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

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SAMPLE COSTS TO ESTABLISH, PRODUCE, AND HARVEST FRESH MARKET BLACKBERRIES
Primocane Bearing

Central Coast Region
Santa Cruz, Monterey, and San Benito Counties

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INTRODUCTION

Sample costs to establish, produce, and harvest primocane blackberries 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, 3, 5, and 6.

The hypothetical farm operation, production practices, overhead, and calculations are described under the assumptions. For additional information or an explanation of the calculations used in the study, contact Mark Bolda, UC Cooperative Extension Farm Advisor, mpbolda@ucanr.edu, or Jeremy Murdock, Department of Agricultural and Resource Economics, University of California, Davis, coststudies@ucdavis.edu. 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 10 beginning on page 13 and pertain to sample costs to establish, produce, and harvest primocane bearing blackberries 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 as of April 2024. **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 blackberry 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.**

Blackberries are also produced using organic methods along the Central Coast; it is estimated that roughly 20 percent of the crop is produced and marketed as organic. Many of the same practices that are used in conventional blackberry production are also used in organic production. Differences between the two production systems are primarily, though not exclusively, found in approaches to crop fertilization and pest management.

Farm. The farm consists of 30 contiguous acres of rented land. Blackberries are planted on 15 acres. Other berries are planted on 12 acres; roads, the irrigation system, and farm buildings account for 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 1: Cultural Practices and Material Inputs

Tables 2, 3, and 4

Crop Cycle. Blackberries are a perennial crop that, when well-managed, can produce for up to 8 years in this area. For this study, we consider costs and returns associated with the establishment of a primocane bearing blackberry crop (Year 1), along with four production and harvest cycles (Years 2-5). This planting and production cycle is intended to ensure optimal productivity and fruit quality. On farming operations where plants remain healthy and productivity is high, some growers may choose to extend the production and harvest cycle by one or more years beyond the five total cycles described here. By contrast, in operations where crop vigor and health has declined, the crop cycle may be shortened.

Land Preparation. Land preparation begins with removal of blackberry canes from the previous crop. The tunnel, trellis, and drip systems are also removed during this time. Labor for these operations is estimated at 143 hours per acre for a total of $3,492. Operations to prepare the field for the next new crop begin by taking two soil samples per 15 acres for soil analysis, which helps to determine fertilization practices. Land is then disced three times, chiseled (ripped) four times, and disced three times. Six tons of composted greenwaste is custom applied and then incorporated into the soil at the same time as the discing operations. The field is also

chiseled once, and sprinkler irrigated using 1 acre-inch of water to ensure adequate moisture prior to soil fumigation. The field is 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 the cost of a fumigation permit. After fumigation, the field is disced and rototilled, if necessary, to break up cloddy soils. Beds are then listed and shaped.

Plant. This study assumes that a primocane bearing blackberry variety is planted; no specific variety is assumed. Primocane blackberries can be managed and pruned such that they are able to produce fruit each year over an extended period of time. The price of tissue cultured plant stock depends on the variety selected, a possible storage charge, and shipping costs. Depending on the source of the plant material, a royalty may be included in the plant cost or be assessed separately. The cost for each plant is estimated at $2.50. Primocane blackberries are planted by hand in January using an 8-feet x 3-feet spacing configuration; planting density is 1,800 plants per acre. Labor is estimated at 24 hours per acre. Blackberries can be planted as early as December and as late as March. Blackberries are sprinkler irrigated after planting using 2 acre-inches of water.

Trellis. Each acre of the blackberry production operation is assumed to be 200-feet wide and 218-feet long, with 25 rows per acre. A trellis system is installed in the establishment year as soon as possible after planting. The total cost is estimated at $4,657 per acre, which includes materials and labor. Material costs include end posts, stakes (also referred to as pickets), and wire system. Because trellis materials can be used for other plantings, the material cost (estimated at roughly $2,484 per acre) is included in the non-cash or investment overhead and amortized accordingly. Installation labor is estimated at 89 hours per acre for a cost of $2,173 per acre.

Irrigate. A drip irrigation system is installed during the establishment year after planting, with drip lines tied to the lower wire of the trellis system and emitters placed every 6-inches. During the winter, crop growth is generally dependent on seasonal rains. The total number of irrigations varies depending on seasonal conditions. For this study, blackberries are irrigated from March through October in the establishment year, using a total of 21 acre-inches of water per acre. Total water use for the establishment year is 24 acre-inches per acre. The estimated cost of water is $30 per acre-inch or $360 per acre-foot. After the last harvest in Production Year 5, the drip line is removed and reused for a second crop cycle. **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 or taxes.**

Tunnels. Tunnels are constructed over the planted blackberries. Each tunnel is 24 feet wide (covering three rows) and 200 feet long. The structures consist of a line of anchor posts, bridged by a metal frame, and covered with 5 mil thick semi-clear plastic, which is fastened down with a rope. Struts on each side of the tunnel maintain tension down the length of the tunnel. Labor to install tunnels is estimated at 40 hours per acre. Tunnels are actively managed during the establishment and all other production years. This includes managing the plastic cover, which is taken down and secured, and unfurled and put over the structures, as needed to ensure optimal growing conditions each year. Tunnel management takes place from April to October and is estimated at 38 hours per acre. The structures are removed with completion of the cropping cycle and all materials used for a subsequent crop cycle.

Cane Management. Plants are pruned and trained during the establishment and all subsequent production years. Pruning, also known as “heading back” or “hard pinch” takes place in April and May, to reduce each cane’s growing point to 3 or 4.5 feet tall. The practice stimulates growth of lateral or fruiting canes to ensure optimal yield. In May and June, the canes are trained or propped up on the trellis system to support cane growth and help with fruit visibility and harvest efficiency. Labor for both practices combined is estimated at roughly

131 hours per acre for a total cost of $3,199. In December of each year (after harvest), all canes are mowed to ground level with a bladed handheld weed eater. Labor for this practice is estimated at 41 hours per acre for a total cost of $1,001. The canes are placed in row centers, shredded with a flail mower, and disced into the soil. Trellis system repairs, if needed, are also performed during this time.

Fertilize. In addition to the soil samples and composted greenwaste discussed above, an 18-13-16 fertilizer is applied at 400 pounds per acre and incorporated into the beds when shaped prior to planting. In March, 21-0-0-24 (ammonium sulfate) is injected through the irrigation system four times at the rate of 20 pounds per acre per irrigation. From early April to late July, a 3-18-18 fertilizer at 24 pounds per application is injected twice monthly.

Weed Mats. Weed mats are installed in tunnel anchor rows during the establishment year to assist with weed management, especially around anchor posts, for all five production and harvest cycles.

Pest management and all subsequent practices during the establishment year are similar to those for all production years. To avoid duplication, the text describing these practices and costs are found in the following section. Tables 2 to 4 also provide more information on establishment practices and costs.

Production Years 2 to 5: Cultural Practices and Material Inputs

Tables 1 and 5-10

Fertilize. In each of the four production years one soil sample (per 15 acres) is analyzed to assist with fertilizer decisions. Fertilizers are either injected through the drip system and/or applied mechanically, with nitrogen applied early in the season and then supplemented with phosphorus and potassium later in the season. Three leaf samples are collected mid-season to determine the nutritional needs of the plants. With the exception of the establishment year, ammonium sulfate (21-0-0-24) is band applied twice in February in equal amounts (75 lbs each application) for a total application rate of 150 pounds per acre. Incorporation is expected with winter rains. In March, 17-0-0 is injected through the irrigation system four times at the rate of 20 pounds per acre per application. In all years, from early April to late July, 3-18-18 at 24 pounds per acre is applied twice monthly.

Irrigate. Depending on effective rainfall and available soil moisture, plants are irrigated from April through October twice per week. Total irrigation water use during the season is estimated at 24 acre-inches per acre per year. The cost of water includes pumping costs and is estimated at $360 per acre-foot or $30 per acre-inch. In this study, the lines are flushed and repaired in March prior to the first irrigation.

Tunnel Management. To ensure optimal growing conditions each year the plastic covers are taken down and secured, and unfurled and put over the structures, as needed. Tunnel management takes place from March to October; labor is estimated at 38 hours per acre for a total cost of $928. The structures are removed with completion of the cropping cycle and all materials used for a subsequent crop cycle.

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 for pest problems and nutritional status during the establishment and all subsequent production years. 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 at $140 per acre per year.

Weeds. During the establishment and production years weeds are managed primarily by monthly hand weeding beginning in May and ending in October for a total cost per acre of $879. Some growers report higher hand weeding costs, which are determined by weed pressure and the use of weed mats in anchor rows. Row middles are disced in June and August.

Diseases. Several diseases are found in primocane blackberries, including downy and powdery mildew. In the establishment and all production years, Aliette is each applied once per season in February or March for downy mildew control. Pristine is applied twice per season, once in June and once in July, for powdery mildew control. All applications are made with an air-blast sprayer. Plants should be monitored for potential diseases during the growing season as production conditions will differ from year to year.

Insects/Arthropods. In the establishment and all production years, Spotted Wing Drosophila (SWD) is managed by one application of Malathion during the first week of July, followed by one application of Mustang Max in August. Leafrollers and other lepidopterous pests are controlled with one August and one September application of Success. If mite populations become problematic during the growing season, a pesticide application may be warranted but is not included here. The number of pest management applications and materials will vary depending upon the pest and infestation levels each year.

Physiological disorders. Blackberry fruit are subject to red duplet disorder, also called druplet reversion or reddening, after harvest (Edgley). This disorder is thought to be caused by fruit damage at harvest or during transportation to the cooler, combined with rapid changes in fruit temperature. Strategies to manage this disorder include harvesting during the coolest part of the day, along with quick delivery to the cooler.

Pollination. Bees are necessary for blackberry pollination. Cost for the establishment and all production years is estimated at $450 per acre, or three hives at $150 per hive. The grower contracts with a beekeeper; hives are set in the field in May and remain until September.

Harvest. Harvest in the establishment and each production year begins in late June or early July, and continues through October, optimal weather and production conditions permitting. Blackberries are harvested by hand every few days at an average seasonal harvest/sort/pack rate cost of $6.50 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 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. Cost for the tray with clamshells is estimated at $2.10 each. Each 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 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 assumes a yield range of 3,000 to 6,000 trays per acre, with a representative marketable yield of 4,500 trays per acre. The representative unit price to growers is $17 per tray, which falls within the range of 2022 to 2023 Salinas-Watsonville shipping point prices from the USDA Agricultural Market Service. Prices range from a low of $10 to a high of $22 depending on market conditions. Estimated net returns to growers for a combination of yields and prices are shown in Table 8, Ranging Analysis. A market/sales fee is also included in the study, which is calculated at eight percent of the $17 unit price, or $1.36 per tray.

Cane Management. New canes (for the next crop) begin to grow after the older (fruited) canes are mowed postharvest. They are trained or propped up on the trellis system to support cane growth and expose fruit for harvest efficiency. New canes are headed back each year in April and May to stimulate lateral growth or fruiting canes and ensure optimal yield. Labor cost for these two operations is estimated to be roughly $3,199 per acre, or 131 labor hours per acre.

Postharvest Cane Management. In December of each year, all canes are mowed to ground level with a bladed handheld weed eater. Labor for this practice is estimated at 41 hours per acre for a total cost of $1,001. The canes are placed in row centers, shredded with a flail mower, and disced into the soil. Trellis system repairs, if needed, are also performed during this time. At the end of Production Year 5, blackberry canes are removed from the field, as are the tunnel, trellis, and drip systems. Preparation for the next new crop also takes place during this time. Information for the associated practices and costs can be found in Establishment Tables 2-4.

Cover Crop. In December of the Establishment Year and Production Years 2-4, 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 each production year to reduce the above ground biomass. Seventy-five percent of the cover cropping cost has been included in this study because there is no cover cropping during the last crop cycle, Production Year 5.

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 cost is noted at the bottom of Table 5 and is 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. The labor rates used in this study are $29.60 per hour for machine operators and $24.42 for general labor, which includes overhead of 48 percent. The basic hourly wages are $20.00 for machine operators and $16.50 for general labor. The overhead includes the employers' share of federal and California state payroll taxes, workers' compensation insurance for berry crops (code 0179), 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 rate as of September 1, 2023. Labor for operations involving machinery are 20% higher than the operation time given in Table 1 to account for the extra labor involved in equipment set up, moving, maintenance, work breaks, and field repair.

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 2024 minimum wage increased to $16.00 per hour, a 3.2 percent increase over the 2023 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 9.0 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 February 2024.

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 $5.18 (excludes excise taxes) and $4.60 per gallon, respectively. The cost includes a 2 percent local sales tax on diesel fuel and 8 percent sales tax on gasoline. Gasoline costs also include 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 2 and 5 is determined by multiplying the total hourly operating cost in Table 10 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 costs for the use of a pickup truck and ATV for business purposes.

Risk. The risks associated with producing and marketing blackberries 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 blackberries. The market for fresh market blackberries is volatile for both price and quantity. A market channel should be determined before blackberry 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 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 0.710 percent of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs $640 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 supplies, 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.

Field Sanitation. Sanitation services provide portable toilets and washing stations for 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 agents, and single use towels. Separate potable water and single use drinking cups are also supplied.

Ranch Supervisor. The grower hires a farm supervisor to oversee some of the cultural and harvest operations as well as fill in on some of the operations where temporary assistance is needed. The estimated cost for the supervisor is $1,500 per acre. Larger operations may have multiple supervisory levels; associated costs will therefore differ.

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 cost and include materials & 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 9.

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 8.25 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 February 2024.

Tunnels. Tunnel structure materials are used for more than one complete blackberry cropping cycle. Steel parts last for 15 years, while plastic coverings last for two crop cycles. A total of seven 24 feet wide by 200 feet long tunnel structures are constructed per acre. Additional information about tunnels is located in the section Establishment Year: Cultural Practices and Material Inputs.

Trellis. The trellis is installed in the establishment year soon after planting; it can be used for more than one berry crop. The cost includes the materials only, with labor costs found in establishment costs. Additional information about the trellis system is located in the section Establishment Year: Cultural Practices and Material Inputs.

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

Cane Management Tools. The weed eaters that are used to mow blackberry canes in December each year, and other relevant tools used in cane management, are included in this study and shown under investments.

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 irrigation system in Table 9 represents the grower's investment in 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 irrigation. Additional information about the drip system is located in Production Years 2 to 5: Cultural Practices and Material Inputs.

Establishment. Costs to establish blackberries 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 Net Cash Cost on Table 1 represents the establishment cost, which is $15,791 per acre or $236,865 for the 15-acre field after the first harvest.

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 requirement. 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. Both of the overhead factors have been discussed in previous sections. The operating costs consist of repairs, fuel, and lubrication and are discussed under operating costs.

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

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UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 1. COSTS PER ACRE TO ESTABLISH, PRODUCE, AND HARVEST BLACKBERRIES - SUMMARY

Year:	Establish Year 1	Production Years 2-5
4.5- Pound Trays Per Acre:	4,500	4,500
Cultural Costs:		
Cultural Costs	28,557	7,598
TOTAL CULTURAL COSTS	28,557	7,598
Harvest Costs:		
Harvest/Pack/Haul/Cool/Market	53,766	53,766
TOTAL HARVEST COSTS	53,766	53,766
Post Harvest:		
Post Harvest Operations	1,059	1,059
TOTAL POSTHARVEST COSTS	1,059	1,059
Interest On Operating Capital @ 9.00%	2,121	1,302
TOTAL OPERATING COSTS/ACRE	85,503	63,724
Cash Overhead Costs:		
Rent, Insurance, Taxes, etc.	6,788	6,871
TOTAL CASH OVERHEAD COSTS	6,788	6,871
TOTAL CASH COSTS/ACRE	92,291	70,596
INCOME/ACRE FROM PRODUCTION	76,500	76,500
NET CASH COSTS/ACRE FOR THE YEAR	**15,791**	
PROFIT/ACRE ABOVE CASH COSTS		5,904
Non-Cash Overhead (Capital Recovery Cost):		
Equipment/Investments	5,278	10,030
TOTAL NON-CASH OVERHEAD COST/ACRE	5,278	10,030
TOTAL COST/ACRE FOR THE YEAR	97,569	80,626
INCOME/ACRE FROM PRODUCTION	76,500	76,500
TOTAL NET COST/ACRE FOR THE YEAR	21,069	4,126
NET PROFIT/ACRE ABOVE TOTAL COST		
TOTAL ACCUMULATED NET/ACRE	-21,069	-25,195

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURE AND RESOURCE ECONOMICS

TABLE 2. COSTS PER ACRE TO ESTABLISH, PRODUCE, AND HARVEST BLACKBERRIES – YEAR 1

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre						
		Labor Cost	Fuel	Lube &Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Cultural:								
Tunnel/Trellis Removal (Prior Crop)	143.00	3,492	0	0	0	0	3,492	
Sample Soil (2 per 15 Acres)	0.02	1	0	0	0	8	10	
Disc 6X	1.03	37	16	6	0	0	58	
Chisel/Rip 4X	0.52	18	8	4	0	0	30	
Compost Application	0.00	0	0	0	330	180	510	
Chisel	0.13	5	2	1	0	0	8	
Set Up/Sprinkler Irrigate 2X	1.00	24	0	0	90	0	114	
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	3	1	0	0	10	
List & Shape Beds	0.46	16	7	2	0	0	25	
Fertilize at Planting (18-13-16)	0.34	12	5	3	572	0	592	
Plant Blackberries	24.00	586	0	0	4,500	0	5,086	
Install Trellis	89.00	2,173	0	0	0	0	2,173	
Install Drip System	3.50	85	0	0	550	0	635	
Disease Management 3X	1.71	61	26	14	222	0	323	
Construct Tunnels	40.00	977	0	0	0	0	977	
Drip Irrigate- Establish	2.70	66	0	0	630	0	696	
Fertilize (21-0-0-24)	0.12	3	0	0	59	0	62	
Tunnel Management	38.01	928	0	0	0	0	928	
Cane Management	131.00	3,199	0	0	0	0	3,199	
Fertilize (3-18-18)	0.48	12	0	0	269	0	281	
Pollinate Crop (3 Hives per Acre)	0.00	0	0	0	0	450	450	
Install Weed Mats (Anchor Rows)	14.00	342	0	0	2,016	0	2,358	
Hand Weed	36.00	879	0	0	0	0	879	
Disc Row Middles 2X	0.43	15	7	2	0	0	24	
Insect Management 3X	1.71	61	26	14	126	0	227	
PCA	0.00	0	0	0	0	140	140	
ATV	0.38	13	1	0	0	0	15	
Pickup	2.33	83	21	9	0	0	113	
TOTAL CULTURAL COSTS	532.04	13,096	123	56	9,365	5,918	28,557	
Harvest:								
Harvest Blackberries	126.00	3,077	0	0	9,450	29,250	41,777	
Load/Haul Blackberries	23.40	831	323	215	0	0	1,369	
Cool Blackberries	0.00	0	0	0	0	4,500	4,500	
Market/Sales Fee	0.00	0	0	0	0	6,120	6,120	
TOTAL HARVEST COSTS	149.40	3,908	323	215	9,450	39,870	53,766	
Postharvest:								
Mow Canes	41.00	1,001	0	0	0	0	1,001	
Shred Canes	0.26	9	4	2	0	0	15	
Disc Canes	0.30	11	5	1	0	0	17	
Plant Cover Crop	0.22	8	3	1	14	0	26	
TOTAL POSTHARVEST COSTS	41.78	1,029	12	5	14	0	1,059	
Interest on Operating Capital at 9.00%							2,121	
TOTAL OPERATING COSTS/ACRE	723	18,033	458	275	18,828	45,788	85,503	

TABLE 2. 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:								
Food Safety Programs							112	
Land Rent							3,200	
Office Expense							800	
Liability Insurance							21	
Water & Nutrient Management Programs							95	
Field Sanitation							45	
Ranch Supervisor							1,500	
Property Taxes							214	
Property Insurance							15	
Investment Repairs							786	
TOTAL CASH OVERHEAD COSTS/ACRE							6,788	
TOTAL CASH COSTS/ACRE							92,291	
NON-CASH OVERHEAD:		Per Producing Acre		Annual Cost Capital Recovery				
Irrigation System		1,512		143			143	
Shop/Hand Tools		519		60			60	
Trellis System		2,484		363			363	
Tunnel Plastic Sheeting		5,367		809			809	
Tunnel Metal Support Materials		26,505		3,077			3,077	
Sort/Pack Trailer		400		46			46	
Shade Structure		140		20			20	
Weed Eaters		89		21			21	
Equipment		4,637		738			738	
TOTAL NON-CASH OVERHEAD COSTS		41,653		5,278			5,278	
TOTAL COSTS/ACRE							97,569	

TABLE 3. MATERIAL COSTS PER ACRE TO ESTABLISH, PRODUCE, AND HARVEST BLACKBERRIES – YEAR 1

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Blackberries	4,500	tray	17.00	76,500	
TOTAL GROSS RETURNS	4,500	tray		76,500	
OPERATING COSTS					
Fungicide:				**222**	
Aliette	5.00	lb	18.45	92	
Pristine	46.00	oz	2.83	130	
Insecticide:				**126**	
Malathion	2.00	pint	12.38	25	
Mustang Max	4.00	floz	2.81	11	
Success	10.00	floz	9.02	90	
Fertilizer:				**1,230**	
Compost (Greenwaste)	6.00	ton	55.00	330	
18-13-16	400.00	lb	1.43	572	
21-0-0-24 (Ammonium Sulfate)	80.00	lb	0.74	59	
3-18-18	192.00	lb	1.40	269	
Water:				**1,270**	
Water-Central Coast	24.00	acin	30.00	720	
Drip Tape	5500.00	foot	0.10	550	
Custom:				**45,788**	
Soil Analysis	0.10	each	84.00	8	
Spread Compost	6.00	acre	30.00	180	
Fumigation	1.00	acre	5000.00	5,000	
Fumigation Permit	1.00	acre	28.00	28	
Tarp Disposal	1.00	acre	112.00	112	
Pollination (Hives)	3.00	each	150.00	450	
Harvest/Sort/Pack	4500.00	tray	6.50	29,250	
Cool	4500.00	tray	1.00	4,500	
Market/Sales Fee	4500.00	tray	1.36	6,120	
PCA	1.00	acre	140.00	140	
Harvest:				**9,450**	
Clamshells	4500.00	each	2.10	9,450	
Plants/Seed:				**4,514**	
Blackberry Plants	1800.00	each	2.50	4,500	
Merced Rye	16.88	lb	0.80	14	
Pest Management:				**2,016**	
Weed Mats and Pins	9.00	roll	224.00	2,016	
Labor				**18,033**	
Equipment Operator Labor	40.09	hrs	29.60	1,187	
Non-Machine Labor	689.84	hrs	24.42	16,846	
Machinery				**733**	
Fuel-Gas	75.13	gal	4.60	346	
Fuel-Diesel	21.63	gal	5.18	112	
Lube				69	
Machinery Repair				207	
Interest on Operating Capital @ 9.00%				2,121	
TOTAL OPERATING COSTS/ACRE				85,503	
TOTAL OPERATING COSTS/TRAY				19	
NET RETURNS ABOVE OPERATING COSTS				-9,003	

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 3. CONTINUED

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
CASH OVERHEAD COSTS					
Food Safety Programs				112	
Land Rent				3,200	
Office Expense				800	
Liability Insurance				21	
Water & Nutrient Management Programs				95	
Field Sanitation				45	
Ranch Supervisor				1,500	
Property Taxes				214	
Property Insurance				15	
Investment Repairs				786	
TOTAL CASH OVERHEAD COSTS/ACRE				6,788	
TOTAL CASH OVERHEAD COSTS/TRAY				2	
TOTAL CASH COSTS/ACRE				92,291	
TOTAL CASH COSTS/TRAY				21	
NET RETURNS ABOVE CASH COSTS				-15,791	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Irrigation System				143	
Shop/Hand Tools				60	
Trellis System				363	
Tunnel Plastic Sheeting				809	
Tunnel Metal Support Materials				3,077	
Sort/Pack Trailer				46	
Shade Structure				20	
Weed Eaters				21	
Equipment				738	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				5,278	
TOTAL NON-CASH OVERHEAD COSTS/TRAY				1	
TOTAL COST/ACRE				97,569	
TOTAL COST/TRAY				22	
NET RETURNS ABOVE TOTAL COST				-21,069	

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 4. MONTHLY CASH COSTS PER ACRE TO ESTABLISH, PRODUCE, AND HARVEST BLACKBERRIES – YEAR 1

	DEC 22	JAN 23	FEB 23	MAR 23	APR 23	MAY 23	JUN 23	JUL 23	AUG 23	SEP 23	OCT 23	NOV 23	DEC 23	Total
Cultural:														
Tunnel/Trellis Removal (Prior Crop)	3,492													3,492
Sample Soil (2 per 15 Acres)	10													10
Disc 6X	58													58
Chisel/Rip 4X	30													30
Compost Application	510													510
Chisel		8												8
Set Up/Sprinkler Irrigate 2X		114												114
Fumigate (Flat - TIF Tarped)		5,028												5,028
Retrieve/Dispose Tarp		112												112
Disc		10												10
List & Shape Beds		25												25
Fertilize at Planting (18-13-16)		592												592
Plant Blackberries		5,086												5,086
Install Trellis		2,173												2,173
Install Drip System		635												635
Disease Management 3X				126			99	99						323
Construct Tunnels				977										977
Drip Irrigate- Establish				37	67	67	67	97	97	97	165			696
Fertilize (21-0-0-24)				62										62
Tunnel Management					133	133	133	133	133	133	133			928
Cane Management					1,600	1,600								3,199
Fertilize (3-18-18)					70	70	70	70						281
Pollinate Crop (3 Hives per Acre)						450								450
Install Weed Mats (Anchor Rows)						2,358								2,358
Hand Weed						147	147	147	147	147	147			879
Disc Row Middles 2X							12		12					24
Insect Management 3X								58	90	79				227
PCA	11	11	11	11	11	11	11	11	11	11	11	11	11	140
ATV	1	1	1	1	1	1	1	1	1	1	1	1	1	15
Pickup	9	9	9	9	9	9	9	9	9	9	9	9	9	113
TOTAL CULTURAL COSTS	4,121	13,805	21	1,223	1,890	4,845	548	624	499	476	464	21	21	28,557
Harvest:														
Harvest Blackberries								7,330	13,558	13,558	7,330			41,777
Load/Haul Blackberries								211	474	474	211			1,369
Cool Blackberries								792	1,458	1,458	792			4,500
Market/Sales Fee								1,077	1,983	1,983	1,077			6,120
TOTAL HARVEST COSTS	0	0	0	0	0	0	0	9,410	17,473	17,473	9,410	0	0	53,766
Postharvest:														
Mow Canes													1,001	1,001
Shred Canes													15	15
Disc Canes													17	17
Plant Cover Crop													26	26
TOTAL POSTHARVEST COSTS	0	0	0	0	0	0	0	0	0	0	0	0	1,059	1,059
Interest on Operating Capital @ 9.00%	31	134	135	144	158	194	198	274	408	543	-82	-8	-8	2,121
TOTAL OPERATING COSTS/ACRE	4,152	13,940	155	1,367	2,048	5,039	746	10,308	18,381	18,492	9,792	12	1,071	85,503

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 4. CONTINUED

	DEC 22	JAN 23	FEB 23	MAR 23	APR 23	MAY 23	JUN 23	JUL 23	AUG 23	SEP 23	OCT 23	NOV 23	DEC 23	Total
CASH OVERHEAD														
Food Safety Programs														112
Land Rent														3,200
Office Expense	62	62	62	62	62	62	62	62	62	62	62	62	62	800
Liability Insurance														21
Water & Nutrient Management Programs														95
Field Sanitation	3	3	3	3	3	3	3	3	3	3	3	3	3	45
Ranch Supervisor	115	115	115	115	115	115	115	115	115	115	115	115	115	1,500
Property Taxes			107					107						214
Property Insurance			8					8						15
Investment Repairs	60	60	60	60	60	60	60	60	60	60	60	60	60	786
TOTAL CASH OVERHEAD COSTS	241	241	355	241	241	241	241	355	241	241	241	241	241	6,788
TOTAL CASH COSTS/ACRE	4,393	14,180	510	1,607	2,289	5,280	987	10,663	18,621	18,733	10,033	253	1,312	92,291

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 5. COSTS PER ACRE TO PRODUCE AND HARVEST BLACKBERRIES – PRODUCTION YEARS 2-5

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre: Labor Cost	Fuel	Lube &Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Cultural:								
Sample Soil (1 per 15 Acres)	0.03	1	0	0	0	8	9	
Fertilize (21-0-0-24)	0.34	12	5	3	111	0	131	
Disease Management 3X	1.71	61	26	14	222	0	323	
Flush and Repair Drip System	0.40	10	0	0	16	0	26	
Mow Cover Crop	0.26	9	4	2	0	0	15	
Fertilize (17-0-0)	0.48	12	0	0	38	0	50	
Tunnel Management	38.00	928	0	0	0	0	928	
Drip Irrigate-Season	2.10	51	0	0	713	0	764	
Fertilize (3-18-18)	0.48	12	0	0	269	0	281	
Cane Management	131.00	3,199	0	0	0	0	3,199	
Pollinate Crop (3 Hives per Acre)	0.00	0	0	0	0	450	450	
Hand Weed	36.00	879	0	0	0	0	879	
Sample Leaves (3 per 15 Acres)	0.03	1	0	0	0	8	9	
Disc Row Middles 2X	0.69	24	11	3	0	0	38	
Insect Management 3X	1.71	61	26	14	126	0	227	
PCA	0.00	0	0	0	0	140	140	
ATV	0.38	13	1	0	0	0	15	
Pickup	2.33	83	21	9	0	0	113	
TOTAL CULTURAL COSTS	215.94	5,356	95	45	1,495	607	7,598	
Harvest:								
Harvest Blackberries	126.00	3,077	0	0	9,450	29,250	41,777	
Load/Haul Blackberries	23.40	831	323	215	0	0	1,369	
Cool Blackberries	0.00	0	0	0	0	4,500	4,500	
Market/Sales Fee	0.00	0	0	0	0	6,120	6,120	
TOTAL HARVEST COSTS	149.40	3,908	323	215	9,450	39,870	53,766	
Postharvest:								
Mow Canes	41.00	1,001	0	0	0	0	1,001	
Shred Canes	0.26	9	4	2	0	0	15	
Disc Canes	0.30	11	5	1	0	0	17	
Plant Cover Crop	0.22	8	3	1	14	0	26	
TOTAL POSTHARVEST COSTS	41.78	1,029	12	5	14	0	1,059	
Interest on Operating Capital at 9.00%							1,302	
TOTAL OPERATING COSTS/ACRE	407	10,292	430	265	10,959	40,477	63,724	

TABLE 5. 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:								
Food Safety Programs							112	
Land Rent							3,200	
Office Expense							800	
Liability Insurance							21	
Water & Nutrient Management Programs							95	
Field Sanitation							45	
Ranch Supervisor							1,500	
Property Taxes							291	
Property Insurance							21	
Investment Repairs							786	
TOTAL CASH OVERHEAD COSTS/ACRE							6,871	
TOTAL CASH COSTS/ACRE							70,596	
NON-CASH OVERHEAD:		Per Producing Acre		Annual Cost Capital Recovery				
Irrigation System		1,512		143			143	
Shop/Hand Tools		519		60			60	
Trellis System		2,484		363			363	
Tunnel Plastic Sheeting		5,367		809			809	
Tunnel Metal Support Materials		26,505		3,077			3,077	
Sort/Pack Trailer		400		46			46	
Shade Structure		140		20			20	
Weed Eaters		89		21			21	
Blackberry Establishment		15,791		4,794			4,794	
Equipment		4,308		696			696	
TOTAL NON-CASH OVERHEAD COSTS		57,115		10,030			10,030	
TOTAL COSTS/ACRE							80,626	

Growing Costs = Total Cost – Harvest Cost. $80,626 - $53,766 = $26,860

TABLE 6. COSTS AND RETURNS PER ACRE TO PRODUCE AND HARVEST BLACKBERRIES – PRODUCTION YEARS 2-5

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Blackberries	4,500	tray	17.00	76,500	
TOTAL GROSS RETURNS	4,500	tray		76,500	
OPERATING COSTS					
Fungicide:				**222**	
Aliette	5.00	lb	18.45	92	
Pristine	46.00	oz	2.83	130	
Insecticide:				**126**	
Malathion	2.00	pint	12.38	25	
Mustang Max	4.00	floz	2.81	11	
Success	10.00	floz	9.02	90	
Fertilizer:				**418**	
21-0-0-24 (Ammonium Sulfate)	150.00	lb	0.74	111	
17-0-0	80.00	lb	0.48	38	
3-18-18	192.00	lb	1.40	269	
Water:				**728**	
Water-Central Coast	24.00	acin	30.00	720	
Drip Repair Materials	1.00	acre	8.40	8	
Custom:				**40,477**	
Soil Analysis	0.10	each	84.00	8	
Pollination (Hives)	3.00	each	150.00	450	
Leaf Analysis	0.10	each	84.00	8	
Harvest/Sort/Pack	4500.00	tray	6.50	29,250	
Cool	4500.00	tray	1.00	4,500	
Market/Sales Fee	4500.00	tray	1.36	6,120	
PCA	1.00	acre	140.00	140	
Harvest:				**9,450**	
Clamshells/Tray	4500.00	each	2.10	9,450	
Plants/Seed:				**14**	
Merced Rye	16.88	lb	0.80	14	
Labor				**10,292**	
Equipment Operator Labor	37.92	hrs	29.60	1,122	
Non-Machine Labor	375.52	hrs	24.42	9,170	
Machinery				**695**	
Fuel-Gas	75.11	gal	4.60	346	
Fuel-Diesel	16.30	gal	5.18	84	
Lube				64	
Machinery Repair				200	
Interest on Operating Capital @ 9.00%				1,302	
TOTAL OPERATING COSTS/ACRE				63,724	
TOTAL OPERATING COSTS/TRAY				14	
NET RETURNS ABOVE OPERATING COSTS				12,776	

TABLE 6. CONTINUED

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
CASH OVERHEAD COSTS					
Food Safety Programs				112	
Land Rent				3,200	
Office Expense				800	
Liability Insurance				21	
Water & Nutrient Management Programs				95	
Field Sanitation				45	
Ranch Supervisor				1,500	
Property Taxes				291	
Property Insurance				21	
Investment Repairs				786	
TOTAL CASH OVERHEAD COSTS/ACRE				6,871	
TOTAL CASH OVERHEAD COSTS/TRAY				2	
TOTAL CASH COSTS/ACRE				70,596	
TOTAL CASH COSTS/TRAY				16	
NET RETURNS ABOVE CASH COSTS				5,904	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Irrigation System				143	
Shop/Hand Tools				60	
Trellis System				363	
Tunnel Plastic Sheeting				809	
Tunnel Metal Support Materials				3,077	
Sort/Pack Trailer				46	
Shade Structure				20	
Weed Eaters				21	
Blackberry Establishment				4,794	
Equipment				696	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				10,030	
TOTAL NON-CASH OVERHEAD COSTS/TRAY				2	
TOTAL COST/ACRE				80,626	
TOTAL COST/TRAY				18	
NET RETURNS ABOVE TOTAL COST				-4,126	

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 7. MONTHLY CASH COSTS PER ACRE TO PRODUCE AND HARVEST BLACKBERRIES – PRODUCTION YEARS 2-5

	JAN 24	FEB 24	MAR 24	APR 24	MAY 24	JUN 24	JUL 24	AUG 24	SEP 24	OCT 24	NOV 24	DEC 24	Total
Cultural:													
Sample Soil (1 per 15 Acres)	9												9
Fertilize (21-0-0-24)		131											131
Disease Management 3X			126			99	99						323
Flush and Repair Drip System			26										26
Mow Cover Crop			15										15
Fertilize (17-0-0)			50										50
Tunnel Management			116	116	116	116	116	116	116	116			928
Drip Irrigate-Season				75	112	127	142	127	112	67			764
Fertilize (3-18-18)				70	70	70	70						281
Cane Management				1,600	1,600								3,199
Pollinate Crop (3 Hives per Acre)					450								450
Hand Weed					147	147	147	147	147	147			879
Sample Leaves (3 per 15 Acres)					9								9
Disc Row Middles 2X						19		19					38
Insect Management 3X							58	90	79				227
PCA	12	12	12	12	12	12	12	12	12	12	12	12	140
ATV	1	1	1	1	1	1	1	1	1	1	1	1	15
Pickup	9	9	9	9	9	9	9	9	9	9	9	9	113
TOTAL CULTURAL COSTS	31	154	355	1,883	2,526	600	654	521	476	352	22	22	7,598
Harvest:													
Harvest Blackberries							7,330	13,558	13,558	7,330			41,777
Load/Haul Blackberries							211	474	474	211			1,369
Cool Blackberries							792	1,458	1,458	792			4,500
Market/Sales Fee							1,077	1,983	1,983	1,077			6,120
TOTAL HARVEST COSTS	0	0	0	0	0	0	9,410	17,473	17,473	9,410	0	0	53,766
Postharvest:													
Mow Canes												1,001	1,001
Shred Canes												15	15
Disc Canes												17	17
Plant Cover Crop												26	26
TOTAL POSTHARVEST COSTS	0	0	0	0	0	0	0	0	0	0	0	1,059	1,059
Interest on Operating Capital @ 9.00%	0	1	4	18	37	42	117	252	387	460	-8	-8	1,302
TOTAL OPERATING COSTS/ACRE	32	155	359	1,901	2,563	642	10,181	18,246	18,336	10,222	14	1,073	63,724

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 7. CONTINUED

	JAN 24	FEB 24	MAR 24	APR 24	MAY 24	JUN 24	JUL 24	AUG 24	SEP 24	OCT 24	NOV 24	DEC 24	Total
CASH OVERHEAD													
Food Safety Programs										112			112
Land Rent										3,200			3,200
Office Expense	67	67	67	67	67	67	67	67	67	67	67	67	800
Liability Insurance										21			21
Water & Nutrient Management Programs										95			95
Field Sanitation	4	4	4	4	4	4	4	4	4	4	4	4	45
Ranch Supervisor	125	125	125	125	125	125	125	125	125	125	125	125	1,500
Property Taxes		146					146						291
Property Insurance		10					10						21
Investment Repairs	65	65	65	65	65	65	65	65	65	65	65	65	786
TOTAL CASH OVERHEAD COSTS	261	417	261	261	261	261	417	261	261	3,689	261	261	6,871
TOTAL CASH COSTS/ACRE	293	572	620	2,162	2,824	903	10,598	18,507	18,597	13,911	275	1,334	70,596

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 8. RANGING ANALYSIS

COSTS PER ACRE AND PER TRAY AT VARYING YIELDS TO PRODUCE AND HARVEST BLACKBERRIES – PRODUCTION YEARS 2-5

	YIELD (TRAY)						
	3,000	3,500	4,000	4,500	5,000	5,500	6,000
OPERATING COSTS/ACRE:							
Cultural	7,598	7,598	7,598	7,598	7,598	7,598	7,598
Harvest	36,300	42,122	47,944	53,766	59,588	65,410	71,232
Postharvest	1,059	1,059	1,059	1,059	1,059	1,059	1,059
Interest on Operating Capital @ 9.00%	974	1,084	1,193	1,302	1,411	1,520	1,629
TOTAL OPERATING COSTS/ACRE	45,931	51,862	57,793	63,724	69,656	75,587	81,518
TOTAL OPERATING COSTS/TRAY	15.31	14.82	14.45	14.16	13.93	13.74	13.59
CASH OVERHEAD COSTS/ACRE	6,871	6,871	6,871	6,871	6,871	6,871	6,871
TOTAL CASH COSTS/ACRE	52,802	58,733	64,664	70,596	76,527	82,458	88,389
TOTAL CASH COSTS/TRAY	17.60	16.78	16.17	15.69	15.31	14.99	14.73
NON-CASH OVERHEAD COSTS/ACRE	10,030	10,030	10,030	10,030	10,030	10,030	10,030
TOTAL COSTS/ACRE	62,832	68,763	74,694	80,626	86,557	92,488	98,419
TOTAL COSTS/TRAY	21.00	20.00	19.00	18.00	17.00	17.00	16.00

Net Return Per Acre Above Operating Costs For Blackberries – Production Years 2-5

PRICE ($/tray)	YIELD (tray/acre)						
Blackberries	3,000	3,500	4,000	4,500	5,000	5,500	6,000
11.00	-12,931	-13,362	-13,793	-14,224	-14,656	-15,087	-15,518
13.00	-6,931	-6,362	-5,793	-5,224	-4,656	-4,087	-3,518
15.00	-931	638	2,207	3,776	5,344	6,913	8,482
17.00	5,069	7,638	10,207	12,776	15,344	17,913	20,482
19.00	11,069	14,638	18,207	21,776	25,344	28,913	32,482
21.00	17,069	21,638	26,207	30,776	35,344	39,913	44,482
23.00	23,069	28,638	34,207	39,776	45,344	50,913	56,482

Net Return Per Acre Above Cash Costs For Blackberries – Production Years 2-5

PRICE ($/tray)	YIELD (tray/acre)						
Blackberries	3,000	3,500	4,000	4,500	5,000	5,500	6,000
11.00	-19,817	-20,248	-20,679	-21,096	-21,541	-21,972	-22,403
13.00	-13,817	-13,248	-12,679	-12,096	-11,541	-10,972	-10,403
15.00	-7,817	-6,248	-4,679	-3,096	-1,541	28	1,597
17.00	-1,817	752	3,321	5,904	8,459	11,028	13,597
19.00	4,183	7,752	11,321	14,904	18,459	22,028	25,597
21.00	10,183	14,752	19,321	23,904	28,459	33,028	37,597
23.00	16,183	21,752	27,321	32,904	38,459	44,028	49,597

Net Return Per Acre Above Total Costs For Blackberries – Production Years 2-5

PRICE ($/tray)	YIELD (tray/acre)						
Blackberries	3,000	3,500	4,000	4,500	5,000	5,500	6,000
11.00	-29,847	-30,278	-30,709	-31,126	-31,571	-32,002	-32,433
13.00	-23,847	-23,278	-22,709	-22,126	-21,571	-21,002	-20,433
15.00	-17,847	-16,278	-14,709	-13,126	-11,571	-10,002	-8,433
17.00	-11,847	-9,278	-6,709	-4,126	-1,571	998	3,567
19.00	-5,847	-2,278	1,291	4,874	8,429	11,998	15,567
21.00	153	4,722	9,291	13,874	18,429	22,998	27,567
23.00	6,153	11,722	17,291	22,874	28,429	33,998	39,567

UC COOPERATIVE EXTENSION – UC DAVIS AGRICULTURAL AND RESOURCE ECONOMICS

TABLE 9. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS FOR BLACKBERRIES

ANNUAL EQUIPMENT COSTS

						Cash Overhead		
Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Total
24	55HP 2WD Tractor	66,000	12	16,501	8,015	29	413	8,457
24	ATV 4WD	10,020	7	3,801	1,518	5	69	1,592
24	Disc-Harrow 5'	4,200	10	743	582	2	25	609
24	Mower-Flail 7'	11,520	10	2,037	1,597	5	68	1,670
24	Pickup 1/2 Ton	38,880	5	17,425	6,847	20	282	7,148
24	Spreader-Fertilize	14,400	10	2,547	1,997	6	85	2,087
24	Air Blast Sprayer - 300 gal	30,000	10	5,305	4,160	13	177	4,349
24	Seed Drill 4'	8,040	10	1,422	1,115	3	47	1,165
24	Flatbed Truck - 1 1/2 Ton	62,650	5	28,078	11,032	32	454	11,518
	TOTAL	245,710	-	77,859	36,863	115	1,618	38,595
	70% of New Cost*	171,997	-	54,501	25,804	80	1,132	27,017

*Used to reflect a mix of new and used equipment

ANNUAL INVESTMENT COSTS

					Cash Overhead			
Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur-ance	Taxes	Repairs	Total
INVESTMENT								
Irrigation System	22,680	25	1,588	2,149	9	121	1,134	3,413
Shop/Hand Tools	14,000	15	980	1,625	5	75	280	1,985
Trellis System	37,260	10	2,608	5,438	14	199	745	6,396
Tunnel Plastic Sheeting	80,503	10	0	12,133	29	403	1,610	14,174
Tunnel Metal Support Materials	397,580	15	27,831	46,155	151	2,127	7,952	56,385
Sort/Pack Trailer	10,800	15	756	1,254	4	58	216	1,532
Shade Structure	2,100	10	147	306	1	11	42	361
Weed Eaters (3)	2,400	5	168	577	1	13	48	638
Blackberry Establishment	236,865	4	0	71,913	84	1,184	0	73,181
TOTAL INVESTMENT	804,188	-	34,078	141,550	298	4,191	12,027	158,066

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Food Safety Programs	15.00	acre	112.00	1,680
Land Rent	15.00	acre	3200.00	48,000
Office Expense	15.00	acre	800.00	12,000
Liability Insurance	15.00	acre	21.34	320
Water & Nutrient Management Programs	15.00	acre	95.00	1,425
Field Sanitation	15.00	acre	45.00	675
Ranch Supervisor	15.00	acre	1500.00	22,500

TABLE 10. HOURLY EQUIPMENT COSTS FOR BLACKBERRIES

Yr	Description	Blackberries-PYs 2-5 Hours Used	Total Hours Used	Capital Recovery	Cash Overhead Insur-ance	Cash Overhead Taxes	Operating Lube& Repairs	Operating Fuel	Operating Total Oper.	Total Costs/Hr.
24	55HP 2WD Tractor	91	500	11.22	0.04	0.58	3.74	13.99	17.73	29.57
24	ATV 4WD	6	100	10.63	0.03	0.48	1.02	3.07	4.08	15.23
24	Disc-Harrow 5'	15	100	4.08	0.01	0.17	0.48	0.00	0.48	4.74
24	Mower-Flail 7'	8	100	11.18	0.03	0.47	3.09	0.00	3.09	14.78
24	Pickup 1/2 Ton	35	200	23.96	0.07	0.99	3.91	9.20	13.11	38.13
24	Spreader-Fertilizer	5	80	17.47	0.05	0.74	5.63	0.00	5.63	23.90
24	Air Blast Sprayer - 300 gal	51	100	29.12	0.09	1.24	3.82	0.00	3.82	34.26
24	Seed Drill 4'	3	150	5.20	0.02	0.22	2.43	0.00	2.43	7.87
24	Flatbed Truck - 1 1/2 Ton	351	400	19.31	0.06	0.79	9.19	13.80	22.99	43.14