University of California Agriculture and Natural Resources
UC Cooperative Extension
UC Davis Department of Agricultural and Resource Economics

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SAMPLE COSTS TO PRODUCE AND HARVEST FRESH MARKET RASPBERRIES

Primocane Bearing

Central Coast Region

Santa Cruz, Monterey, and San Benito Counties

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Central Coast Region – Santa Cruz, Monterey, and San Benito Counties - 2023

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INTRODUCTION

The sample costs to establish, produce, and harvest 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 and harvest 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 and 3, and Tables 4-6 a and b.

The hypothetical farm operation, production practices, overhead, and calculations are described under assumptions. For additional information or explanation of calculations used in the study, contact Mark Bolda, mpbolda@ucanr.edu, or Jeremy Murdock, Department of Agricultural and Resource Economics, University of California, Davis, (530) 752-4651. Sample Cost of Production studies for many commodities are available and can be downloaded from the website https://coststudies.ucdavis.edu. Archived studies are also available on the website.

ASSUMPTIONS

The following assumptions refer to calculations in Tables 1 to 8 and pertain to sample costs to establish, produce, and harvest fresh market primocane bearing raspberries in the Central Coast Region - Santa Cruz, Monterey, and San Benito Counties. Sample costs are given for tractors, fuel, repairs, labor, materials, and custom services and are based on current figures. **Costs per acre can vary considerably depending upon many variables including individual grower practices vs custom services, production location and weather conditions, land rent and taxes, soil type, water costs, pest pressures, material inputs, energy costs, and labor costs and availability.** Uncertainty about climate change and the regulatory environment may also impact the costs and returns studied here.

The practices and costs used in this study may not be applicable to all situations or used in each production year. Individual growers may use this study as a template and modify it to more accurately reflect their own situations. Additional raspberry production information is available from the University of California Division of Agriculture and Natural Resources at: https://anrcatalog.ucanr.edu/Details.aspx?itemNo=3525. **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.**

Raspberries are also produced using organic methods along the Central Coast, with roughly 20 percent of the crop produced and marketed as organic. Many of the same practices that are used in conventional raspberry production are also used in organic production. Differences between the two production systems are primarily, but not exclusively, found in approaches to crop fertilization and pest management.

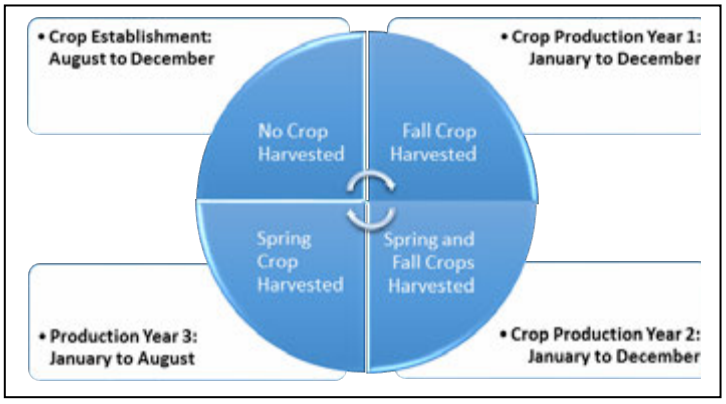
Farm. The farm consists of 45 contiguous acres of land. Raspberries are planted on 42 acres. Roads, the irrigation system, and buildings account for the additional three acres. The grower rents the land for $3,200 per acre per year and owns the equipment and machinery. In this study one production block and one crop rotation are outlined. However, to better utilize equipment and labor most growers will farm multiple blocks at the same time.

Establishment Year: Cultural Practices and Material Inputs

Tables 1, 2 and 3

Raspberries are a perennial crop that, when well-managed, can produce for up to five years in this region. For this study and location, we consider costs associated with the establishment of a primocane bearing raspberry planting, along with costs and returns for the production and harvest of a total of four crops. This planting, production, and harvest cycle is intended to ensure optimal productivity and fruit quality.

Crop Cycle Summary. For Central Coast raspberries, the complete crop cycle begins by preparing the field and planting raspberries during the establishment year, which begins in August and ends in December. The first production and fall harvest cycle, called Production Year 1, begins in January and ends in December. One spring and one fall crop are produced and harvested in Production Year 2, which begins in January and ends in December. A fourth crop is produced and harvested in Production Year 3, from January to June. The full raspberry crop cycle is completed in July or August with postharvest crop removal and field preparation for the next crop cycle.



Land Preparation. Two soil samples per 42 acres are taken for soil analysis prior to land preparation to help determine fertilization practices. The field is then ripped, disced, ring rolled, and landplaned. Six tons of composted greenwaste is custom applied and then incorporated into the soil by discing. Following these operations the field is again landplaned, then chiseled, and sprinkler irrigated with one acre-inch of water to ensure adequate moisture for fumigation. The field is then flat fumigated with a combination of chloropicrin and 1,3-dichloropropene for pest management purposes. Cost for a solid, tarped fumigation is estimated at $5,028 per acre, which includes a fumigation permit. After fumigation, the field is disced again and rototilled, if necessary, to break cloddy soils. Beds are then listed and shaped.

Fertilize. Fertilizer and application rate decisions are based on soil sampling and analysis as noted above. In addition to the greenwaste compost, 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.

Plant. Several raspberry varieties are planted in the region but 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 $12.30 per pound. This price falls within the range of prices 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 28 hours per acre to plant 260 pounds of plant stock.

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

Production Years 1 to 3: Cultural Practices and Material Inputs

Tables 4 – 6 a, b, c, and d

Trellis. Each acre of the raspberry production operation is assumed to be 300 feet long and 154 feet wide, with 21 crop rows per acre using a 7-foot row spacing. A trellis system is installed in March of Production Year 1. The total cost is estimated at $3,054 per acre, which includes materials, labor, and equipment use. Material costs include end posts, stakes, and the wire system. Because trellis materials can be used for other plantings, the material cost (estimated at roughly $2,025 per producing acre) is included in the non-cash or investment overhead and amortized accordingly. Labor and equipment use is estimated at $1,029 per acre and included in cultural costs.

Irrigate. A drip irrigation system is installed in Production Year 1 to irrigate the raspberry crop as needed during Production Years 1, 2, and 3. The drip line is tied to the lower wire of the trellis and emitters are placed every 6-inches. Both the drip line and emitters are used for two full crop cycles or six years in total. During winters, crop growth is generally dependent on seasonal rains. The total number of irrigations varies depending on seasonal conditions. For this study, raspberries are irrigated from March through October, using a total of 22 acre-inches of water in Production Year 1. For Production Year 2 water use is estimated at 36 acre-inches per acre, or 18 acre-inches for each of the spring and fall crops. In Production Year 3, the crop is irrigated from March to June using 12 acre-inches of water per acre. The cost of pumped water is $23.50 per acre inch, for a total of $282 per acre foot. **The total amount and cost of water may differ substantially in this area depending on factors such as climatic conditions, soil type, well depth and pumping variables, water district or agency, and associated delivery or other fees and taxes.**

CropManage. Growers may now take advantage of real-time recommendations for efficient water use and nitrogen fertilizer applications by using UC ANR's CropManage: https://cropmanage.ucanr.edu/. CropManage, which is currently available at no cost to growers, may be especially helpful in decision-making,

accurate documentation of material inputs, sustainable practices, and compliance with both state and regional regulatory programs (see Fertilizer and Irrigation Regulatory Programs section below). Commercially available software programs may also be used.

Tunnels. Tunnels, also called hoop houses, are constructed over the planted raspberries. Each tunnel is 21 feet wide (covering three rows) and 300 feet long. The structures consist of a line of anchor posts, bridged by a metal frame, and covered with a 5 mil thick semi-clear plastic, which is tied down with rope. Struts on each side of the tunnel maintain tension down the length of the structure. Plastic is taken down and secured, and unfurled and put over the structures, as needed, to ensure optimal growing conditions each year. The structures are removed at the end of Production Year 3 and are used for a second crop cycle. Labor for tunnel installation is included in the Production Year 1 costs. Management costs are included in all production years.

Fertilize. One soil sample and three leaf samples are taken and analyzed each production year to assist with fertility management and the nutritional needs of the plants. Following the 300 pounds per acre of slow release fertilizer that is applied pre-plant, liquid fertilizers are applied through the drip system during the three production years. For the fall crop in Production Year 1, alternating weekly applications of CN9 (at four gallons per acre), CAN17 (at three gallons per acre) and ammonium sulfate (at 15 pounds per acre) are made during the vegetative growth phase, which begins in March and ends in July. Beginning in August, applications of 20-20-20 (at 10 pounds per acre) and 10-30-30 (at four pounds per acre) are made during the flowering/fruiting phase.

Production Year 2 spring crop fertility practices are the same as for the fall crop in Production Year 1 but begin instead in February during the vegetative growth phase and end in April at the onset of flowering. For the fall crop in Production Year 2, fertilizer inputs are similar to those for the Production Year 1 fall crop. Depending on plant health and vigor, however, some growers may decrease fertility applications during this time period.

For the spring crop in Production Year 3 fertilizer inputs are the same as for the Production Year 2 spring crop. Though none are included in this study, some growers may also supplement these practices with micronutrient fertilizer applications.

Pest Management. Information for specific pest management materials and the associated application rates can be found in the *UC Integrated Pest Management (IPM) Guidelines for Caneberries*. For information on pest identification, monitoring, and pest management materials visit the UC IPM website at https://ipm.ucanr.edu/agriculture/caneberries/ or contact your local UCCE farm advisor. Written recommendations are required for many commercially applied pesticides and are made by licensed pest control advisers. For information and pesticide use permits, contact your local county Agricultural Commissioner's office.

Pest Control Adviser (PCA). A PCA monitors the field during Production Years 1, 2, and 3 for pest problems and nutritional status. Growers may hire private consultants on a per acre basis or as part of an agreement with an agricultural chemical and fertilizer company. In this study costs for a PCA are included in Production Years 1 and 2 at $140 per acre per year, and in Production Year 3 for a partial year at $70 per acre.

Weeds. During the three production years weeds are managed primarily by monthly hand weeding in January, February and March of Production Years 1 and 2 at a labor cost of $336 per acre per year. In Production Year 3 labor costs are reduced to $168 per acre because of the shortened production cycle. In each year row middles are disced. Some growers may use additional hand weeding labor in anchor rows during spring and summer. Costs per acre will differ depending on weed management strategy.

Insects (Arthropods). In all production years some combination of pest management materials are used to control leafrollers, aphids, leafhoppers, mites, thrips, and vinegar flies. Applications vary from year to year depending upon pest pressure. In this study, for Production Year 1, Dipel and Mustang are applied once in July, Dipel and Mustang are applied twice in August (once with Savey), and in September Malathion and Acramite are applied. For Production Year 2 Dipel, Malathion, and Delegate are applied once in the spring; the remainder of pest management practices are the same as in Production Year 1. In Production Year 3 the crop is treated once with Dipel, Malathion, and Delegate in May. The beneficial mite *Persimilis* is also released in the field to assist with mite control.

Diseases. In Production Year 1, Rally is applied twice, once in July (with the Dipel and Mustang) and once in September (with the Malathion and Acramite) to control mildew and rust. Switch is applied once (with Dipel and Malathion) for mold, and Pristine is applied once (with Dipel, Mustang, and Savey) for mold, mildew, and rust. For Production Year 2, disease management practices are similar to Production Year 1. For Production Year 3, Switch is applied once in May (with the Dipel, Malathion, and Delegate), and is the only disease management application in this production year.

Pollination. Bees are necessary for raspberry pollination. Cost is estimated at $300 per crop, or two hives at $150 per hive. The grower contracts with a beekeeper; during Production Year 1 hives are set out in July for three months, during Production Year 2 in March for two months and in July for three months, and again during Production Year 3 in March for three months. Some growers use three hives per crop depending on production conditions and needs; cost for pollination would therefore increase over those shown here.

Harvest. Production Year 1 harvest begins in August and extends through October. For Production Year 2 two crops are produced and managed simultaneously, with the spring harvest performed during April, May, and June and the fall harvest from August through October. Production Year 3 harvest may start as early as April and continue until the end of June. Raspberries are harvested by hand every few days at an average seasonal harvest/sort/pack rate cost of $8.00 per tray. Crew size and number of crews may vary through the season depending upon the yield. Harvest rate per person 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-half gallon buckets. It is then field sorted and packed into a tray containing 12 six-ounce plastic clam shells. Each tray weighs 4.5 pounds. A covered packing and sorting wagon/trailer with a stainless-steel tabletop is pulled by a small tractor to the harvest area. The wagon is managed by a 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 crew member and who also loads the trays on the truck. The truck holds up to two pallets with 144 trays per pallet and takes 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 $1.00 per tray for cooling services.

Yields and Returns. This study estimates a yield range for the Production Year 1 fall crop of 3,500 to 6,000 4.5-pound trays per acre, with a representative marketable yield at 4,750 trays per acre. Canes for the spring crop in Production Year 2 are managed for optimum yield; yield is therefore the same as for Production Year 1. This style of management results in suppressed yield for the fall crop in Production Year 2, which is reduced by about 40 percent. Total marketable yield for Production Year 2 is 7,600 trays per acre. Yield in Production Year 3 rebounds and is estimated at 4,750 trays per acre. Yields may vary from grower to grower depending on different production conditions and management practices.

The estimated unit price to growers in all three production years is $17 per tray based on the 2021 to 2023 Salinas-Watsonville shipping point prices from the USDA Agricultural Marketing Service. Prices range from a low of $11 to a high of $23 depending on market conditions. Estimated net returns to growers for a combination of yields and prices are shown on Tables 4d, 5d, and 6d, Ranging Analysis.

Prune/Train. Raspberry plants are not pruned but are trained during Production Year 1. Labor for training is estimated at 70 hours per acre. During Production Year 2 two raspberry crops are pruned/managed simultaneously. Management begins in January by pruning canes that have fruited from the Production Year 1 fall crop. At the same time, canes that are already growing for the Production Year 2 spring crop are trained and adjusted on the trellis system. Labor is estimated at 160 hours per acre for these two operations. Production Year 1 pruned canes are left on the ground and shredded and disked in March. In February, newly emerging canes for the Production Year 2 fall crop are suppressed with a Shark herbicide application and then clipped by hand in April. Labor for this operation is estimated at 35 hours per acre. The Shark herbicide also helps with weed control in cane rows. In January of Production Year 3 fruited canes from the Production Year 2 fall crop are pruned, shredded, and disked. Growing canes for the Production Year 3 spring crop are trained and adjusted on the trellis system. Labor is estimated at 70 hours per acre. In February any new, emerging growth and canes are suppressed with Shark, and clipped by hand in April. Labor is estimated at 35 hours per acre. Pruning and clipping practices for the crop cycle, and the associated costs for labor, can vary substantially from grower to grower.

Tunnel/Trellis Removal and Postharvest Operations. Following harvest of the Production Year 3 spring crop, raspberry canes are removed from the field, along with the tunnel, trellis, and drip systems. Materials from the tunnel, trellis, and drip systems are reusable. Postharvest operations are estimated at $3,402, which includes all labor and equipment use. Operations to prepare the field for the next crop take place after postharvest operations.

Early Crop Termination or Crop Extension. Depending on growing conditions, plant health, and vigor some growers may choose to terminate the crop production cycle early, removing plants and preparing the field for the next crop cycle following the spring crop in Production Year 2. Growers may also choose to stop production and remove the planting prior to Production Year 3 because of labor constraints, availability, and cost. In contrast, under conditions where plant growth, health, and vigor are not compromised by poor production conditions and/or labor constraints, some growers may extend the cropping cycle to the following spring.

Growing Costs. Some growers along the Central Coast of California prefer to focus on growing costs and therefore separate total harvest costs from total cash costs, equipment depreciation, and replacement costs. For this study, growing costs are noted at the bottom of Tables 4a, 5a and 6a and are calculated by subtracting total harvest costs from total costs. **Growing costs in this region vary considerably and depend on grower specific production practices, water and other input costs, and land rent and taxes.**

Labor, Equipment, and Interest

Labor. Labor rates are estimated at $29.60 per hour for machine operators and $23.68 for field labor, which includes overhead of 48 percent. The basic hourly wages are $20.00 for machine operators and $16.00 for general labor. The overhead includes the employers' share of federal and California state payroll taxes, workers' compensation insurance for berry crops (code 0079), and a percentage for other possible benefits. Workers' compensation costs will vary among growers, but for this study the cost is based upon the average industry rate as of January 1, 2023. Labor for operations involving machinery are 20 percent higher than the operation time given in Table 2, 4a, 5a and 6a to account for the extra labor involved in equipment set up, moving, maintenance, work breaks, and field repair.

California Minimum Wage and Overtime Rules. In 2016 new minimum wage and overtime laws were passed in California that were gradually phased in over time. For 2023 minimum wage increased to $15.50 per hour, a 3.3 percent increase over the 2022 minimum wage. Many growers may already pay wages that are higher than the state's legal requirement, as is shown in this study. In 2022 the new overtime law

completed its multi-year phase in period for farming operations that employ 26 or more employees. Overtime wages are now required for work over 8 hours per day or 40 hours per week.

Federal H-2A Program. Growers may choose to use the H-2A guestworker visa program to employ workers. Rates of pay are determined by the highest applicable wage rates that are in effect at the time work is performed: the adverse effect wage rate (AEWR), the applicable prevailing wage, the agreed-upon collective bargaining rate, or the Federal or State statutory minimum wage (US Department of Labor). Growers also need to comply with other requirements associated with the H-2A program, including those for housing, meals, and transportation. Use of this program may result in labor costs that are higher than those shown in this study but may be necessary in order to assure a reliable supply of labor.

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 7.0 percent per year. A nominal interest rate is the typical market cost of borrowed funds. The interest cost of post-harvest operations is discounted back to the last harvest month using a negative interest charge. The rate will vary depending upon various factors, but the rate in this study is considered a typical lending rate by a farm lending agency as of January 2023.

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 red dye diesel and gasoline are $5.40 (excludes excise tax) and $4.50 per gallon, respectively. The cost includes a 2 percent local sales tax on diesel fuel and an 8 percent sales tax on gasoline. Gasoline cost also includes federal and state excise taxes, which are refundable for on-farm use when filing income taxes. The fuel, lube, and repair cost per acre for each operation in Tables 4a, 5a and 6a is determined by multiplying the total hourly operating cost in Table 8 for each piece of equipment used for the selected operation by the hours per acre. Tractor time is 10 percent higher than implement time for a given operation to account for setup, travel and down time.

Pickup Truck/ATV. This study includes a cost for the use of a pickup truck and ATV for business purposes.

Risk. The risks associated with producing and marketing fresh market 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 the production, financial, market, legal, and human resource risks that ultimately affect the profitability and economic viability of fresh market raspberries. Crop insurance is one tool that growers may use to protect against loss but is not included in this study. The market for fresh market raspberries is volatile for both price and quantity. A market channel should be determined before raspberry production begins.

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. Because overhead costs are farm and ranch specific, costs will vary among growers.

Property Taxes. Counties charge a base property tax rate of 1 percent 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 percent of the average value of the property. Average value equals new cost plus salvage value divided by two 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 0.710 percent of the

average value of the assets over their useful life. Liability insurance covers accidents on the farm and each year is estimated at $945 for the entire farm.

Office Expenses. Annual office and business expenses are estimated at $800 per acre. Costs include, but are not limited to, a variety of administration and office expenses such as office supplies, telephones, bookkeeping, accounting, road maintenance, utilities, and other miscellaneous expenses.

Land Rent. Land rents in the three-county area range from $500 to $4,000 per acre per year. In this study land rent is assumed to be $3,200 per acre per year. Land rent includes developed well(s) and irrigation system. In general, growers are responsible for the portion above ground such as the pump, and the landowner is responsible for what is below ground, such as the well running dry.

Food Safety and Regulatory Programs. To ensure the safety of fresh products, accommodate buyer requests, and comply with regulatory programs such as those for water and nutrient management, growers may have in-house departments or staff specially dedicated to supervision and management of these programs. **Associated costs will vary depending upon the farm size, staff time, and the complexity of operations.**

Food Safety. An estimated cost of $112 per acre is included in this study. It includes participation in a third party (independent) audit of food safety practices.

Fertilizer and Irrigation Regulatory Programs. This study includes a cost of $95 per acre for compliance and fees associated with current water quality and nutrient management regulatory programs: the State's Sustainable Groundwater Management Act (SGMA) and the Central Coast's Irrigated Lands Regulatory Program (ILRP). The estimated costs are for staff time to assist with sampling, data collection, recordkeeping, reporting, and administration. Fees associated with both SGMA's local Groundwater Sustainability Agency (GSA) and participation in a third-party entity to comply with ILRP's Central Coast (Region 3) Agricultural Order (Ag Order 4.0) are also estimated and included in the cost.

Ranch Supervisor. The grower hires a supervisor to oversee some of the farm operations and work as needed when additional assistance is needed for cultural or harvest operations. The estimated cost for the supervisor is $1,400 per acre. Larger operations may have multiple supervisory or management levels; associated costs will therefore differ.

Field Sanitation. Sanitation services for the farm provide portable toilets and washing stations to the farm at an estimated cost of $45 per acre. The cost includes double toilets with washbasins, delivery and pickup, and 12 months of servicing. Costs also include soap or other suitable cleaning agent, and single-use towels. Separate potable water and single-use drinking cups are also supplied.

Investment Repair. Repair costs are the annual maintenance costs for investments in non-cash overhead. For this study, annual repairs are calculated as 2 percent of the new cost, with the exception of drip system repairs, which are 5 percent of the total costs and include materials and labor.

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.

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

Salvage Value. Salvage value is an estimate of the remaining value of an investment at the end of its 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 7.

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 8.50 percent is used to calculate capital recovery. The rate will vary depending upon the size of the loan and other lending agency conditions but is the basic suggested rate by a farm lending agency as of January 2023.

Tunnels. Tunnel structure materials are used for more than one complete raspberry cropping cycle. For example, steel parts last for 12 years, while plastic coverings last for only six years (two cropping cycles). A total of seven 21 feet wide by 300 feet long tunnel structures are constructed per acre. Additional information about tunnels is located in Production Years 1 to 3: Cultural Practices and Material Inputs.

Trellis. The trellis system has a life of six years and is removed at the end of Production Year 3; it can be used in subsequent raspberry crop plantings. Additional information about the trellis system is located in the section Production Years 1 to 3: Cultural Practices and Material Inputs.

Tools. This includes shop and field tools used on the farm. The value is estimated and does not represent any specific inventory.

Shade Structure. A shade structure for laborers is set up in first year to provide shade for rest breaks and for a sorting and packing area at harvest. The cost includes the setup labor and materials. The shade structure may also be used for future crops.

Irrigation System. The irrigation system is maintained by the landowner and assumed to be included in the land rental cost. In some cases the grower may be responsible for maintenance. The grower invests in and owns sprinkler pipe and drip system materials sufficient for irrigation needs. The grower also owns a trailer and other equipment needed for moving pipe and irrigation supplies to and from the field. Irrigation water is pumped from a well and delivered to the field through an underground pipe system. Main lines above ground are connected to the underground system to deliver water for the irrigations. Additional information about the drip system is located in Production Years 1 to 3: Cultural Practices and Material Inputs.

Establishment. Costs to establish raspberries 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 represents the establishment cost. For this study the cost is $13,762 per acre or $578,004 for the 42-acre field.

Equipment Costs. Farm equipment is purchased new or used, but the study shows the current purchase price for new equipment. The new purchase price is adjusted to 70 percent to indicate a mix of new and used equipment. Seventy percent indicates a relatively high percentage of new equipment because of machinery upgrades that are currently necessary to meet air quality requirements. Annual ownership costs for equipment and other investments are shown in Table 7. Equipment costs are composed of three parts: non-cash overhead, cash overhead, and operating costs. Both the overhead factors have been discussed in previous sections. The operating costs consist of repairs, fuel, and lubrication and are discussed under operating costs.

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

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UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 1. COSTS PER ACRE to ESTABLISH, PRODUCE, AND HARVEST RASPBERRIES - SUMMARY

	Cost Per Acre			
Year:	Establish	Prod Yr 1	Prod Yr 2	Prod Yr 3
4.5 Pound Trays:		4,750 (F)*	4,750 (S) 2,850 (F)	4,750 (S)
Land Prep/Plant Costs:				
Land Prep/Plant Costs	10,718			
TOTAL LAND PREP/PLANTING COSTS	10,718			
Cultural Costs:				
Cultural Costs		10,665	10,530	5,686
TOTAL CULTURAL COSTS		10,665	10,530	5,686
Harvest Costs:				
Harvest/Load/Haul/Cool/Sell		62,009	99,758	62,010
TOTAL HARVEST COSTS		62,009	99,758	62,010
Postharvest Costs				3,402
TOTAL POSTHARVEST COSTS				3,402
Interest On Operating Capital @ 7.00%	176	1,039	2,961	803
TOTAL OPERATING COSTS/ACRE	10,895	73,712	113,250	71,900
Cash Overhead Costs:				
Land Rent, Insurance, Taxes	2,867	6,475	6,483	3,639
TOTAL CASH OVERHEAD COSTS	2,867	6,475	6,483	3,639
TOTAL CASH COSTS/ACRE	13,762	80,187	119,733	75,539
INCOME/ACRE FROM PRODUCTION		80,750	129,200	80,750
NET CASH COSTS/ACRE FOR THE YEAR	**13,762**			
NET RETURNS/ACRE ABOVE CASH COSTS		563	9,467	5,211
ACCUMULATED NET CASH COSTS/ACRE	13,762	13,199		
Non-Cash Overhead (Capital Recovery Cost):				
Investments/Equipment	209	4,939	5,137	4,925
TOTAL NON-CASH OVERHEAD COST/ACRE	209	4,939	5,137	4,925
TOTAL COST/ACRE FOR THE YEAR	13,971	85,126	124,869	80,464
INCOME/ACRE FROM PRODUCTION		80,750	129,200	80,750
TOTAL NET COST/ACRE FOR THE YEAR	13,971			
NET RETURNS/ACRE ABOVE TOTAL COST		-4,376	4,331	286
TOTAL ACCUMULATED NET/ACRE	-13,971	-18,347	-14,016	-13,730

* F = Fall Crop; S = Spring Crop

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 2. COSTS PER ACRE TO ESTABLISH RASPBERRIES

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre: Labor Cost	Fuel	Lube &Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Land Prep/Planting:								
Sample Soil (2 per 42 Ac)	0.03	3	0	0	0	7	10	
Rip 3X	1.45	52	70	26	0	0	148	
Disc & Ringroll 3X	0.52	18	11	6	0	0	36	
Landplane 2X	0.37	13	18	6	0	0	37	
Compost Application	0.00	0	0	0	330	180	510	
Incorporate Compost (Disc)	0.17	6	4	2	0	0	12	
Chisel	0.19	7	9	3	0	0	19	
Set Up/Sprinkler Irrigate 2X	1.00	83	16	6	94	0	199	
Fumigate (Flat-TIF Tarped)	0.00	0	0	0	0	5,028	5,028	
Retrieve/Dispose Tarp	0.00	0	0	0	0	112	112	
Disc	0.17	6	4	2	0	0	12	
Rototill	0.32	11	7	3	0	0	22	
List Beds	0.15	5	7	2	0	0	14	
Preplant Fertilization (18-8-13)	0.24	9	4	3	540	0	555	
Shape beds	0.15	5	7	2	0	0	14	
Plant Raspberries	28.00	663	0	0	3,198	0	3,861	
ATV	0.38	13	1	0	0	0	15	
Pickup	2.33	83	21	10	0	0	114	
TOTAL LAND PREP/PLANTING COSTS	35.47	978	179	73	4,162	5,327	10,718	
Interest on Operating Capital at 7.00%							176	
TOTAL OPERATING COSTS/ACRE	35	978	179	73	4,162	5,327	10,895	
CASH OVERHEAD:								
Land Rent							1,600	
Liability Insurance							11	
Office Expense							400	
Field Sanitation							23	
Ranch Supervisor							700	
Water & Nutrient Management Programs							48	
Food Safety							56	
Property Taxes							11	
Property Insurance							1	
Investment Repairs							18	
TOTAL CASH OVERHEAD COSTS/ACRE							2,867	
TOTAL CASH COSTS/ACRE							13,762	
NON-CASH OVERHEAD:		Per Producing Acre		Annual Cost Capital Recovery				
Shop/Hand Tools		311		37			37	
Sprinkler Pipe		564		54			54	
Equipment		911		118			118	
TOTAL NON-CASH OVERHEAD COSTS		1,787		209			209	
TOTAL COSTS/ACRE							13,971	

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 3. MATERIAL INPUT COSTS PER ACRE TO ESTABLISH RASPBERRIES

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
OPERATING COSTS					
Fertilizer:				**870**	
Compost (Greenwaste)	6.00	ton	55.00	330	
18-08-13	300.00	lb	1.80	540	
Water:				**94**	
Water-Central Coast	4.00	acin	23.50	94	
Custom:				**5,327**	
Soil Analysis	0.08	each	84.00	7	
Spread Compost	6.00	ton	30.00	180	
Fumigate	1.00	acre	5000.00	5,000	
Fumigation Permit	1.00	acre	28.00	28	
Plastic Removal	1.00	acre	112.00	112	
Plants/Seeds:				**3,198**	
Raspberry Plants	260.00	lb	12.30	3,198	
Labor				**978**	
Equipment Operator Labor	8.97	hrs	29.60	265	
Non-Machine Labor	30.08	hrs	23.68	712	
Machinery				**252**	
Fuel-Gas	4.93	gal	4.50	22	
Fuel-Diesel	29.13	gal	5.40	157	
Lube				27	
Machinery Repair				46	
Interest on Operating Capital @ 7.00%				176	
TOTAL OPERATING COSTS/ACRE				10,895	
TOTAL OPERATING COSTS/TRAY				0	
NET RETURNS ABOVE OPERATING COSTS				-10,895	
CASH OVERHEAD:					
Land Rent				1,600	
Liability Insurance				11	
Office Expense				400	
Field Sanitation				23	
Ranch Supervisor				700	
Water & Nutrient Management Programs				48	
Food Safety				56	
Property Taxes				11	
Property Insurance				1	
Investment Repairs				18	
TOTAL CASH OVERHEAD COSTS/ACRE				2,867	
TOTAL CASH OVERHEAD COSTS/TRAY				0	
TOTAL CASH COSTS/ACRE				13,762	
TOTAL CASH COSTS/TRAY				0	
NET RETURNS ABOVE CASH COSTS				-13,762	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Shop/Hand Tools				37	
Sprinkler Pipe				54	
Equipment				118	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				209	
TOTAL NON-CASH OVERHEAD COSTS/TRAY				0	
TOTAL COST/ACRE				13,971	
TOTAL COST/TRAY				0	
NET RETURNS ABOVE TOTAL COST				-13,971	

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 4a. COSTS PER ACRE TO PRODUCE AND HARVEST RASPBERRIES – PRODUCTION YEAR 1

	Operation	Cash and Labor Costs per Acre						
Operation	Time (Hrs/A)	Labor Cost	Fuel	Lube &Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Cultural:								
Hand Weed	0.00	0	0	0	0	336	336	
Weed Management-Disc Row Middles	0.69	24	4	1	0	0	29	
Install Trellis	1.00	1,006	16	6	0	0	1,029	
Install Drip System	0.52	492	8	3	480	0	984	
Drip Irrigate	3.20	76	0	0	517	0	593	
Sample Soil (1 per 42 Acres)	0.02	1	0	0	0	4	5	
Fertilize (CN9, CAN17, 21-0-0-24)	0.84	20	0	0	264	0	284	
Release Persimilis (Predatory Mites)	1.00	24	0	0	680	0	704	
Train Canes	70.00	1,658	0	0	0	0	1,658	
Disease, Insect & Mite Management	2.61	93	42	22	485	0	642	
Construct Tunnels	100.00	2,368	0	0	0	0	2,368	
Tunnel Management	50.00	1,184	0	0	0	0	1,184	
Pollinate Crop (2 Hives per Acre)	0.00	0	0	0	0	300	300	
Sample Leaves (3 per 42 Acres)	0.03	1	0	0	0	8	9	
Fertilize (20-20-20, 10-30-30)	0.24	6	0	0	266	0	271	
PCA	0.00	0	0	0	0	140	140	
ATV	0.38	13	1	0	0	0	15	
Pickup	2.33	83	21	10	0	0	114	
TOTAL CULTURAL COSTS	232.86	7,048	92	44	2,691	789	10,665	
Harvest:								
Harvest Raspberries	100.00	2,368	0	0	9,215	38,000	49,583	
Load/Haul Raspberries	23.43	832	316	115	0	0	1,263	
Cool Raspberries	0.00	0	0	0	0	4,750	4,750	
Market/Sales Fee	0.00	0	0	0	0	6,413	6,413	
TOTAL HARVEST COSTS	123.43	3,200	316	115	9,215	49,163	62,009	
Interest on Operating Capital at 7.00%							1,039	
TOTAL OPERATING COSTS/ACRE	356	10,249	409	159	11,906	49,951	73,712	

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 4a. CONTINUED

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre: Labor Cost	Fuel	Lube &Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
CASH OVERHEAD:								
Land Rent							3,200	
Liability Insurance							21	
Office Expense							800	
Field Sanitation							45	
Food Safety							112	
Water & Nutrient Management Programs							95	
Ranch Supervisor							1,400	
Property Taxes							174	
Property Insurance							12	
Investment Repairs							615	
TOTAL CASH OVERHEAD COSTS/ACRE							6,475	
TOTAL CASH COSTS/ACRE							80,187	
NON-CASH OVERHEAD:		Per Producing Acre		Annual Cost Capital Recovery				
Shop/Hand Tools		333		39			39	
Tunnel Plastic Sheeting		5,367		1,179			1,179	
Tunnel Metal Support Materials		21,204		2,811			2,811	
Irrigation System		1,512		146			146	
Trellis Materials		2,025		426			426	
Sort/Pack Wagon		257		34			34	
Shade Structure		54		11			11	
Equipment		1,734		293			293	
TOTAL NON-CASH OVERHEAD COSTS		32,486		4,939			4,939	
TOTAL COSTS/ACRE							85,126	

Growing Costs = Total Costs – Harvest Costs. $85,126 - $62,009 = $23,117

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 4b. COSTS AND RETURNS PER ACRE TO PRODUCE AND HARVEST RASPBERRIES – PRODUCTION YEAR 1

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
4.5 lb tray	4,750	tray	17.00	80,750	
TOTAL GROSS RETURNS	4,750	tray		80,750	
OPERATING COSTS					
Fungicide:				**187**	
Rally	3.00	oz	5.85	18	
Switch	14.00	oz	7.44	104	
Pristine	23.00	oz	2.83	65	
Insecticide:				**978**	
Persimilis	80.00	thousand	8.50	680	
Dipel	3.00	lb	20.00	60	
Mustang	12.90	floz	2.81	36	
Savey 50WP	6.00	oz	13.75	83	
Malathion 5EC	3.00	pint	12.38	37	
Acramite	1.00	lb	82.00	82	
Fertilizer:				**530**	
CN9	28.00	gal	3.53	99	
CAN17	21.00	gal	4.16	87	
Ammonium Sulfate (21-0-0-24)	105.00	lb	0.74	78	
20-20-20	80.00	lb	2.20	176	
10-30-30	32.00	lb	2.80	90	
Water:				**997**	
Drip Tape	6000.00	foot	0.08	480	
Water-Central Coast	22.00	acin	23.50	517	
Custom:				**49,951**	
Hand Weed	3.00	acre	112.00	336	
Soil Analysis	0.05	each	84.00	4	
Pollination (Hives)	2.00	each	150.00	300	
Leaf Analysis	0.10	each	84.00	8	
PCA	1.00	acre	140.00	140	
Harvest/Sort/Pack	4750.00	tray	8.00	38,000	
Cool	4750.00	tray	1.00	4,750	
Market/Sales Fee	4750.00	tray	1.35	6,413	
Harvest:				**9,215**	
Clamshells (12 Units)	4750.00	tray	1.94	9,215	
Labor				**10,249**	
Equipment Operator Labor	37.21	hrs	29.60	1,101	
Non-Machine Labor	386.28	hrs	23.68	9,147	
Machinery				**568**	
Fuel-Gas	75.24	gal	4.50	339	
Fuel-Diesel	12.95	gal	5.40	70	
Lube				61	
Machinery Repair				98	
Interest on Operating Capital @ 7.00%				1,039	
TOTAL OPERATING COSTS/ACRE				73,712	
TOTAL OPERATING COSTS/TRAY				16	
NET RETURNS ABOVE OPERATING COSTS				7,038	

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 4b. CONTINUED

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
CASH OVERHEAD COSTS					
Land Rent				3,200	
Liability Insurance				21	
Office Expense				800	
Field Sanitation				45	
Food Safety				112	
Water & Nutrient Management Programs				95	
Ranch Supervisor				1,400	
Property Taxes				174	
Property Insurance				12	
Investment Repairs				615	
TOTAL CASH OVERHEAD COSTS/ACRE				6,475	
TOTAL CASH OVERHEAD COSTS/TRAY				1	
TOTAL CASH COSTS/ACRE				80,187	
TOTAL CASH COSTS/TRAY				17	
NET RETURNS ABOVE CASH COSTS				563	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Shop/Hand Tools				39	
Tunnel Plastic Sheeting				1,179	
Tunnel Metal Support Materials				2,811	
Irrigation System				146	
Trellis Materials				426	
Sort/Pack Wagon				34	
Shade Structure				11	
Equipment				293	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				4,939	
TOTAL NON-CASH OVERHEAD COSTS/TRAY				1	
TOTAL COST/ACRE				85,126	
TOTAL COST/TRAY				18	
NET RETURNS ABOVE TOTAL COST				-4,376	

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 4c. MONTHLY CASH COSTS PER ACRE TO PRODUCE AND HARVEST RASPBERRIES – PRODUCTION YEAR 1

	JAN 21	FEB 21	MAR 21	APR 21	MAY 21	JUN 21	JUL 21	AUG 21	SEP 21	OCT 21	Total
Cultural:											
Hand Weed	112	112	112								336
Weed Management-Disc Row Middles		15	15								29
Install Trellis			1,029								1,029
Install Drip System			984								984
Drip Irrigate			56	80	80	80	80	80	80	56	593
Sample Soil (1 per 42 Acres)			5								5
Fertilize (CN9, CAN17, 21-0-0-24)			41	81	41	81	41				284
Release Persimilis (Predatory Mites)			704								704
Train Canes			568	545	545						1,658
Disease, Insect & Mite Management							80	394	167		642
Construct Tunnels							2,368				2,368
Tunnel Management							1,184				1,184
Pollinate Crop (2 Hives per Acre)							300				300
Sample Leaves (3 per 42 Acres)								9			9
Fertilize (20-20-20, 10-30-30)								136	136		271
PCA	14	14	14	14	14	14	14	14	14	14	140
ATV	2	2	2	2	2	2	2	2	2	2	15
Pickup	11	11	11	11	11	11	11	11	11	11	114
TOTAL CULTURAL COSTS	139	154	3,540	733	692	188	4,080	646	410	83	10,665
Harvest:											
Harvest Raspberries								16,524	16,536	16,524	49,583
Load/Haul Raspberries								421	421	421	1,263
Cool Raspberries								1,583	1,584	1,583	4,750
Market/Sales Fee										6,413	6,413
TOTAL HARVEST COSTS	0	0	0	0	0	0	0	18,528	18,541	24,940	62,009
Interest on Operating Capital @ 7.00%	1	2	22	27	31	32	56	167	278	424	1,039
TOTAL OPERATING COSTS/ACRE	140	155	3,563	759	723	220	4,135	19,342	19,229	25,447	73,712
CASH OVERHEAD											
Land Rent										3,200	3,200
Liability Insurance										21	21
Office Expense	80	80	80	80	80	80	80	80	80	80	800
Field Sanitation	5	5	5	5	5	5	5	5	5	5	45
Food Safety										112	112
Water & Nutrient Management Programs										95	95
Ranch Supervisor	140	140	140	140	140	140	140	140	140	140	1,400
Property Taxes		87					87				174
Property Insurance		6					6				12
Investment Repairs	62	62	62	62	62	62	62	62	62	62	615
TOTAL CASH OVERHEAD COSTS	286	379	286	286	286	286	379	286	286	3,714	6,475
TOTAL CASH COSTS/ACRE	426	535	3,849	1,045	1,009	506	4,514	19,628	19,515	29,161	80,187

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 4d. RANGING ANALYSIS – PRODUCTION YEAR 1

COSTS PER ACRE AND PER TRAY AT VARYING YIELDS TO PRODUCE AND HARVEST RASPBERRIES

	YIELD (TRAY)						
	3,500	3,900	4,300	4,750	5,200	5,600	6,000
OPERATING COSTS/ACRE:							
Cultural	10,665	10,665	10,665	10,665	10,665	10,665	10,665
Harvest	46,023	51,139	56,254	62,009	67,763	72,879	77,994
Interest on Operating Capital @ 7.00%	862	919	975	1,039	1,102	1,159	1,215
TOTAL OPERATING COSTS/ACRE	57,550	62,722	67,894	73,712	79,530	84,703	89,874
TOTAL OPERATING COSTS/TRAY	16.44	16.08	15.79	15.52	15.29	15.13	14.98
CASH OVERHEAD COSTS/ACRE	6,475	6,475	6,475	6,475	6,475	6,475	6,475
TOTAL CASH COSTS/ACRE	64,025	69,197	74,369	80,187	86,005	91,177	96,349
TOTAL CASH COSTS/TRAY	18.29	17.74	17.30	16.88	16.54	16.28	16.06
NON-CASH OVERHEAD COSTS/ACRE	4,939	4,939	4,939	4,939	4,939	4,939	4,939
TOTAL COSTS/ACRE	68,964	74,136	79,308	85,126	90,945	96,117	101,289
TOTAL COSTS/TRAY	20.00	19.00	18.00	18.00	17.00	17.00	17.00

Net Return Per Acre Above Operating Costs For Raspberries

PRICE ($/tray)	YIELD (tray/acre)						
4.5 Lb Tray	3,500	3,900	4,300	4,750	5,200	5,600	6,000
11.00	-19,050	-19,822	-20,594	-21,462	-22,330	-23,103	-23,874
13.00	-12,050	-12,022	-11,994	-11,962	-11,930	-11,903	-11,874
15.00	-5,050	-4,222	-3,394	-2,462	-1,530	-703	126
17.00	1,950	3,578	5,206	7,038	8,870	10,497	12,126
19.00	8,950	11,378	13,806	16,538	19,270	21,697	24,126
21.00	15,950	19,178	22,406	26,038	29,670	32,897	36,126
23.00	22,950	26,978	31,006	35,538	40,070	44,097	48,126

Net Return Per Acre Above Cash Costs For Raspberries

PRICE ($/tray)	YIELD (tray/acre)						
4.5 Lb Tray	3,500	3,900	4,300	4,750	5,200	5,600	6,000
11.00	-25,525	-26,297	-27,069	-27,937	-28,805	-29,577	-30,349
13.00	-18,525	-18,497	-18,469	-18,437	-18,405	-18,377	-18,349
15.00	-11,525	-10,697	-9,869	-8,937	-8,005	-7,177	-6,349
17.00	-4,525	-2,897	-1,269	563	2,395	4,023	5,651
19.00	2,475	4,903	7,331	10,063	12,795	15,223	17,651
21.00	9,475	12,703	15,931	19,563	23,195	26,423	29,651
23.00	16,475	20,503	24,531	29,063	33,595	37,623	41,651

Net Return Per Acre Above Total Costs For Raspberries

PRICE ($/tray)	YIELD (tray/acre)						
4.5 Lb Tray	3,500	3,900	4,300	4,750	5,200	5,600	6,000
11.00	-30,464	-31,236	-32,008	-32,876	-33,745	-34,517	-35,289
13.00	-23,464	-23,436	-23,408	-23,376	-23,345	-23,317	-23,289
15.00	-16,464	-15,636	-14,808	-13,876	-12,945	-12,117	-11,289
17.00	-9,464	-7,836	-6,208	-4,376	-2,545	-917	711
19.00	-2,464	-36	2,392	5,124	7,855	10,283	12,711
21.00	4,536	7,764	10,992	14,624	18,255	21,483	24,711
23.00	11,536	15,564	19,592	24,124	28,655	32,683	36,711

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 5a. COSTS PER ACRE TO PRODUCE AND HARVEST RASPBERRIES – PRODUCTION YEAR 2

	Operation	Cash and Labor Costs per Acre						
Operation	Time (Hrs/A)	Labor Cost	Fuel	Lube &Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Cultural:								
Hand Prune & Train Canes	160.00	3,789	0	0	0	0	3,789	
Hand Weed	0.00	0	0	0	0	336	336	
Suppress Primocanes (Shark)	0.65	23	10	6	53	0	92	
Shred Prunings	0.21	7	1	1	0	0	10	
Fertilize (CN9, CAN17, 21-0-0-24)	0.84	20	0	0	264	0	284	
Sample Soil (1 per 42 Acres)	0.02	1	0	0	0	4	5	
Drip Irrigate	3.20	76	0	0	846	0	922	
Disease, Insect & Mite Management	3.27	116	52	28	615	0	811	
Tunnel Management	50.00	1,184	0	0	0	0	1,184	
Weed Management – Disc Row Middles	0.34	12	2	1	0	0	15	
Release Persimilis (Predatory Mites)	1.00	24	0	0	680	0	704	
Pollinate Crop (2 Hives per Acre per Crop)	0.00	0	0	0	0	600	600	
Fertilize (20-20-20, 10-30-30)	0.48	11	0	0	531	0	543	
Hand Clip Canes	35.00	829	0	0	0	0	829	
Sample Leaves (3 per 42 Acres)	0.03	1	0	0	0	8	9	
PCA	0.00	0	0	0	0	140	140	
ATV	0.75	27	2	1	0	0	30	
Pickup	4.67	166	42	21	0	0	228	
TOTAL CULTURAL COSTS	260.46	6,285	110	57	2,989	1,089	10,530	
Harvest:								
Harvest Raspberries	175.00	4,144	0	0	14,744	60,800	79,688	
Load/Haul Raspberries	41.00	1,456	554	201	0	0	2,210	
Cool Raspberries	0.00	0	0	0	0	7,600	7,600	
Market/Sales Fee	0.00	0	0	0	0	10,260	10,260	
TOTAL HARVEST COSTS	216.00	5,600	554	201	14,744	78,660	99,758	
Interest on Operating Capital at 7.00%							2,961	
TOTAL OPERATING COSTS/ACRE	476	11,886	664	258	17,733	79,749	113,250	

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 5a. CONTINUED

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre: Labor Cost	Fuel	Lube &Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
CASH OVERHEAD:								
Land Rent							3,200	
Liability Insurance							21	
Office Expense							800	
Field Sanitation							45	
Food Safety							112	
Water & Nutrient Management Programs							95	
Ranch Supervisor							1,400	
Property Taxes							181	
Property Insurance							13	
Investment Repairs							615	
TOTAL CASH OVERHEAD COSTS/ACRE							6,483	
TOTAL CASH COSTS/ACRE							119,733	
NON-CASH OVERHEAD:		Per Producing Acre		Annual Cost Capital Recovery				
Irrigation System		1,512		146			146	
Shop/Hand Tools		333		39			39	
Tunnel Metal Support Materials		21,204		2,811			2,811	
Tunnel Plastic Sheeting		5,367		1,179			1,179	
Trellis Materials		2,025		426			426	
Sort/Pack Wagon		257		34			34	
Shade Structure		54		11			11	
Equipment		2,837		490			490	
TOTAL NON-CASH OVERHEAD COSTS		33,589		5,137			5,137	
TOTAL COSTS/ACRE							124,869	

Growing Costs = Total Costs – Harvest Costs or $124,869 - $99,758 = $25,111

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 5b. COSTS AND RETURNS PER ACRE TO PRODUCE AND HARVEST RASPBERRIES – PRODUCTION YEAR 2

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
4.5 lb tray	7,600	tray	17.00	129,200	
TOTAL GROSS RETURNS	7,600	tray		129,200	
OPERATING COSTS					
Herbicide:				**53**	
Shark EW	3.66	floz	14.50	53	
Fungicide:				**187**	
Rally	3.00	oz	5.85	18	
Switch	14.00	oz	7.44	104	
Pristine	23.00	oz	2.83	65	
Insecticide:				**1,108**	
Dipel	4.00	lb	20.00	80	
Delegate	6.00	oz	12.23	73	
Malathion 5EC	6.00	pint	12.38	74	
Persimilis	80.00	thousand	8.50	680	
Mustang	12.90	floz	2.81	36	
Savey 50WP	6.00	oz	13.75	83	
Acramite	1.00	lb	82.00	82	
Fertilizer:				**795**	
CN9	28.00	gal	3.53	99	
CAN17	21.00	gal	4.16	87	
Ammonium Sulfate (21-0-0-24)	105.00	lb	0.74	78	
20-20-20	160.00	lb	2.20	352	
10-30-30	64.00	lb	2.80	179	
Water:				**846**	
Water-Central Coast	36.00	acin	23.50	846	
Custom:				**79,749**	
Hand Weed	3.00	acre	112.00	336	
Soil Analysis	0.05	each	84.00	4	
Pollination (2 Hives per Acre per Crop)	4.00	each	150.00	600	
Leaf Analysis	0.10	each	84.00	8	
Harvest/Sort/Pack	7600.00	tray	8.00	60,800	
Cool	7600.00	tray	1.00	7,600	
Market/Sales Fee	7600.00	tray	1.35	10,260	
PCA	1.00	acre	140.00	140	
Harvest:				**14,744**	
Clamshells (12 Units)	7600.00	tray	1.94	14,744	
Labor				**11,886**	
Equipment Operator Labor	61.12	hrs	29.60	1,809	
Non-Machine Labor	425.52	hrs	23.68	10,076	
Machinery				**921**	
Fuel-Gas	132.86	gal	4.50	598	
Fuel-Diesel	12.19	gal	5.40	66	
Lube				100	
Machinery Repair				158	
Interest on Operating Capital @ 7.00%				2,961	
TOTAL OPERATING COSTS/ACRE				113,250	
TOTAL OPERATING COSTS/TRAY				15	
NET RETURNS ABOVE OPERATING COSTS				15,950	

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 5b. CONTINUED

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
CASH OVERHEAD COSTS					
Land Rent				3,200	
Liability Insurance				21	
Office Expense				800	
Field Sanitation				45	
Food Safety				112	
Water & Nutrient Management Programs				95	
Ranch Supervisor				1,400	
Property Taxes				181	
Property Insurance				13	
Investment Repairs				615	
TOTAL CASH OVERHEAD COSTS/ACRE				6,483	
TOTAL CASH OVERHEAD COSTS/TRAY				1	
TOTAL CASH COSTS/ACRE				119,733	
TOTAL CASH COSTS/TRAY				16	
NET RETURNS ABOVE CASH COSTS				9,467	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Irrigation System				146	
Shop/Hand Tools				39	
Tunnel Metal Support Materials				2,811	
Tunnel Plastic Sheeting				1,179	
Trellis Materials				426	
Sort/Pack Wagon				34	
Shade Structure				11	
Equipment				490	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				5,137	
TOTAL NON-CASH OVERHEAD COSTS/TRAY				1	
TOTAL COST/ACRE				124,869	
TOTAL COST/TRAY				16	
NET RETURNS ABOVE TOTAL COST				4,331	

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 5c. MONTHLY CASH COSTS PER ACRE TO PRODUCE AND HARVEST RASPBERRIES – PRODUCTION YEAR 2

	JAN 22	FEB 22	MAR 22	APR 22	MAY 22	JUN 22	JUL 22	AUG 22	SEP 22	OCT 22	Total
Cultural:											
Hand Prune & Train Canes	1,894					1,894					3,789
Hand Weed	112	112	112								336
Suppress Primocanes (Shark)		92									92
Shred Prunings			10								10
Fertilize (CN9, CAN17, 21-0-0-24		41	81	81			81				284
Sample Soil (1 per 42 Acres)			5								5
Drip Irrigate			103	103	127	127	127	127	103	103	922
Disease, Insect & Mite Management					170		80	394	167		811
Tunnel Management			1,184								1,184
Weed Management - Disc Row Middles			15								15
Release Persimilis (Predatory Mites)			704								704
Pollinate Crop (2 Hives per Acre per Crop)			300				300				600
Fertilize (20-20-20, 10-30-30)					136	136		136	136		543
Hand Clip Canes				829							829
Sample Leaves (3 per 42 Acres)					9						9
PCA	14	14	14	14	14	14	14	14	14	14	140
ATV	3	3	3	3	3	3	3	3	3	3	30
Pickup	23	23	23	23	23	23	23	23	23	23	228
TOTAL CULTURAL COSTS	2,046	285	2,554	1,053	482	2,197	628	697	446	143	10,530
Harvest:											
Harvest Raspberries				16,524	16,536	16,524		10,035	10,035	10,035	79,688
Load/Haul Raspberries				421	421	421		315	315	315	2,210
Cool Raspberries				1,583	1,584	1,583		950	950	950	7,600
Market/Sales Fee						6,413				3,848	10,260
TOTAL HARVEST COSTS	0	0	0	18,528	18,541	24,940	0	11,300	11,300	15,148	99,758
Interest on Operating Capital @ 7.00%	12	14	28	143	254	412	416	486	554	643	2,961
TOTAL OPERATING COSTS/ACRE	2,058	298	2,582	19,724	19,277	27,549	1,044	12,483	12,301	15,935	113,250
CASH OVERHEAD											
Land Rent										3,200	3,200
Liability Insurance										21	21
Office Expense	80	80	80	80	80	80	80	80	80	80	800
Field Sanitation	5	5	5	5	5	5	5	5	5	5	45
Food Safety										112	112
Water & Nutrient Management Programs										95	95
Ranch Supervisor	140	140	140	140	140	140	140	140	140	140	1,400
Property Taxes		91					91				181
Property Insurance		6					6				13
Investment Repairs	62	62	62	62	62	62	62	62	62	62	615
TOTAL CASH OVERHEAD COSTS	286	383	286	286	286	286	383	286	286	3,714	6,483
TOTAL CASH COSTS/ACRE	2,344	681	2,868	20,010	19,563	27,835	1,427	12,769	12,587	19,649	119,733

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 5d. RANGING ANALYSIS – PRODUCTION YEAR 2

COSTS PER ACRE AND PER TRAY AT VARYING YIELDS TO PRODUCE AND HARVEST RASPBERRIES

	YIELD (TRAY)						
	5,600	6,240	6,880	7,600	8,320	8,960	9,600
OPERATING COSTS/ACRE:							
Cultural	10,530	10,530	10,530	10,530	10,530	10,530	10,530
Harvest	75,101	82,991	90,882	99,758	108,635	116,526	124,416
Interest on Operating Capital @ 7.00%	2,310	2,519	2,727	2,961	3,195	3,404	3,612
TOTAL OPERATING COSTS/ACRE	87,941	96,040	104,139	113,250	122,361	130,460	138,559
TOTAL OPERATING COSTS/TRAY	15.70	15.39	15.14	14.90	14.71	14.56	14.43
CASH OVERHEAD COSTS/ACRE	6,483	6,483	6,483	6,483	6,483	6,483	6,483
TOTAL CASH COSTS/ACRE	94,424	102,523	110,622	119,733	128,844	136,943	145,042
TOTAL CASH COSTS/TRAY	16.86	16.43	16.08	15.75	15.49	15.28	15.11
NON-CASH OVERHEAD COSTS/ACRE	5,137	5,137	5,137	5,137	5,137	5,137	5,137
TOTAL COSTS/ACRE	99,561	107,660	115,759	124,869	133,980	142,079	150,178
TOTAL COSTS/TRAY	18.00	17.00	17.00	16.00	16.00	16.00	16.00

Net Return Per Acre Above Operating Costs For Raspberries

PRICE ($/tray)	YIELD (tray/acre)						
4.5 Lb Tray	5,600	6,240	6,880	7,600	8,320	8,960	9,600
11.00	-26,341	-27,400	-28,459	-29,650	-30,841	-31,900	-32,959
13.00	-15,141	-14,920	-14,699	-14,450	-14,201	-13,980	-13,759
15.00	-3,941	-2,440	-939	750	2,439	3,940	5,441
17.00	7,259	10,040	12,821	15,950	19,079	21,860	24,641
19.00	18,459	22,520	26,581	31,150	35,719	39,780	43,841
21.00	29,659	35,000	40,341	46,350	52,359	57,700	63,041
23.00	40,859	47,480	54,101	61,550	68,999	75,620	82,241

Net Return Per Acre Above Cash Costs For Raspberries

PRICE ($/tray)	YIELD (tray/acre)						
4.5 Lb Tray	5,600	6,240	6,880	7,600	8,320	8,960	9,600
11.00	-32,824	-33,883	-34,942	-36,133	-37,324	-38,383	-39,442
13.00	-21,624	-21,403	-21,182	-20,933	-20,684	-20,463	-20,242
15.00	-10,424	-8,923	-7,422	-5,733	-4,044	-2,543	-1,042
17.00	776	3,557	6,338	9,467	12,596	15,377	18,158
19.00	11,976	16,037	20,098	24,667	29,236	33,297	37,358
21.00	23,176	28,517	33,858	39,867	45,876	51,217	56,558
23.00	34,376	40,997	47,618	55,067	62,516	69,137	75,758

Net Return Per Acre Above Total Costs For Raspberries

PRICE ($/tray)	YIELD (tray/acre)						
4.5 Lb Tray	5,600	6,240	6,880	7,600	8,320	8,960	9,600
11.00	-37,961	-39,020	-40,079	-41,269	-42,460	-43,519	-44,578
13.00	-26,761	-26,540	-26,319	-26,069	-25,820	-25,599	-25,378
15.00	-15,561	-14,060	-12,559	-10,869	-9,180	-7,679	-6,178
17.00	-4,361	-1,580	1,201	4,331	7,460	10,241	13,022
19.00	6,839	10,900	14,961	19,531	24,100	28,161	32,222
21.00	18,039	23,380	28,721	34,731	40,740	46,081	51,422
23.00	29,239	35,860	42,481	49,931	57,380	64,001	70,622

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 6a. COSTS PER ACRE TO PRODUCE AND HARVEST RASPBERRIES – PRODUCTION YEAR 3

	Operation	Cash and Labor Costs per Acre						
Operation	Time (Hrs/A)	Labor Cost	Fuel	Lube &Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Cultural:								
Hand Prune & Train Canes	70.00	1,658	0	0	0	0	1,658	
Hand Weed	0.00	0	0	0	0	168	168	
Suppress Primocanes (Shark)	0.65	23	10	6	53	0	92	
Shred Prunings	0.21	7	1	1	0	0	10	
Fertilize (CN9, CAN17, 21-0-0-24)	0.60	14	0	0	189	0	203	
Sample Soil (1 per 42 Acres)	0.02	1	0	0	0	4	5	
Drip Irrigate	1.60	38	0	0	282	0	320	
Tunnel Management	25.00	592	0	0	0	0	592	
Weed Management - Disc Row Middles	0.34	12	2	1	0	0	15	
Release Persimilis (Predatory Mites)	1.00	24	0	0	680	0	704	
Pollinate Crop (2 Hives per Acre)	0.00	0	0	0	0	300	300	
Fertilize (20-20-20, 10-30-30)	0.24	6	0	0	266	0	271	
Hand Clip Canes	35.00	829	0	0	0	0	829	
Disease, Insect & Mite Management	0.65	23	10	6	235	0	274	
Sample Leaves (3 per 42 Acres)	0.03	1	0	0	0	8	9	
PCA	0.00	0	0	0	0	70	70	
ATV	0.50	18	2	1	0	0	20	
Pickup	3.00	107	27	13	0	0	147	
TOTAL CULTURAL COSTS	138.85	3,352	53	27	1,704	551	5,686	
Harvest:								
Harvest Raspberries	100.00	2,368	0	0	9,215	38,000	49,583	
Load/Haul Raspberries	23.45	833	317	115	0	0	1,264	
Cool Raspberries	0.00	0	0	0	0	4,750	4,750	
Market/Sales Fee	0.00	0	0	0	0	6,413	6,413	
TOTAL HARVEST COSTS	123.45	3,201	317	115	9,215	49,163	62,010	
Postharvest:								
Remove Tunnels/Trellis	125.00	2,960	0	0	0	0	2,960	
Field Cleanup	18.15	432	7	2	0	0	442	
TOTAL POSTHARVEST COSTS	143.15	3,392	7	2	0	0	3,402	
Interest on Operating Capital at 7.00%							803	
TOTAL OPERATING COSTS/ACRE	405	9,945	377	144	10,919	49,713	71,900	

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 6a. CONTINUED

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre: Labor Cost	Fuel	Lube &Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
CASH OVERHEAD:								
Land Rent							1,600	
Liability Insurance							11	
Office Expense							400	
Field Sanitation							23	
Food Safety							56	
Water & Nutrient Management Programs							48	
Ranch Supervisor							700	
Property Taxes							173	
Property Insurance							12	
Investment Repairs							615	
TOTAL CASH OVERHEAD COSTS/ACRE							3,639	
TOTAL CASH COSTS/ACRE							75,539	
NON-CASH OVERHEAD:		Per Producing Acre		Annual Cost Capital Recovery				
Irrigation System		1,512		146			146	
Shop/Hand Tools		333		39			39	
Tunnel Metal Support Materials		21,204		2,811			2,811	
Tunnel Plastic Sheeting		5,367		1,179			1,179	
Trellis Materials		2,025		426			426	
Sort/Pack Wagon		257		34			34	
Shade Structure		54		11			11	
Equipment		1,610		279			279	
TOTAL NON-CASH OVERHEAD COSTS		32,362		4,925			4,925	
TOTAL COSTS/ACRE							80,464	

Growing Costs = Total Costs – Harvest Costs or $80,464 – $62,010 = $18,454

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 6b. COSTS AND RETURNS PER ACRE TO PRODUCE AND HARVEST RASPBERRIES – PRODUCTION YEAR 3

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
4.5 lb tray	4,750	tray	17.00	80,750	
TOTAL GROSS RETURNS	4,750	tray		80,750	
OPERATING COSTS					
Herbicide:				**53**	
Shark EW	3.66	floz	14.50	53	
Fungicide:				**104**	
Switch	14.00	oz	7.44	104	
Insecticide:				**811**	
Persimilis	80.00	thousand	8.50	680	
Dipel	1.00	lb	20.00	20	
Malathion 5EC	3.00	pint	12.38	37	
Delegate	6.00	oz	12.23	73	
Fertilizer:				**454**	
CN9	20.00	gal	3.53	71	
CAN17	15.00	gal	4.16	62	
Ammonium Sulfate (21-0-0-24)	75.00	lb	0.74	56	
20-20-20	80.00	lb	2.20	176	
10-30-30	32.00	lb	2.80	90	
Water:				**282**	
Water-Central Coast	12.00	acin	23.50	282	
Custom:				**49,713**	
Hand Weed	3.00	acre	56.00	168	
Soil Analysis	0.05	each	84.00	4	
Pollination (Hives)	2.00	each	150.00	300	
Leaf Analysis	0.10	each	84.00	8	
Harvest/Sort/Pack	4750.00	tray	8.00	38,000	
Cool	4750.00	tray	1.00	4,750	
Market/Sales Fee	4750.00	tray	1.35	6,413	
PCA	1.00	acre	70.00	70	
Harvest:				**9,215**	
Clamshells (12 Units)	4750.00	tray	1.94	9,215	
Labor				**9,945**	
Equipment Operator Labor	34.81	hrs	29.60	1,030	
Non-Machine Labor	376.44	hrs	23.68	8,914	
Machinery				**521**	
Fuel-Gas	76.71	gal	4.50	345	
Fuel-Diesel	5.80	gal	5.40	31	
Lube				56	
Machinery Repair				88	
Interest on Operating Capital @ 7.00%				803	
TOTAL OPERATING COSTS/ACRE				71,900	
TOTAL OPERATING COSTS/TRAY				15	
NET RETURNS ABOVE OPERATING COSTS				8,850	

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 6b. CONTINUED

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
CASH OVERHEAD COSTS					
Land Rent				1,600	
Liability Insurance				11	
Office Expense				400	
Field Sanitation				23	
Food Safety				56	
Water & Nutrient Management Programs				48	
Ranch Supervisor				700	
Property Taxes				173	
Property Insurance				12	
Investment Repairs				615	
TOTAL CASH OVERHEAD COSTS/ACRE				3,639	
TOTAL CASH OVERHEAD COSTS/TRAY				1	
TOTAL CASH COSTS/ACRE				75,539	
TOTAL CASH COSTS/TRAY				16	
NET RETURNS ABOVE CASH COSTS				5,211	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Irrigation System				146	
Shop/Hand Tools				39	
Tunnel Metal Support Materials				2,811	
Tunnel Plastic Sheeting				1,179	
Trellis Materials				426	
Sort/Pack Wagon				34	
Shade Structure				11	
Equipment				279	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				4,925	
TOTAL NON-CASH OVERHEAD COSTS/TRAY				1	
TOTAL COST/ACRE				80,464	
TOTAL COST/TRAY				17	
NET RETURNS ABOVE TOTAL COST				286	

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 6c. MONTHLY CASH COSTS PER ACRE TO PRODUCE AND HARVEST RASPBERRIES – PRODUCTION YEAR 3

	JAN 23	FEB 23	MAR 23	APR 23	MAY 23	JUN 23	JUL 23	Total
Cultural:								
Hand Prune & Train Canes	1,658							1,658
Hand Weed	56	56	56					168
Suppress Primocanes (Shark)		92						92
Shred Prunings			10					10
Fertilize (CN9, CAN17, 21-0-0-24)		41	81	81				203
Sample Soil (1 per 42 Acres)			5					5
Drip Irrigate			80	80	80	80		320
Tunnel Management			592					592
Weed Management - Disc Row Middles			15					15
Release Persimilis (Predatory Mites)			704					704
Pollinate Crop (2 Hives per Acre)			300					300
Fertilize (20-20-20, 10-30-30)					136	136		271
Hand Clip Canes				829				829
Disease, Insect & Mite Management					274			274
Sample Leaves (3 per 42 Acres)					9			9
PCA	10	10	10	10	10	10	10	70
ATV	3	3	3	3	3	3	3	20
Pickup	21	21	21	21	21	21	21	147
TOTAL CULTURAL COSTS	1,747	223	1,876	1,024	533	249	34	5,686
Harvest:								
Harvest Raspberries				16,524	16,536	16,524		49,583
Load/Haul Raspberries				421	421	421		1,264
Cool Raspberries				1,583	1,584	1,583		4,750
Market/Sales Fee						6,413		6,413
TOTAL HARVEST COSTS	0	0	0	18,528	18,541	24,940	0	62,010
Postharvest:								
Remove Tunnels/Trellis							2,960	2,960
Field Cleanup							442	442
TOTAL POSTHARVEST COSTS	0	0	0	0	0	0	3,402	3,402
Interest on Operating Capital @ 7.00%	10	11	22	136	248	395	-20	803
TOTAL OPERATING COSTS/ACRE	1,758	234	1,899	19,688	19,322	25,585	3,415	71,900
CASH OVERHEAD								
Land Rent							1,600	1,600
Liability Insurance							11	11
Office Expense	57	57	57	57	57	57	57	400
Field Sanitation	3	3	3	3	3	3	3	23
Food Safety							56	56
Water & Nutrient Management Programs							48	48
Ranch Supervisor	100	100	100	100	100	100	100	700
Property Taxes		87					87	173
Property Insurance		6					6	12
Investment Repairs	88	88	88	88	88	88	88	615
TOTAL CASH OVERHEAD COSTS	248	341	248	248	248	248	2,056	3,639
TOTAL CASH COSTS/ACRE	2,006	575	2,147	19,936	19,570	25,833	5,472	75,539

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 6d. RANGING ANALYSIS – PRODUCTION YEAR 3

COSTS PER ACRE AND PER TRAY AT VARYING YIELDS TO PRODUCE AND HARVEST RASPBERRIES

	YIELD (TRAY)						
	3,500	3,900	4,300	4,750	5,200	5,600	6,000
OPERATING COSTS/ACRE:							
Cultural	5,686	5,686	5,686	5,686	5,686	5,686	5,686
Harvest	46,024	51,140	56,255	62,010	67,764	72,880	77,995
Postharvest	3,402	3,402	3,402	3,402	3,402	3,402	3,402
Interest on Operating Capital @ 7.00%	626	683	739	803	867	923	980
TOTAL OPERATING COSTS/ACRE	55,738	60,910	66,082	71,900	77,718	82,891	88,063
TOTAL OPERATING COSTS/TRAY	15.93	15.62	15.37	15.14	14.95	14.80	14.68
CASH OVERHEAD COSTS/ACRE	3,639	3,639	3,639	3,639	3,639	3,639	3,639
TOTAL CASH COSTS/ACRE	59,377	64,549	69,721	75,539	81,357	86,529	91,701
TOTAL CASH COSTS/TRAY	16.96	16.55	16.21	15.90	15.65	15.45	15.28
NON-CASH OVERHEAD COSTS/ACRE	4,925	4,925	4,925	4,925	4,925	4,925	4,925
TOTAL COSTS/ACRE	64,302	69,474	74,646	80,464	86,282	91,455	96,626
TOTAL COSTS/TRAY	18.00	18.00	17.00	17.00	17.00	16.00	16.00

Net Return Per Acre Above Operating Costs For Raspberries

PRICE ($/tray)	YIELD (tray/acre)						
4.5 Lb Tray	3,500	3,900	4,300	4,750	5,200	5,600	6,000
11.00	-17,238	-18,010	-18,782	-19,650	-20,518	-21,291	-22,063
13.00	-10,238	-10,210	-10,182	-10,150	-10,118	-10,091	-10,063
15.00	-3,238	-2,410	-1,582	-650	282	1,109	1,937
17.00	3,762	5,390	7,018	8,850	10,682	12,309	13,937
19.00	10,762	13,190	15,618	18,350	21,082	23,509	25,937
21.00	17,762	20,990	24,218	27,850	31,482	34,709	37,937
23.00	24,762	28,790	32,818	37,350	41,882	45,909	49,937

Net Return Per Acre Above Cash Costs For Raspberries

PRICE ($/tray)	YIELD (tray/acre)						
4.5 Lb Tray	3,500	3,900	4,300	4,750	5,200	5,600	6,000
11.00	-20,877	-21,649	-22,421	-23,289	-24,157	-24,929	-25,701
13.00	-13,877	-13,849	-13,821	-13,789	-13,757	-13,729	-13,701
15.00	-6,877	-6,049	-5,221	-4,289	-3,357	-2,529	-1,701
17.00	123	1,751	3,379	5,211	7,043	8,671	10,299
19.00	7,123	9,551	11,979	14,711	17,443	19,871	22,299
21.00	14,123	17,351	20,579	24,211	27,843	31,071	34,299
23.00	21,123	25,151	29,179	33,711	38,243	42,271	46,299

Net Return Per Acre Above Total Costs For Raspberries

PRICE ($/tray)	YIELD (tray/acre)						
4.5 Lb Tray	3,500	3,900	4,300	4,750	5,200	5,600	6,000
11.00	-25,802	-26,574	-27,346	-28,214	-29,082	-29,855	-30,626
13.00	-18,802	-18,774	-18,746	-18,714	-18,682	-18,655	-18,626
15.00	-11,802	-10,974	-10,146	-9,214	-8,282	-7,455	-6,626
17.00	-4,802	-3,174	-1,546	286	2,118	3,745	5,374
19.00	2,198	4,626	7,054	9,786	12,518	14,945	17,374
21.00	9,198	12,426	15,654	19,286	22,918	26,145	29,374
23.00	16,198	20,226	24,254	28,786	33,318	37,345	41,374

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 7. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD FOR RASPBERRIES

ANNUAL EQUIPMENT COSTS – PRODUCTION YEAR 1

						Cash Overhead		
Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Total
21	55HP 2WD Tractor	66,000	12	16,501	8,142	29	413	8,584
21	ATV 4WD	10,020	7	3,801	1,538	5	69	1,612
21	Pickup 1/2 Ton	36,000	5	16,134	6,413	19	261	6,692
21	Trailer	2,760	20	144	289	1	15	304
21	Vine Sprayer 100g 3 pt	12,600	8	2,845	1,972	5	77	2,054
21	Truck 2 Ton	75,600	5	33,882	13,467	39	547	14,053
21	24HP 4WD Tractor	28,800	10	8,507	3,816	13	187	4,016
21	Disc 5'	2,280	10	403	320	1	13	335
	TOTAL	234,060	-	82,217	35,956	112	1,581	37,650
	70% of New Cost*	163,842	-	57,552	25,169	79	1,107	26,355

*Used to reflect a mix of new and used equipment

ANNUAL EQUIPMENT COSTS – PRODUCTION YEAR 2

						Cash Overhead		
Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Total
22	55HP 2WD Tractor	66,000	12	16,501	8,142	29	413	8,584
22	ATV 4WD	10,020	7	3,801	1,538	5	69	1,612
22	Pickup 1/2 Ton	36,000	5	16,134	6,413	19	261	6,692
22	Vine Sprayer 100g 3 pt	12,600	8	2,845	1,972	5	77	2,054
22	Mower (flail) 5'	7,800	10	1,379	1,096	3	46	1,145
22	Truck 2 Ton	75,600	5	33,882	13,467	39	547	14,053
22	Truck 2 Ton #2	75,600	5	33,882	13,467	39	547	14,053
22	24HP 4WD Tractor	28,800	10	8,507	3,816	13	187	4,016
22	Disc 5'	2,280	10	403	320	1	13	335
	TOTAL	314,700	-	117,335	50,230	153	2,160	52,543
	70% of New Cost*	220,290	-	82,134	35,161	107	1,512	36,780

*Used to reflect a mix of new and used equipment

ANNUAL EQUIPMENT COSTS – PRODUCTION YEAR 3

						Cash Overhead		
Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Total
23	55HP 2WD Tractor	66,000	12	16,501	8,142	29	413	8,584
23	ATV 4WD	10,020	7	3,801	1,538	5	69	1,612
23	Pickup 1/2 Ton	36,000	5	16,134	6,413	19	261	6,692
23	Vine Sprayer 100g 3 pt	12,600	8	2,845	1,972	5	77	2,054
23	140HP MFWD Tractor	168,000	15	32,707	19,072	71	1,004	20,147
23	Truck 2 Ton	75,600	5	33,882	13,467	39	547	14,053
23	Disc-Stubble 14'	23,140	15	2,222	2,708	9	127	2,844
23	24HP 4WD Tractor	28,800	10	8,507	3,816	13	187	4,016
23	Mower (flail) 5'	7,800	10	1,379	1,096	3	46	1,145
23	Disc 5'	2,280	10	403	320	1	13	335
	TOTAL	430,240	-	118,381	58,543	195	2,743	61,481
	70% of New Cost*	301,168	-	82,867	40,980	136	1,920	43,037

*Used to reflect a mix of new and used equipment

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 7. CONTINUED

ANNUAL INVESTMENT COSTS – PRODUCTION YEARS 1 TO 3

Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead Insur-ance	Taxes	Repairs	Total
INVESTMENT								
Shop/Hand Tools	14,000	15	980	1,651	5	75	280	2,011
Tunnel Plastic Sheeting	225,410	6	0	49,502	80	1,127	4,508	55,217
Tunnel Metal Support Materials	890,580	12	62,341	118,066	338	4,765	17,812	140,981
Irrigation System	63,500	25	4,445	6,148	24	340	1,270	7,782
Trellis Materials	85,030	6	5,952	17,872	32	455	1,701	20,060
Sort/Pack Wagon	10,800	12	756	1,432	4	58	216	1,710
Shade Structure	2,270	6	159	477	1	12	45	535
TOTAL INVESTMENT	1,291,590	-	74,633	195,148	485	6,831	25,832	228,296

ANNUAL BUSINESS OVERHEAD COSTS – PRODUCTION YEARS 1 AND 2

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Land Rent	45.00	acre	3200.00	144,000
Liability Insurance	45.00	acre	21.34	960
Office Expense	45.00	acre	800.00	36,000
Field Sanitation	45.00	acre	45.00	2,025
Food Safety	45.00	acre	112.00	5,040
Water & Nutrient Management Programs	45.00	acre	95.00	4,275
Ranch Supervisor	45.00	acre	1400.00	63,000

ANNUAL BUSINESS OVERHEAD COSTS – PRODUCTION YEAR 3

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Land Rent	45.00	acre	1600.00	72,000
Liability Insurance	45.00	acre	11.00	495
Office Expense	45.00	acre	400.00	18,000
Field Sanitation	45.00	acre	23.00	1,035
Food Safety	45.00	acre	56.00	2,520
Water & Nutrient Management Prog	45.00	acre	48.00	2,160
Ranch Supervisor	45.00	acre	700.00	31,500

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 8. HOURLY EQUIPMENT COSTS FOR RASPBERRIES

PRODUCTION YEAR 1

Yr	Description	RASPBERRIES Hours Used	Total Hours Used	Cash Overhead: Capital Recovery	Cash Overhead: Insurance	Cash Overhead: Taxes	Operating: Lube& Repairs	Operating: Fuel	Operating: Total Oper.	Total Costs/Hr.
21	55HP 2WD Tractor	191	1000	5.70	0.02	0.29	5.45	14.58	20.03	26.04
21	ATV 4WD	18	285	3.78	0.01	0.17	1.30	3.00	4.30	8.26
21	Pickup 1/2 Ton	98	400	11.22	0.03	0.46	4.44	9.00	13.44	25.15
21	Trailer	64	150	1.35	0.00	0.07	0.46	0.00	0.46	1.88
21	Vine Sprayer 100g 3 pt	110	250	5.52	0.02	0.22	2.48	0.00	2.48	8.23
21	Truck 2 Ton	984	1000	9.43	0.03	0.38	4.89	13.50	18.39	28.23
21	24HP 4WD Tractor	32	1600	1.67	0.01	0.08	1.55	4.77	6.33	8.08
21	Disc 5'	29	200	1.12	0.00	0.05	0.42	0.00	0.42	1.59

PRODUCTION YEAR 2

Yr	Description	RASPBERRIES Hours Used	Total Hours Used	Cash Overhead: Capital Recovery	Cash Overhead: Insurance	Cash Overhead: Taxes	Operating: Lube& Repairs	Operating: Fuel	Operating: Total Oper.	Total Costs/Hr.
22	55HP 2WD Tractor	181	1000	5.70	0.02	0.29	5.45	14.58	20.03	26.04
22	ATV 4WD	33	285	3.78	0.01	0.17	1.30	3.00	4.30	8.26
22	Pickup 1/2 Ton	196	400	11.22	0.03	0.46	4.44	9.00	13.44	25.15
22	Vine Sprayer 100g 3 pt	165	250	5.52	0.02	0.22	2.48	0.00	2.48	8.23
22	Mower (flail) 5'	9	200	3.84	0.01	0.16	4.17	0.00	4.17	8.17
22	Truck 2 Ton	985	1000	9.43	0.03	0.38	4.89	13.50	18.39	28.23
22	Truck 2 Ton #2	737	1000	9.43	0.03	0.38	4.89	13.50	18.39	28.23
22	24HP 4WD Tractor	26	1600	1.67	0.01	0.08	1.55	4.77	6.33	8.08
22	Disc 5'	14	200	1.12	0.00	0.05	0.42	0.00	0.42	1.59

PRODUCTION YEAR 3

Yr	Description	RASPBERRIES Hours Used	Total Hours Used	Cash Overhead: Capital Recovery	Cash Overhead: Insurance	Cash Overhead: Taxes	Operating: Lube& Repairs	Operating: Fuel	Operating: Total Oper.	Total Costs/Hr.
23	55HP 2WD Tractor	60	1000	5.70	0.02	0.29	5.45	14.58	20.03	26.04
23	ATV 4WD	23	285	3.78	0.01	0.17	1.30	3.00	4.30	8.26
23	Pickup 1/2 Ton	126	400	11.22	0.03	0.46	4.44	9.00	13.44	25.15
23	Vine Sprayer 100g 3 pt	55	250	5.52	0.02	0.22	2.48	0.00	2.48	8.23
23	140HP MFWD Tractor	7	1066	12.52	0.05	0.66	11.10	43.88	54.98	68.21
23	Truck 2 Ton	985	1000	9.43	0.03	0.38	4.89	13.50	18.39	28.23
23	Disc-Stubble 14'	6	133	14.25	0.05	0.67	3.99	0.00	3.99	18.95
23	24HP 4WD Tractor	26	1600	1.67	0.01	0.08	1.55	4.77	6.33	8.08
23	Mower (flail) 5'	9	200	3.84	0.01	0.16	4.17	0.00	4.17	8.17
23	Disc 5'	14	200	1.12	0.00	0.05	0.42	0.00	0.42	1.59