00	acre
	Feb			Weed	1.00	acre
	Mar			Weed	1.00	acre
Prune: Primocane Suppression (Sh	Feb	55HP 2WD Tractor	Vine Sprayer 100g 3 pt	Equipment Operator Labor	0.78	hour
				Shark EW	3.66	floz
Prune: Hand (clip)	Feb			Non-Machine Labor	35.00	hours
Cover Crop: Mow	Mar	55HP 2WD Tractor	Mower (flail) 5'	Equipment Operator Labor	0.25	hour
Fertilize: Soil Test 2/15 ac	Mar			Soil Analysis	0.13	each
				Non-Machine Labor	0.40	hour
Irrigate	Mar			Water-Pumped	4.00	acin
				Non-Machine Labor	0.40	hour
	Apr			Water-Pumped	4.00	acin
				Non-Machine Labor	0.40	hour
	May			Water-Pumped	4.00	acin
				Non-Machine Labor	0.40	hour
	June			Water-Pumped	4.00	acin
				Non-Machine Labor	0.40	hour
	July			Water-Pumped	4.00	acin
Fertilize: CN9 UN32 CAN17 21-0-0	Mar			Non-Machine Labor	0.12	hour
				CN9	244.00	lb
				UN32	60.00	lb
				CAN17	126.40	lb
				21-0-0 Soluble	100.00	lb
Insect: Worm (Dipel)LRoller (Mus	Mar	55HP 2WD Tractor	Vine Sprayer 100g 3 pt	Equipment Operator Labor	0.78	hour
				Dipel	1.00	lb
				Mustang	4.30	floz
Insect:Aphid LH Mite Thr (Malath	Mar	55HP 2WD Tractor	Vine Sprayer 100g 3 pt	Equipment Operator Labor	0.78	hour
				Malathion 5EC	3.00	pint
Tunnels: Plastic Up	Mar			Non-Machine Labor	25.00	hours
Pollinate: 2 Hives (2 months)	Apr			Bee Hives	2.00	each
Fertilize: 20-20-20 10-30-30	Apr			Non-Machine Labor	0.12	hour
				20-20-20	37.50	lb
				10-30-30	75.00	lb
	May			Non-Machine Labor	0.12	hour
				20-20-20	37.50	lb
				10-30-30	75.00	lb
	June			Non-Machine Labor	0.12	hour
				20-20-20	37.50	lb
				10-30-30	75.00	lb
	July			Non-Machine Labor	0.12	hour
				20-20-20	37.50	lb
				10-30-30	75.00	lb
Prune: Hand	Apr			Non-Machine Labor	17.50	hours
	May			Non-Machine Labor	17.50	hours
Insect: (Dipel Mustang)	Apr	55HP 2WD Tractor	Vine Sprayer 100g 3 pt	Equipment Operator Labor	0.55	hour
				Dipel	1.00	lb
				Mustang	4.30	floz

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**Table 15. CONTINUED: Production Year 2**

Operation	Operation Month	Tractor	Implement	Labor Type/ Material	Rate/ acre	Unit
Fertilize: Leaf Analysis 2/15 ac	May			Leaf Analysis	0.13	each
Insect: Worm (Success)	June	55HP 2WD Tractor	Vine Sprayer 100g 3 pt	Equipment Operator Labor	0.55	hour
				Success	5.00	floz
Tunnels; Remove	July			Non-Machine Labor	125.00	hours
Postharvest Cleanup	July	140HP MFWD	Disc Offset 10'	Non-Machine Labor	18.00	hours
PCA	July			PCA	1.00	acre
ATV	July		ATV 4WD	Equipment Operator Labor	0.90	hour
Pickup	July		Pickup 1/2 Ton	Equipment Operator Labor	6.00	hours
Harvest (+foreman&checker)	May			Non-Machine Labor	33.30	hours
				Piece Rate	1,667.00	each
	June			Clamshell, 12 Unit	1,667.00	each
				Non-Machine Labor	33.40	hours
				Clamshell, 12 Unit	1,667.00	each
				Piece Rate	1,667.00	each
	July			Non-Machine Labor	33.30	hours
				Piece Rate	1,666.00	each
				Clamshell, 12 Unit	1,666.00	each
Haul	May		Truck 1 Ton	Equipment Operator Labor	11.24	hours
	June		Truck 1 Ton	Equipment Operator Labor	11.27	hours
	July		Truck 1 Ton	Equipment Operator Labor	11.24	hours
Cooling	May			Cooler (cost per tray)	1,667.00	each
	June			Cooler (cost per tray)	1,667.00	each
	July			Cooler (cost per tray)	1,666.00	each
Sales 8% gross	July			Sales 8% gross	5,000.00	each