

**AVOCADO SAMPLE ESTABLISHMENT AND PRODUCTION
COSTS AND PROFITABILITY ANALYSIS
FOR VENTURA, SANTA BARBARA
AND SAN LUIS OBISPO COUNTIES, 2011
CONVENTIONAL PRODUCTION PRACTICES**



Etaferahu Takele, Area Farm Advisor, Agricultural Economics/Farm Management,
University of California Cooperative Extension (UCCE) Southern California
Ben Faber, Farm Advisor, Soils and Water, Avocados and Minor Subtropicals,
UCCE Santa Barbara & Ventura Counties
Mao Vue, Staff Research Associate, UCCE Southern California

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

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Based on data collected in 2011

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The authors wish to express their appreciation to those cooperators who provided data and review in the development of this study. To simplify information, trade names of some products have been used in this report. No endorsement of named product is intended, nor did criticism imply of similar products that are not mentioned.

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ABSTRACT

There is a growing concern that the fast expanding and globalized competitive world market is causing decline in grower returns and expansion of urban development and environmental regulations causing production cost increases and challenging the viability and sustainability of producing these crops. Ventura, Santa Barbara, and San Luis Obispo counties are among the top avocado producing counties in California. These counties make up 48% of the California avocado industry; grossing over \$167 million in 2011. It has been over 10 years since we developed a cost study for avocados in California. The establishment and production costs and profitability analyses have been the fundamental tool that growers and investors use for investment analyses and decisions, conducting business transactions, and risk management strategies. In this study, we provide up to date costs of establishment and production and profitability; benchmark indicators for evaluating the viability and sustainability of avocado production. This study is based on assumptions of orchard establishment and production practices that are considered typical in Ventura, Santa Barbara, and San Luis Obispo counties and is based on 20 acres orchard. Data regarding production practices, inputs and prices was collected from growers, the University of California Cooperative Extension (UCCE) farm advisor, agricultural institutions, and supply and equipment dealers. While this study makes every effort to model a production system based on typical, real world practices, it cannot fully represent financial, agronomic, and market risks, which affect the profitability and economic viability of all producers.

INTRODUCTION

According to the California Avocado Commission (CAC) there are currently 51,800 producing acres, 3,210 acres of new plantings, and 7,830 acres are in topped/stumped condition in California for 2011. Acreage has declined by about 6,000 acres since year 2001. Ventura County has the second highest acreage with about 18,550 (16,250 producing) acres, whereas Santa Barbara County has about 7,080 (5,770 producing) acres. In addition, San Luis Obispo County has 4,540 (4,040 producing) acres. Together these three counties make up for 48% of the avocado industry in California.

Most orchards in Ventura, and Santa Barbara, are producing trees. Orchards in San Luis Obispo County are relatively younger. The total acreage in these three counties is 30,170 of which 26,060 acres (86.38% of the total) are producing, some 1,930 acres (6.40% of the total) have been stumped/topped (more so in Ventura and Santa Barbara counties than in San Luis Obispo County) and new plantings are 2,180 acres (7.22% of the total). We developed this study for growers, prospective growers, agricultural lenders, educators and all who are involved or have interest with the establishment and production of avocados in Ventura, Santa Barbara, and San Luis Obispo counties. This study provides establishment and production practices, estimates of financial requirements for establishing an avocado orchard and producing avocados. It also provides analyses of profitability.

This study is based on assumptions of typical conventional practices for establishing and producing avocados in Ventura, Santa Barbara, and San Luis Obispo counties in 2011. We are assuming that the production practices and costs are similar these three counties in most cases

except in San Luis Obispo, we estimate a lower price of water, lower yield, and hence lower picking costs than in Ventura and Santa Barbara counties. The assumptions of the typical practices were based on data we collected from growers and the UCCE farm advisor in the fall of 2011 and reviewed in 2012. While the assumptions outlined in this study may not fit all conditions, they represent current trends of production and the methodology can easily be adapted to address individual situations, analyze expenditures, profits, and investments. When practices deviate from those given in this study, growers can enter and substitute their own costs in the “Your Cost” column in the tables. They can compare their costs with ours, analyze the reasons for the differences, and make adjustments if necessary.

ASSUMPTIONS

The discussion in these sections includes production practices: inputs, application rates, time of application, and methods. Input prices, contract fees and service expenses are based on 2011 prices.

ORCHARD SPECIFICATION

This study is based on 21 acres of flat to moderately sloped avocado plantings in Ventura, Santa Barbara, and San Luis Obispo counties. Twenty of the twenty-one acres are in the actual avocado production and one acre is in roads and farmstead. For an avocado orchard this size the majority of growers will have their house on the grove, however, we have made an effort to separate the household costs from orchard costs.

ESTABLISHMENT AND PRODUCTION PRACTICES

Land preparation. In Ventura and Santa Barbara counties there have been very little avocado orchard establishment on new open land since 2001. In San Luis Obispo County, it is a growing industry; hence, there have been new plantings. According to the San Luis Obispo County Agricultural Commissioner’s crop reports, avocado acreage in this county increased from 2,000 acres in year 2000 to 4,800 acres in 2011 (more than doubled in 10 years). In Ventura and Santa Barbara counties, if new orchards are planted they are commonly planted on previous avocado ground. Whereas new plantings on previous avocado grounds have roads and drainage systems already in place, we want the study to represent planting on new and open land in which case costs of establishment include new road building and drainage systems installations.

The typical land preparation for an avocado orchard planting includes the following. Brush will be crushed by a crawler tractor to leave organic residue on the surface and help with erosion control. During the first year of establishment, orchard layout including planting spaces, installations of the irrigation and drainage systems and grading for erosion control are designed. Erosion control methods include paving the roads, installing drainage systems, and seeding the exposed areas of the ground. During the first year, these operations are done once, most likely in March and are estimated to take 3 hours per acre. Erosion control is done throughout the life of the orchard and includes cleaning drains and sand bagging. From the second year onward, these operations are estimated to take 3 hours per acre and done once per year in spring. Roads are constructed before planting and strategically designed for easy travel access to people, trucks, equipment and ATVs in the orchard. The majority of the land preparation operations including irrigation and drainage system installations are done by contractors. The costs of clearing land

and road building are estimated to be \$2,000 per acre. The cost of orchard layout is estimated to be \$210 per acre (5 minutes per tree layout). Installation of the irrigation and drainage systems is included in the cost of the irrigation system.

Planting. Planting space varies among growers in Ventura, Santa Barbara, and San Luis Obispo counties. In the past, the most common planting space was about 20' x 20' with 109 trees per acre. In recent years, growers are using narrow space plantings. For this study, we used a spacing of 22' x 11' with 180 trees per acre. Hass trees grafted onto clonal rootstock are the most common type used in these regions and in the major avocado producing counties of California.

Planting operations includes digging holes for plants with shovels and transporting the trees to the sites of planting. Moist backfill soil is placed in the holes and compressed to remove air pockets. Trees are planted in the holes along with stakes and then wrapped. A layer of mulch in the tree rows is applied to help the soil retain moisture and contain weeds. Mulch also suppresses the development of root rot and reduces the adverse effects of saline soil and water (IPM, 2011). Mulch is applied in the first and third year. Each time, it is applied at 200 cubic yards per acre at a price of \$2.50 per cubic yard. It costs \$200 per acre for contractors to apply the mulch.

Clonal rootstock trees with wraps cost \$28 per unit and stakes (2x2x6ft) cost \$2.20 per unit based on bulk purchase price. Digging, planting, wrapping, and staking the trees are estimated to take 30 hours per acre (10 minutes per tree).

During the second year, some replanting of trees will take place to replace lost trees. For this study, 9 trees (~5% replacement) are replaced per acre. The price of replacement trees with wraps remains the same. Re-planting time also remains the same at 10 minutes per tree (a total of 1.50 hours per acre). Growers can also use the stakes and mulch used in the first year for the replaced trees.

Pruning. Pruning begins in establishment year 4. Pruning is needed for improving yield for profitability, reducing fertilization needs, and maximizing tree-bearing surfaces (Dixon, 2011). Pruning consists of removing deadwood and overcrowding branches, and creation and maintenance of desirable structure and size. Growers in these regions typically prune once per year in January starting in establishment year 4. Pruning is considered to take 5 minutes per tree in year 4; 6 minutes per tree in year 5; 8 minutes per tree in year 6 and 10 minutes per tree at maturity/production years.

IRRIGATION

Irrigation System. The cost of irrigation system also varies depending on where farmers purchase their system and parts. Information for irrigation system and parts were gathered from various supply companies in these regions. We used \$2,660 per acre including installation for an irrigation system (drippers and micro sprinklers included).

The irrigation system is installed before planting in the first year of establishment. During year 1, one dripper is placed at root ball on one side of the tree. In year 2, a second dripper is added on the opposite side of the tree. In year 3, the drippers will be replaced with micro sprinklers.

One micro sprinkler per tree, emitting on average 10 to 15 gallons per hour is used. Water should not wet the tree trunk in order to prevent diseases.

Table A. Per Acre and Per Tree Irrigation Water Application by Age of Tree in Ventura, Santa Barbara, & San Luis Obispo Counties		
Year	Acre-Inches per Acre per Year	Gallons per Tree per Year
1	12	1810
2	16	2414
3	20	3017
4	24	3620
5	28	4224
6	30	4526
7+	30	4526

Irrigation Water Application Rate and Prices. The price of water varies depending on source (wells or district water), method, and pumping distances to the orchard. It also depends on pumping capacity, pump size, and elevation. In Ventura, Santa Barbara, and San Luis Obispo counties, irrigation water source varies including purchase from the local district and pumping from wells. Growers with orchards of over 25 acres, especially in San Luis Obispo County, are most likely to have their own wells. Water cost in Ventura and Santa Barbara counties is estimated at \$325 per acre-foot (\$27.08 per acre-inch); a rate we arrived based on information provided by growers, the UCCE farm advisor, and various water districts in these regions. Water cost in San Luis Obispo County (per most current cost studies) ranges from \$50 to \$250 per acre-foot. We used \$200 per acre-foot (\$16.67 per acre-inch) in this

study. Irrigation water use in Ventura, Santa Barbara, and San Luis Obispo counties by tree age is presented in Table A.

Frequency and amount of irrigation depends on weather, rainfall, and location. Typically, growers irrigate from April through October. Number of irrigations in this study include 60 in the first year; and 30 from second year onward; (though some growers stated that they irrigate as much as 2 times per week; 8 times per month during the summer months). Irrigation labor includes walking in the orchard to inspect the system, water flow, fixing leaky problems, or cleaning emitter clogs caused by rodents, insects, and chemical precipitations. Labor hours for irrigation are estimated at 10 minutes per irrigation per acre.

Pest Management. There are varieties of pests found in California avocado orchards. Some common types of pests include loopers, moths, thrips, perseas, mites, gophers, and squirrels. In California, avocado orchards are under good biological control due to beneficial insects that prey on harmful pests like the omnivorous looper and amorbia moth. The main pest issues in these study areas include avocado thrips and perseas' reoccurrences. Thrips and perseas control methods for avocado production includes application of material such as abamectin (Agri-Mek) mixed with 1% narrow range 415 oil (NR415) once per year in March beginning in establishment year 3 when trees reach bearing age. Fifteen ounces of abamectin (\$1 per ounce) and 1 gallon of NR415 oil (\$10 per gallon) is applied per acre by aerial application (\$87 per acre by helicopter). In addition, about 4 gallons of NR415 oil is applied annually in August to control thrips and perseas mites. NR415 oil cost \$40 per acre (\$10 per gallon) and \$87 per acre for aerial application.

Rodents (gophers and ground squirrels) also cause problems in avocado orchards. According to UC Integrated Pest Management program experts, gopher control is needed to prevent damage to young trees, their gnawing can damage sprinklers, and their tunnels can divert and carry off irrigation water. Gopher control is particularly needed during the first three years of establishment. Two gopher traps per acre are needed and set up during the first year of

establishment after planting. Each trap costs \$7.50 per unit. The costs of traps are spread over the first three years of establishment (\$5 per acre per year); however, the traps can last up to ten years. Labor hours to check traps and collect dead gophers are estimated at 2 hours per acre per year (10 minutes per acre per month).

In addition, squirrel control is needed throughout the tree life or until squirrels are under control. Traps and anticoagulant bait are used for squirrel control in order to prevent tunneling through soil and erosion problems. Typically, one bait station with baits serves one acre. Each bait station costs \$2.30 and can last up to 10 years; therefore, the cost per acre per year becomes \$0.23. Anticoagulant bait is applied monthly throughout the year. Total bait application is 2.64 pounds per acre per year (0.22 pound per application per month) and cost \$3 per pound. Traps are set during the first year of establishment; one squirrel trap (\$20 per trap) is set between two acres (\$10 per acre) and lasts up to ten years before replacement. Therefore, the cost of traps is spread over ten years at \$1 per acre per year. It takes about one hour per acre per year (5 minutes per acre per month) to set trap, lay out bait station with bait, replenish bait, and collect dead squirrels during the first year of establishment. From the second year onward, it also takes one hour per acre per year (5 minutes per acre per month) to collect dead squirrels. Dead squirrels may also be collected throughout the year during other operations such as pruning, irrigation, and weed control.

There may be other pests present in avocado orchards of these study areas; therefore, growers can adjust their cost of pest management as applicable. For more information on pesticide use permits, contact your County Agricultural Commissioner's office or the University of California Cooperative Extension farm advisors. The University of California also has pest management information on the UC Statewide Integrated Pest Management Program website at: <http://www.ipm.ucdavis.edu/PMG/selectnewpest.avocado.html>.

Weed Management. Weeds can harbor insects and pests and make it difficult for rodent control. Too much weed also interferes with efficient application of irrigation water to the avocado trees. The two typical weed management practices include herbicide applications and weed whipping. Herbicide is sprayed three times per year during spring, summer, and fall. Each herbicide application consists of about 2.67 ounces of generic glyphosate and water mixture. Generic glyphosate costs \$0.11 per ounce based on bulk purchase price. We estimated about 4 hours (1 hour and 20 minutes per application) for 3 herbicide applications per acre per year.

Weed cutting is done once per year in June using a weed whip and it takes 30 minutes per acre each time. Weed whipping is done 4 times per acre per year for establishment year 1 through 5; 3 times per acre per year for establishment year 6; and 2 times per acre per year for mature/production years. Weed management will most likely reduce because the canopy shade will reduce weed growth.

Table B. Nitrogen (N) Application Rates per Tree and per Acre Annually. UN32% Application Rate per Tree and per Acre Annually by Pounds and Gallons.

Year	Pound of N per tree per year	Pounds of N per acre per year	Pounds of UN32% per tree per year	Pounds of UN32% per acre per year	Gallons of UN-32% per tree per year	Gallons of UN-32% per acre per year
1	0.06	10.8	0.19	33.73	0.02	3.05
2	0.12	21.6	0.37	67.48	0.03	6.10
3	0.20	36	0.62	112.46	0.06	10.17
4	0.31	55.8	0.97	174.33	0.09	15.76
5	0.61	109.8	1.91	343.04	0.17	31.02
6	0.92	165.6	2.87	517.37	0.26	46.78
7+	0.92	165.6	2.87	517.37	0.26	46.78

1 gallon of UN-32% weight 11.06lbs and contain 3.54lbs of Nitrogen.
Pounds of N per acre per year is calculated by taking pounds of UN-32% per acre per year and multiplying by 32%.
Gallons of UN-32% per acre per year is calculated by taking the number of gallons and multiplying by 11.03lbs/gallon. Due to rounding calculation for pounds and gallons of UN-32% may be off but still within range of accuracy.

Fertilization. The amount of fertilizer application increases with age of trees. Per our discussion with growers, fertilization takes place on an 8-month applications program from March to October. Urea ammonium nitrate (UN32) is the most commonly used material for Nitrogen (N) in Ventura, Santa Barbara, and San Luis Obispo counties. UN32 costs \$1.64 per gallon based on bulk purchase price in 2011. Table B presents the amount of annual UN32 fertilizer that provides the N per tree and per acre. Potassium thiosulfate is applied once per year in March at 100 pounds per acre. Potassium thiosulfate cost about \$0.32 per pound based on bulk purchase price. Both UN32 and potassium thiosulfate are applied through the irrigation system.

In addition, zinc sulfate 12% is applied in April through the irrigation system starting in the third year of establishment if leaf analysis determines zinc deficiency. We estimated zinc sulfate 12% application of 1 gallon per acre in year 3, 2 gallons in year 4, 3 gallons in year 5, 4 gallons in year 6, and 5 gallons for mature/production years. Zinc sulfate 12% costs \$4.60 per gallon based on bulk purchase price.

Root Rot Treatment. For treatment of root rot, 2 gallons of potassium phosphite is applied per acre per year until the trees are healthy. For this study, potassium phosphite is applied through the irrigation system two times per year in May (1 gallon) and September (1 gallon). Potassium phosphite costs \$30 per gallon.

Pollination. In Ventura, Santa Barbara, and San Luis Obispo counties, beehives are used for pollination beginning the third year of establishment. Typically, two beehives per acre are rented at an average rate of \$60 per beehive.

HARVESTING AND MARKETING

Table C. Typical Yield Assumptions of Avocados in Ventura, Santa Barbara, & San Luis Obispo Counties using Conventional Production Practices

Year	Yield (lbs./acre)	
	Ventura & Santa Barbara	San Luis Obispo
3	825	740
4	3300	3000
5	6600	5900
6	9900	8900
7+	12400	11200

Yield. Fruit bearing begins in the third year of establishment. Table C presents the yield estimates provided by growers and the farm advisor. Based on our discussions with growers and the UCCE farm advisor, yield is lower in San Luis Obispo County than Ventura and Santa Barbara counties.

Fruit bearing begins the third year of establishment; and harvesting also begins the same year. Growers in Ventura, Santa Barbara, and San Luis Obispo counties typically harvest once or twice per year depending on weather and production level. During establishment years 3 and 4, harvesting is usually done once per year in July. From establishment year

5 throughout mature production years', harvesting is done twice; once in May and once in September. Harvesting costs include picking, hauling, and the California Avocado Commission assessment (CAC) fee. Picking fees based on growers and UCCE farm advisor interviews are estimated at \$0.09 per pound for establishment years 3 and 4 and \$0.13 per pound for establishment year 5 and throughout the production years for Ventura and Santa Barbara counties. For San Luis Obispo County, because of lower yield, picking costs are estimated at \$0.07 per pound for establishment years 3 and 4 and \$0.11 per pound for establishment year 5 and throughout the production years. Hauling fee is assumed at equal distant from field to the nearest packinghouse or cooling house for all counties and is estimated at \$0.004 per pound. The CAC assessment fee is based on total crop value. The fee in 2011 was \$0.011 for every \$1.07 of crop value.

Hass Avocado Board Assessment (HAB) Fee. Some growers indicated that they pay fees to first handlers who belong to the HAB; a 2.5-cent per pound assessment fee, which will be remitted to the HAB. According to 7 U.S.C. 7801-7813, first handler is defined as a Hass avocado marketing operator that sells domestic or imported Hass avocados for United States domestic consumption, and who is responsible for remitting assessment to the HAB (2000). However, we do not have sufficient information whether all Hass avocado growers belong to HAB and whether or not they pay the HAB assessment fee. Therefore, we did not include the fee in this study. For more information on HAB assessment, growers can check with their packinghouse (first handler) to see if they are required to pay the HAB assessment.

Price. We used \$1.07 per pound, the five-year CAC average price for avocados to calculate crop value.

INTEREST ON OPERATING CAPITAL. Interest on operating capital is calculated at an annual operating loan (short-term) rate of 5.75% provided by Production Credit Association for 2011. The interest on operating capital reflects borrowing costs and or opportunity costs for money used in the cultural practices for establishment of an avocado orchard and producing avocados. An opportunity cost is the return forgone by choosing to produce avocados instead of using the money on other alternative investment options.

LABOR. Labor wages are based on information gathered from growers, includes owner, and hired services. The wage rates used for this study including benefits are \$14 per hour for manual labor and \$18 per hour for skilled labor. Skilled laborers include pick-up truck and ATV drivers.

EQUIPMENT. The equipment complement includes pick-up truck for material deliveries and for trips to the market for supplies; and an ATV for irrigation system checks, erosion control, rodent control, and backpack spraying. For this study, we assumed a pick-up truck is used for 15 hours per acre per year (~13,000 miles per year for the 20 acres) and the ATV is used for 7.50 hours per acre per year (~2,500 miles per year for the 20 acres).

Equipment operating cash costs for fuel, lubrication, and repairs are calculated using formulas and coefficients developed by the American Society of Agricultural Engineer (ASAE). Repair costs are based on purchase price, annual hours use, total hours of life, and repair coefficients formulated by the ASAE. Fuel and lubrication costs are also determined by ASAE equations

based on machinery horsepower (maximum PTOHP) and the type of fuel used. For this study, we used average fuel prices of \$3.85 per gallon for gasoline and \$3.44 per gallon for diesel, obtained from the U.S. Energy Information Administration.

CASH OVERHEAD

Office Expenses. Expenses in this category include office supplies, telephone services, faxes, photocopies, computers, bookkeeping, accounting, legal fees, and so on. Although many growers with orchards this size (20 acres) may run their business from home and may not separate the business and home overhead expenses, we made an attempt to account the business expenses separately. Office expenses are estimated at \$120 per acre per year based on information gathered from growers.

Property Taxes. Ventura, Santa Barbara, and San Luis Obispo counties charge a base property tax rate of 1% on the assessed value of property, including land, equipment, buildings, and improvements. There may also be additional taxes on property in special assessment districts but for this study we calculated county taxes at 1% (the base rate) of the value of the properties.

Property Insurance. Growers also carry insurance for property protection, which is typically calculated at 7.75% of the average value of assets for 2011.

Investment Repairs. Investment repairs and maintenances are calculated at 2 to 3% of investment values as suggested in some farm management books. For buildings and tools, we calculated repairs at 2%. For the irrigation system and parts, we calculated repairs at 2%.

Interest on Establishment. Interest on establishment is also calculated using the annual operating loan (short-term) rate of 5.75% on the accumulated loan during the first six years of establishment.

Other expenses. Other overhead expenses include leaf analysis, soil analysis, liability insurance and sanitation fees. Leaf analysis is done using a sample of about 40 leaves picked from different trees throughout the orchard and is typically conducted in September. It costs about \$55 for the first 10 acres and an additional \$20 for another 10 acres (\$4.00 per acre for the 20 acres orchard in our study). Soil analysis is also conducted in September; it costs \$70 for the first 10 acres and an additional \$25 for another 10 acres (\$5 per acre for the 20 acres orchard in our study). Growers also carry annual liability insurance to cover accidents. For farm size smaller than 25 acres, liability insurance costs \$477 per orchard (\$23.85 per acre for 20 acres orchard) per year and typically paid in June. Sanitation fees are not included in this study because the need for sanitation facility is during harvesting which is provided by harvesting contractors. Growers rarely rent sanitation facility during the remaining parts of the production year.

NON-CASH OVERHEAD COSTS

Land Rent. Currently very little new plantings are taking place on open land in Ventura and Santa Barbara counties. Most plantings have been on land that had been previously avocado

orchard; therefore, information on new land value was not available from the growers or appraisers. Orchards in San Luis Obispo County are relatively new; therefore, no published data on land rent or leases for agriculture is available.

Market prices for land usually show not only the production value of land but also the speculative value of land, which include its uses for non-agricultural purposes. We investigated multiple sources to come up with a reasonable land value for agricultural purposes. We used the values published by the California Chapter of the American Society of Farm Managers and Rural Appraisers annual publications on land values and leases. The land values published for avocados in Ventura and Santa Barbara counties ranged from \$25,000 to \$50,000 per acre. There is no land value published for avocados in San Luis Obispo County. After some research into agricultural land for sale in San Luis Obispo County, we found the price ranges to be comparable to Ventura and Santa Barbara counties. New and open land for agricultural use in San Luis Obispo County ranges from \$40,000 to \$50,000 per acre. We used the high end (\$50,000) for all counties and estimated the opportunity cost (the return foregone from investing in other alternative) of land at 4.75% which is California's long-term rate of return on agricultural production assets from current income.

Ownership Costs of Farm Equipment and Investments. We used the capital recovery method to calculate ownership cost of farm equipment and investments. This method allows growers to calculate an annual amount of money to charge the enterprise so that the value of assets will be recovered within a specific period at the designated interest rate. The interest we used to calculate ownership cost is 4.75%, which is California's long-term rate of return on agricultural production assets from current income. We valued the equipment complement at a 60% of new prices to reflect a mix of old and new equipment complement.

Amortized Establishment Cost. In this study, we used the first six years as establishment period. The cumulative establishment costs (accumulated costs of establishment less gross income for years 1- 6) in Ventura and Santa Barbara counties are \$35,111 per acre and \$35,176 per acre in San Luis Obispo County. The establishment cost is then amortized at the long-term average rate of return to agricultural production asset from current income over a 30-year productive life to determine the annual amount that must be recovered from the investment.

SUMMARY OF PRODUCTION COSTS

Our estimate of total annual production costs for avocados is \$10,912 per acre for Ventura and Santa Barbara counties and \$10,196 for San Luis Obispo County. Production costs by type of activity and by type of inputs are presented in tables 3 and 5, respectively, for Ventura and Santa Barbara counties, and in tables 4 and 6, respectively, for San Luis Obispo County.

The production costs breakdown for Ventura and Santa Barbara counties include 24% (\$2,674) accounted for by cultural (production) practices (consisting of pruning, weed control, erosion control, pest control, fertilization, and irrigation); 17% (\$1,808) by harvesting costs (picking, hauling, and marketing fees); 1% (\$99.81) by interest on operating capital; 12% (\$1,304) by cash overhead costs (liability insurance, soil analysis, leaf analysis, office expenses, property taxes, property insurance, and investment repairs) ; and 46% (\$5,027) by non-cash overhead costs

(annual ownership costs consist of equipment, buildings, tools, irrigation system, and amortization of accumulated tree establishment). For San Luis Obispo County, the production costs breakdown include 23% (\$2,362) accounted for by cultural (production) practices; 14% (\$1,409) by harvesting; 1% (\$89.80) by interest on operating capital; 13% (\$1,305) by cash overhead costs; and 49% (\$5,031) by non-cash overhead costs.

PROFITABILITY ANALYSIS

We analyzed profitability of producing avocados in Ventura, Santa Barbara, and San Luis Obispo counties for conventional production. We calculated break-even costs per pound and economic margins. Break-even costs allow growers to compare expected market prices with the unit cost of production. A break-even cost is the per unit cost of production; that is the total cost of production per acre divided by yield per acre.

Gross margin (or returns above cash costs) is what growers often refer to as profit if there is no debt on the farming operation. It approximates the return to management and investment. If you deduct depreciation, it also approximates taxable income. Gross margin is calculated as gross returns (price time yield) minus cash costs of production and overhead.

Economic profit or returns above total costs including management are a very useful measure of how attractive the enterprise is for potential investors and entrants into the business. Economic profit can be positive or zero. A zero economic profit should not be alarming if all costs, including the owners labor and management fees, are included in the production costs. In this study, we do not include management charges, so the return after all costs is deducted reflect returns to management. Returns to management are calculated as gross returns minus cash and non-cash costs of production.

Given the typical yield assumptions we used in this study of 12,400 pounds for Ventura and Santa Barbara counties, the breakeven cost is estimated at \$0.88 per pound. For San Luis Obispo, using a yield level of 11,200 pounds, the breakeven cost is estimated at \$0.91 per pound. Given the five year CAC average price assumption of \$1.07 per pound, the profit margin (returns to management) therefore equals about \$0.19 per pound for Ventura and Santa Barbara counties and about \$0.16 per pound for San Luis Obispo County.

Returns above Costs. We realize that many of the avocado growers in Ventura and Santa Barbara counties have older and mature avocado orchards; therefore may have very little or no debt on their investments in land, buildings, irrigation systems, tools, and equipment. However, we developed this cost study of establishment and production of a new avocado orchard in Ventura, Santa Barbara, and San Luis Obispo counties and provide investors with up to date investment and profitability benchmarks and to reflect the opportunity cost of producing avocados.

The costs of production and profitability analyses, given our assumption for narrow space planting of 22'x 11' and yield of 12,400 pounds in Ventura and Santa Barbara counties show that the cash cost per pound of production to be \$0.47 and the total cost per pound to be \$0.88. Given the five year CAC average price of \$1.07 per pound for avocados, the gross margin (profit

after cash costs) therefore equals about \$0.60 per pound (\$7,382 per acre) and the net margin (returns to management-profit after all costs except management) equals about \$0.19 per pound (\$2,356 per acre).

Crop yield and prices received by growers vary from individual to individual. Therefore, we provided range analyses including break-even costs at various yields as well as gross margins and returns to management at various yields and price combinations so that growers can approximate their orchard's profitability using the price and yield combination that would fit their operation.

Risk. There are several risks associated with producing and marketing avocados. Production risks are associated with various sources of uncertainty including insect damage, diseases, and severe frost that affect conventional production. Frost is the main production risk in Ventura, Santa Barbara, and San Luis Obispo counties. The market and price of avocados are also very volatile. They are caused by factors such as increases in supply and or decreases in demand for avocados.

While this study makes every effort to model a production system based on typical, real world practices, it cannot fully represent financial, agronomic, and market risks, which affect the profitability and economic viability of all producers. Access to information on avocado production practices, prices, and markets are crucial for those involved in avocado production and marketing of the crop.

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Table 1. Costs per Acre to Establish an Avocado Orchard in Ventura and Santa Barbara Counties using Conventional Production Practices in 2011

	Year	1st	2nd	3rd	4th	5th	6th
OPERATING COSTS:							
Pre-plant Costs:							
Clear Land & Build Road		2,000					
Orchard Layout		210					
TOTAL Pre-plant COSTS		2,210					
Planting Costs:							
Avocado Trees, Stakes, Labor (180 trees)		5,856					
Mulch & Labor		700					
TOTAL Plant COSTS		6,556					
Replanting Costs:							
Replacement Trees & Labor (5% or 9 trees)			273				
TOTAL Replant COSTS			273				
Cultural Practices and Costs: (material, labor, fuel, lube & repair)							
Mulch & labor				700			
Erosion control	42	42	42	42	42	42	42
Weed control - glyphosate herbicide (3x/yr.)	56.88	56.88	56.88	56.88	56.88	56.88	56.88
Weed control - weed whipping (4x/yrs.1 - 5; 3x/yr.6; 2x/yr.7)	28	28	28	28	28	28	21
Rodent control for gophers (12x/yr.)	33	33	33				
Rodent control for squirrels (12x/yr.)	23.15	23.15	23.15	23.15	23.15	23.15	23.15
Fertilizer - potassium thiosulfate	32	32	32	32	32	32	32
Fertilizer - UN32% (8x/yr.)	5	10	16.68	25.85	50.87	76.72	
Fertilizer - Zinc sulfate 12%			4.6	9.2	13.8	18.4	
Root Rot Treatment - potassium phosphite (2x/yr.)	60	60	60	60	60	60	60
Irrigate & walk lines (60 irrigations yr. 1; 30 irrigations yr. 2-onwards.)	465	503	612	720	828	882	
Pollination			120	120	120	120	
Pest control - abamectin (Agri-Mek), NR415 oil, & helicopter rental			112	112	112	112	
Pest control - NR415 oil & helicopter rental			127	127	127	127	
Orchard pruning				210	252	336	
Misc. pickup truck (labor, fuel, lube & repairs)	466	466	466	466	466	466	466
Misc. ATV (labor, fuel, lube & repairs)	220	220	220	220	220	220	220
TOTAL Cultural COSTS	1430	1473	2652	2251	2431	2593	
Harvest and Marketing Costs:							
Picking - \$0.09/lb. (yr. 3-4); \$0.13/lb. (yr. 5-7)				74.25	297	858	1287
Hauling - \$0.004/lb.				3.30	13.20	26.40	39.6
CAC assessment fee - \$0.011 x production value				9.71	38.84	77.68	116.52
TOTAL Harvesting & Marketing Costs	0	0	87	349	962	1443	
Interest on Operating Capital @ 5.75%	556.97	78.88	37.89	39.43	79.05	90.77	
TOTAL OPERATING COSTS/ACRE	10753	1825	2777	2640	3472	4127	

Table 1. Costs per Acre to Establish an Avocado Orchard in Ventura and Santa Barbara Counties using Conventional Production Practices in 2011, Cont.

	Year	1st	2nd	3rd	4th	5th	6th
CASH OVERHEAD COSTS:							
Liability Insurance		23.85	23.85	23.85	23.85	23.85	23.85
Interest on Operating Capital - cash overhead		38.40	38.40	38.40	38.40	38.40	38.40
Leaf Analysis		4	4	4	4	4	4
Soil Analysis		5	5	5	5	5	5
Office Expenses		120	120	120	120	120	120
Property Taxes		532	605	638	673	697	709
Property Insurance		188	244	270	297	316	325
Investment Repairs		81	81	81	81	81	81
Interest on Establishment			837	1216	1624	1899	2037
TOTAL CASH OVERHEAD COSTS/ACRE		992	1958	2396	2867	3184	3344
TOTAL CASH COSTS		11746	3784	5173	5507	6657	7470
INCOME FROM PRODUCTION		0	0	883	3531	7,062	10,593
NET CASH COSTS FOR THE YEAR		11746	3784	4290	1976	-405	-3123
ACCUMULATED NET CASH COSTS		11746	15529	19819	21795	21390	18267
NON-CASH OVERHEAD:							
Land		2375	2375	2375	2375	2375	2375
Building		57.41	57.41	57.41	57.41	57.41	57.41
Tools (backpack sprayer, picking bags, shovels, etc.)		24.66	24.66	24.66	24.66	24.66	24.66
Irrigation system (system, drippers, micro sprinklers)		152.70	152.70	152.70	152.70	152.70	152.70
Equipment		197.55	197.55	197.55	197.55	197.55	197.55
TOTAL NON-CASH OVERHEAD COSTS		2807	2807	2807	2807	2807	2807
TOTAL NET COSTS/ACRE		14553	6591	7098	4783	2402	-315
TOTAL ACCUMULATED NET COST		14553	21144	28241	33024	35426	35111

Table 2. Costs per Acre to Establish an Avocado Orchard in San Luis Obispo County using Conventional Production Practices in 2011

	Year	1st	2nd	3rd	4th	5th	6th
OPERATING COSTS:							
Pre-plant Costs:							
Clear Land & Build Road		2,000					
Orchard Layout		210					
TOTAL Pre-plant COSTS		2,210					
Planting Costs:							
Avocado Trees, Stakes, Labor (180 trees)		5,856					
Mulch & Labor		700					
TOTAL Plant COSTS		6,556					
Replanting Costs:							
Replacement Trees & Labor (5% or 9 trees)			273				
TOTAL Replant COSTS			273				
Cultural Practices and Costs: (material, labor, fuel, lube & repair)							
Mulch & labor				700			
Erosion control	42	42	42	42	42	42	42
Weed control - glyphosate herbicide (3x/yr.)	56.88	56.88	56.88	56.88	56.88	56.88	56.88
Weed control - weed whipping (4x/yrs.1 - 5; 3x/yr.6; 2x/yr.7)	28	28	28	28	28	28	21
Rodent control for gophers (12x/yr.)	33	33	33				
Rodent control for squirrels (12x/yr.)	23.15	23.15	23.15	23.15	23.15	23.15	23.15
Fertilizer - potassium thiosulfate	32	32	32	32	32	32	32
Fertilizer - UN32% (8x/yr.)	5	10	16.68	25.85	50.87	76.72	
Fertilizer - Zinc sulfate 12%			4.6	9.2	13.8	18.4	
Root Rot Treatment - potassium phosphite (2x/yr.)	60	60	60	60	60	60	60
Irrigate & walk lines (60 irrigations yr. 1; 30 irrigations yr. 2-onwards.)	340	337	403	470	537	570	
Pollination			120	120	120	120	
Pest control - abamectin (Agri-Mek), NR415 oil & helicopter rental			112	112	112	112	
Pest control - NR415 oil & helicopter rental			127	127	127	127	
Orchard pruning				210	252	336	
Misc. pickup truck (labor, fuel, lube & repairs)	466	466	466	466	466	466	466
Misc. ATV (labor, fuel, lube & repairs)	220	220	220	220	220	220	220
TOTAL Cultural COSTS	1305	1307	2444	2001	2140	2280	
Harvest and Marketing Costs:							
Picking - \$0.07/lb. (yr. 3-4); \$0.11/lb. (yr. 5-7)			51.8	210	649	979	
Hauling - \$0.004/lb.			2.96	12	23.60	35.6	
CAC assessment fee - \$0.011 x production value			8.71	35.31	69.44	104.75	
TOTAL Harvesting & Marketing Costs	0	0	63	257	742	1119	
Interest on Operating Capital @ 5.75%	553.38	65.96	37.20	38.31	71.90	81.84	
TOTAL OPERATING COSTS/ACRE	10625	1646	2545	2297	2954	3482	

Table 2. Costs per Acre to Establish an Avocado Orchard in San Luis Obispo County using Conventional Production Practices in 2011, Cont.

	Year	1st	2nd	3rd	4th	5th	6th
CASH OVERHEAD COSTS:							
Liability Insurance		23.85	23.85	23.85	23.85	23.85	23.85
Interest on Operating Capital - cash overhead		38.40	38.40	38.40	38.40	38.40	38.40
Leaf Analysis		4	4	4	4	4	4
Soil Analysis		5	5	5	5	5	5
Office Expenses		120	120	120	120	120	120
Property Taxes		532	604	636	671	695	708
Property Insurance		188	244	268	295	314	324
Investment Repairs		81	81	81	81	81	81
Interest on Establishment			829	1198	1596	1868	2018
TOTAL CASH OVERHEAD COSTS/ACRE		992	1950	2375	2835	3149	3321
TOTAL CASH COSTS		11617	3596	4919	5132	6103	6803
INCOME FROM PRODUCTION		0	0	792	3210	6,313	9,523
NET CASH COSTS FOR THE YEAR		11617	3596	4128	1922	-210	-2720
ACCUMULATED NET CASH COSTS		11617	15213	19340	21262	21052	18332
NON-CASH OVERHEAD:							
Land		2375	2375	2375	2375	2375	2375
Building		57.41	57.41	57.41	57.41	57.41	57.41
Tools (backpack sprayer, picking bags, shovels, etc.)		24.66	24.66	24.66	24.66	24.66	24.66
Irrigation system (system, drippers, micro sprinklers)		152.70	152.70	152.70	152.70	152.70	152.70
Equipment		197.55	197.55	197.55	197.55	197.55	197.55
TOTAL NON-CASH OVERHEAD COSTS		2807	2807	2807	2807	2807	2807
TOTAL NET COSTS/ACRE		14424	6403	6935	4729	2597	87
TOTAL ACCUMULATED NET COST		14424	20827	27762	32492	35089	35176

Table 3. Costs per Acre to Produce Avocados in Ventura and Santa Barbara Counties using Conventional Production Practices in 2011

UC COOPERATIVE EXTENSION								
Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre					Total Cost	Your Cost
		Labor Cost	Fuel	Lube & Repairs	Material Cost	Custom/ Rent		
Cultural:								
Erosion control	3	42	0	0	0	0	42	
Weed control - glyphosate herbicide (3x/yr.)	4	56	0	0	0.88	0	56.88	
Weed control - weed whipping (2x/yr.)	1	14	0	0	0	0	14	
Rodent control for squirrels (12x/yr.)	1	14	0	0	9.15	0	23.15	
Fertilizer - potassium thiosulfate	0	0	0	0	32	0	32	
Fertilizer - UN32% (8x/yr.)	0	0	0	0	76.72	0	76.72	
Fertilizer - zinc sulfate 12%	0	0	0	0	23	0	23	
Root rot treatment - potassium phosphite (2x/yr.)	0	0	0	0	60	0	60	
Irrigate & walk lines (30 irrigations)	5	70	0	0	812.4	0	882.4	
Pollination	0	0	0	0	0	120	120	
Pest control - abamectin (Agri-Mek), NR415 oil, & helicopter rental	0	0	0	0	25	87	112	
Pest control - NR415 oil & helicopter rental	0	0	0	0	40	87	127	
Orchard pruning	30	420	0	0	0	0	420	
Misc. pickup truck (labor, fuel, lube & repairs)	15	324	86.63	55.02	0	0	466	
Misc. ATV (labor, fuel, lube & repairs)	7.5	162	41.59	15.94	0	0	220	
TOTAL Cultural COSTS	66.5	1102	128.22	70.96	1079.15	294	2674	
Harvest and Marketing Costs:								
Picking - \$0.13/lb.	0	1612	0	0	0	0	1,612	
Hauling - \$0.004/lb.	0	49.6	0	0	0	0	49.6	
CAC assessment fee - \$0.011 x production value	0	0	0	0	0	145.95	145.95	
TOTAL Harvest COSTS	0	1661.6	0	0	0	145.95	1808	
Interest on Operating Capital @ 5.75%							99.81	
TOTAL OPERATING COSTS/ACRE	66.5	2763.6	128.22	70.96	1079.15	439.95	4582	
CASH OVERHEAD:								
Liability Insurance							23.85	
Interest on Operating Capital - cash overhead							38.4	
Leaf Analysis							4	
Soil Analysis							5	
Office Expenses							120	
Property Taxes							708	
Property Insurance							324	
Investment Repairs							81	
TOTAL CASH OVERHEAD COSTS/ACRE							1304	
TOTAL CASH COSTS/ACRE							5886	
NON-CASH OVERHEAD:								
		Per producing Annual cost						
		Acre	Capital Recovery					
Land		50,000	2,375				2,375	
Building		1,000	57.41				57.41	
Tools		400	24.66				24.66	
Irrigation System		2,660	152.70				152.7	
Amortized Establishment Cost		35,111	2,219				2,219.35	
Equipment		1,430	197.55				197.55	
TOTAL NON-CASH OVERHEAD COSTS		90,601	5,027				5,027	
TOTAL COSTS/ACRE							10,912	

Table 4. Costs per Acre to Produce Avocados in San Luis Obispo County using Conventional Production Practices in 2011

UC COOPERATIVE EXTENSION								
Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre					Total Cost	Your Cost
		Labor Cost	Fuel	Lube & Repairs	Material Cost	Custom/ Rent		
Cultural:								
Erosion control	3	42	0	0	0	0	42	
Weed control - glyphosate herbicide (3x/yr.)	4	56	0	0	0.88	0	56.88	
Weed control - weed whipping (2x/yr.)	1	14	0	0	0	0	14	
Rodent control for squirrels (12x/yr.)	1	14	0	0	9.15	0	23.15	
Fertilizer - potassium thiosulfate	0	0	0	0	32	0	32	
Fertilizer - UN32% (8x/yr.)	0	0	0	0	76.72	0	76.72	
Fertilizer - zinc sulfate 12%	0	0	0	0	23	0	23	
Root rot treatment - potassium phosphite (2x/yr.)	0	0	0	0	60	0	60	
Irrigate & walk lines (30 irrigations)	5	70	0	0	500	0	570	
Pollination	0	0	0	0	0	120	120	
Pest control - abamectin (Agri-Mek), NR415 oil & helicopter rental	0	0	0	0	25	87	112	
Pest control - NR415 oil & helicopter rental	0	0	0	0	40	87	127	
Orchard pruning	30	420	0	0	0	0	420	
Misc. pickup truck (labor, fuel, lube & repairs)	15	324	86.63	55.02	0	0	466	
Misc. ATV (labor, fuel, lube & repairs)	7.5	162	41.59	15.94	0	0	220	
TOTAL Cultural COSTS	66.5	1102	128.22	70.96	766.85	294	2362	
Harvest and Marketing Costs:								
Picking - \$0.11/lb.	0	1232	0	0	0	0	1,232	
Hauling - \$0.004/lb.	0	44.8	0	0	0	0	44.8	
CAC assessment fee - \$0.011 x production value	0	0	0	0	0	131.82	131.82	
TOTAL Harvest COSTS	0	1276.8	0	0	0	131.82	1409	
Interest on Operating Capital @ 5.75%							89.8	
TOTAL OPERATING COSTS/ACRE	66.5	2378.8	128.22	70.96	766.85	425.82	3860	
CASH OVERHEAD:								
Liability Insurance							23.85	
Interest on Operating Capital - cash overhead							38.4	
Leaf Analysis							4	
Soil Analysis							5	
Office Expenses							120	
Property Taxes							708	
Property Insurance							324	
Investment Repairs							81	
TOTAL CASH OVERHEAD COSTS/ACRE							1305	
TOTAL CASH COSTS/ACRE							5165	
NON-CASH OVERHEAD:								
		Per producing Annual cost						
		Acre	Capital Recovery					
Land		50,000	2,375				2,375	
Building		1,000	57.41				57.41	
Tools		400	24.66				24.66	
Irrigation System		2,660	152.70				152.70	
Amortized Establishment Cost		35,176	2,223.46				2,223.46	
Equipment		1,430	197.55				197.55	
TOTAL NON-CASH OVERHEAD COSTS		90,666	5,031				5,031	
TOTAL COSTS/ACRE							10,196	

Table 5. Costs and Returns per Acre to Produce Avocados in Ventura and Santa Barbara Counties using Conventional Production Practices in 2011

UC COOPERATIVE EXTENSION				
	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre
GROSS RETURNS				
Conventional Avocados	12,400	lb	\$1.07	\$13,268
TOTAL GROSS RETURNS	12,400	lb		\$13,268
OPERATING COSTS				
Custom:				294
Beehives		2 unit	60	120
Helicopter rental		2 acre	87	174
Water:				812.4
Ventura water	30	ac-in	27.08	812.4
Fertilizer:				191.72
Potassium Thiosulfate	100	lb	0.32	32
UN-32%	46.78	gal	1.64	76.72
Potassium Phosphite	2	gal	30	60
Zinc sulfate 12%	5	gal	4.6	23
Insecticide:				65
Abamectin	15	oz	1	15
Oil Spray - NR 415	5	gal	10	50
Harvest:				1,808
Picking	12400	lb	0.13	1,612
Hauling	12400	lb	0.004	49.6
CAC Assessment Fee	13268	production value	0.011	145.95
Herbicide:				0.88
Generic Glyphosate	8	oz	0.11	0.88
Rodenticide:				9.15
Squirrel Bait	2.64	lb	3	7.92
Squirrel Trap	1	acre	1	1
Squirrel Bait Station	1	acre	0.23	0.23
Labor:				1,102
Equipment Operator Labor	27	hr	18	486
Manual Labor	39	hr	14	546
Irrigation Labor	5	hr	14	70
Machinery:				199.17
Fuel-Gas	33.3	gal	3.85	128.22
Fuel-Diesel	0	gal	3.44	0
Lube				19.23
Machinery Repair				51.72
Interest on Operating Capital (5.75%)				99.81
TOTAL OPERATING COSTS/ACRE				4,582
NET RETURNS ABOVE OPERATING COSTS				8,686
CASH OVERHEAD COSTS				
Liability Insurance				23.85
Interest on Operating Capital - cash overhead				38.4
Leaf Analysis				4
Soil Analysis				5
Office Expenses				120
Property Taxes				707.80
Property Insurance				323.79
Investment Repairs				81
TOTAL CASH OVERHEAD COSTS/ACRE				1,304
TOTAL CASH COSTS/ACRE				5,886
NET RETURNS ABOVE CASH COSTS				7,382
NON-CASH OVERHEAD COSTS (Capital Recovery)				
Land				2,375
Building				57.41
Tools				24.66
Irrigation System				152.70
Amortized Establishment Cost				2219.35
Equipment				197.55
TOTAL NON-CASH OVERHEAD COSTS				5,027
TOTAL COST/ACRE				10,912
TOTAL COST/lb				0.88
NET RETURNS ABOVE TOTAL COST				2,356

Table 6. Costs and Returns per Acre to Produce Avocados in San Luis Obispo County using Conventional Production Practices in 2011

UC COOPERATIVE EXTENSION				
	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre
GROSS RETURNS				
Conventional Avocados	11,200	lb	\$1.07	\$11,984
TOTAL GROSS RETURNS	11,200	lb		\$11,984
OPERATING COSTS				
Custom:				294
Beehives		2 unit	60	120
Helicopter rental		2 acre	87	174
Water:				500
San Luis Obispo water	30	ac-in	16.67	500
Fertilizer:				191.72
Potassium Thiosulfate	100	lb	0.32	32
UN-32%	46.78	gal	1.64	76.72
Potassium Phosphite	2	gal	30	60
Zinc sulfate 12%	5	gal	4.6	23
Insecticide:				65
Abamectin	15	oz	1	15
Oil Spray - NR 415	5	gal	10	50
Harvest:				1,409
Picking	11200	lb	0.11	1,232
Hauling	11200	lb	0.004	44.8
CAC Assessment Fee	11984	production value	0.011	131.82
Herbicide:				0.88
Generic Glyphosate	8	oz	0.11	0.88
Rodenticide:				9.15
Squirrel Bait	2.64	lb	3	7.92
Squirrel Trap	1	acre	1	1
Squirrel Bait Station	1	acre	0.23	0.23
Labor:				1,102
Equipment Operator Labor	27	hr	18	486
Manual Labor	39	hr	14	546
Irrigation Labor	5	hr	14	70
Machinery:				199.17
Fuel-Gas	33.3	gal	3.85	128.22
Fuel-Diesel	0	gal	3.44	0
Lube				19.23
Machinery Repair				51.72
Interest on Operating Capital (5.75%)				89.80
TOTAL OPERATING COSTS/ACRE				3,860
NET RETURNS ABOVE OPERATING COSTS				8,124
CASH OVERHEAD COSTS				
Liability Insurance				23.85
Interest on Operating Capital - cash overhead				38.4
Leaf Analysis				4
Soil Analysis				5
Office Expenses				120
Property Taxes				708.13
Property Insurance				324.05
Investment Repairs				81
TOTAL CASH OVERHEAD COSTS/ACRE				1,305
TOTAL CASH COSTS/ACRE				5,165
NET RETURNS ABOVE CASH COSTS				6,819
NON-CASH OVERHEAD COSTS (Capital Recovery)				
Land				2,375
Building				57.41
Tools				24.66
Irrigation System				152.7
Amortized Establishment Cost				2223.46
Equipment				197.55
TOTAL NON-CASH OVERHEAD COSTS				5,031
TOTAL COST/ACRE				10,196
TOTAL COST/lb				0.91
NET RETURNS ABOVE TOTAL COST				1,788

Table 7. Monthly Cash Costs per Acre to Produce Avocados in Ventura and Santa Barbara Counties using Conventional Production Practices in 2011

UC COOPERATIVE EXTENSION													
Beginning 01-11	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Ending 12-11	11	11	11	11	11	11	11	11	11	11	11	11	
Cultural:													
Erosion control			42										42
Weed control - glyphosate herbicide (3x/yr.)			18.91			18.91			19.05				56.88
Weed control - weed whipping (2x/yr.)		7				7							14
Rodent control for squirrels (12x/yr.)	3.07	1.84	1.84	1.84	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	23.15
Fertilizer - potassium thiosulfate			32										32
Fertilizer - UAN32% (8x/yr.)			9.59	9.59	9.59	9.59	9.59	9.59	9.58	9.58			76.72
Fertilizer - zinc sulfate 12%				23									23
Root rot treatment - potassium phosphite (2x/yr.)					30				30				60
Irrigate & walk lines (30 irrigations)			126	126	126	126	126	126	126	126			882.4
Pollination					60				60				120
Pest control - abamectin (Agri-Mek), NR415 oil & helicopter rental			112										112
Pest control - NR415 oil & helicopter rental								127					127
Orchard pruning	420												420
Misc. pickup truck (labor, fuel, lube & repairs)	39	39	39	39	39	39	39	39	39	39	39	39	466
Misc. ATV (labor, fuel, lube & repairs)	18	18	18	18	18	18	18	18	18	18	18	18	220
TOTAL Cultural COSTS	480.17	65.94	273.44	217.67	284.65	220.56	194.51	321.51	303.55	194.50	58.92	58.92	2,674
Harvest and Marketing Costs:													
Picking - \$0.13/lb.					806				806				1,612
Hauling - \$0.004/lb.					24.8				24.8				49.6
CAC assessment fee - \$0.011 x production value					72.98				72.98				145.95
TOTAL Harvest COSTS	0	0	0	0	899	0	0	0	899	0	0	0	1,808
Interest on Operating Capital (5.75%)	10.69	1.47	6.60	4.34	26.36	4.91	4.33	7.83	26.11	4.33	1.31	1.31	99.81
TOTAL OPERATING COSTS/ACRE	490.86	67.41	280.04	222.00	1,210.01	225.47	198.84	329.34	1,228.66	198.83	60.23	60.23	4,582
CASH OVERHEAD													
Liability Insurance						23.85							23.85
Interest on Operating Capital - cash overhead	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	38.40
Leaf Analysis									4				4
Soil Analysis									5				5
Office Expenses	10	10	10	10	10	10	10	10	10	10	10	10	120
Property Taxes		354						354					708
Property Insurance		162						162					324
Investment Repairs	6.77	6.77	6.77	6.77	6.77	6.77	6.77	6.77	6.77	6.77	6.77	6.77	81
TOTAL CASH OVERHEAD COSTS	19.97	535.765	19.97	19.97	19.97	43.82	535.765	19.97	28.97	19.97	19.97	19.97	1,304
TOTAL CASH COSTS/ACRE	510.83	603.17	300.01	241.97	1,229.98	269.29	734.60	349.31	1,257.63	218.80	80.20	80.20	5,886

Table 8. Monthly Cash Costs per Acre to Produce Avocados in San Luis Obispo County using Conventional Production Practices in 2011

UC COOPERATIVE EXTENSION													
Beginning 01-11	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Ending 12-11	11	11	11	11	11	11	11	11	11	11	11	11	
Cultural:													
Erosion control			42										42
Weed control - glyphosate herbicide (3x/yr.)			18.91			18.91			19.05				56.88
Weed control - weed whipping (2x/yr.)		7				7							14
Rodent control for squirrels (12x/yr.)	3.07	1.84	1.84	1.84	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	23.15
Fertilizer - potassium thiosulfate			32										32
Fertilizer - UAN32% (8x/yr.)			9.59	9.59	9.59	9.59	9.59	9.59	9.58	9.58			76.72
Fertilizer - zinc sulfate 12%				23									23
Root rot treatment - potassium phosphite (2x/yr.)					30				30				60
Irrigate & walk lines (30 irrigations)			81.44	81.44	81.44	81.44	81.44	81.44	81.44	81.44			570
Pollination					60				60				120
Pest control - abamectin (Agri-Mek), NR415 oil, & helicopter rental			112										112
Pest control - NR415 oil & helicopter rental								127					127
Orchard pruning	420												420
Misc. pickup truck (labor, fuel, lube & repairs)	39	39	39	39	39	39	39	39	39	39	39	39	466
Misc. ATV (labor, fuel, lube & repairs)	18	18	18	18	18	18	18	18	18	18	18	18	220
TOTAL Cultural COSTS	480.17	65.94	273.44	172.97	239.95	175.86	149.95	276.95	258.99	149.94	58.92	58.92	2,362
Harvest and Marketing Costs:													
Picking - \$0.11/lb.					616				616				1,232
Hauling - \$0.004/lb.					22.4				22.4				44.8
CAC assessment fee - \$0.011 x production value					65.91				65.91				131.82
TOTAL Harvest COSTS	0	0	0	0	704.31	0	0	0	704.31	0	0	0	1,409
Interest on Operating Capital (5.75%)	11.44	1.57	7.06	3.57	22.49	4.19	3.57	7.31	22.23	3.57	1.40	1.40	89.8
TOTAL OPERATING COSTS/ACRE	491.60	67.51	280.50	176.54	966.75	180.05	153.52	284.26	985.53	153.51	60.32	60.32	3,860
CASH OVERHEAD													
Liability Insurance						23.85							23.85
Interest on Operating Capital - cash overhead	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20	38.40
Leaf Analysis									4				4
Soil Analysis									5				5
Office Expenses	10	10	10	10	10	10	10	10	10	10	10	10	120
Property Taxes		354						354					708
Property Insurance		162						162					324
Investment Repairs	6.77	6.77	6.77	6.77	6.77	6.77	6.77	6.77	6.77	6.77	6.77	6.77	81
TOTAL CASH OVERHEAD COSTS	19.97	536.059	19.97	19.97	19.97	43.82	536.059	19.97	28.97	19.97	19.97	19.97	1305
TOTAL CASH COSTS/ACRE	511.57	603.57	300.47	196.51	986.72	223.87	689.58	304.23	1,014.50	173.48	80.29	80.29	5,165

Table 9. Range Analysis: Income and Cost Analyses for Producing Avocados in Ventura and Santa Barbara Counties using Conventional Production Practices in 2011

UC COOPERATIVE EXTENSION

COSTS PER ACRE AND PER POUND AT VARIOUS YIELDS OF PRODUCTION

	YIELD (lbs./acre)						
	8,700	9,900	11,200	12,400	13,600	14,900	16,100
OPERATING COSTS:							
Cultural	2,674	2,674	2,674	2,674	2,674	2,674	2,674
Harvest	1,268	1,443	1,633	1,808	1,982	2,172	2,347
Interest on operating capital @ 5.75%	87.80	91.69	95.91	99.81	103.71	107.93	111.82
TOTAL OPERATING COSTS/ACRE	4,030	4,209	4,403	4,582	4,760	4,954	5,133
Total Operating Costs/Lb	0.46	0.43	0.39	0.37	0.35	0.33	0.32
CASH OVERHEAD COSTS/ACRE	1304	1304	1304	1304	1304	1304	1304
TOTAL CASH COSTS/ACRE	5,334	5,513	5,707	5,886	6,065	6,258	6,437
Total Cash Costs/Lb	0.61	0.56	0.51	0.47	0.45	0.42	0.40
NON-CASH OVERHEAD COSTS/ACRE	5,027	5,027	5,027	5,027	5,027	5,027	5,027
TOTAL COSTS/ACRE	10,361	10,540	10,734	10,912	11,091	11,285	11,464
Total Costs/Lb	1.19	1.06	0.96	0.88	0.82	0.76	0.71

RETURNS PER ACRE ABOVE OPERATING COSTS AT VARIOUS YIELDS AND PRICE COMBINDATION

PRICE(\$/Lb)	YIELD(lb/acre)						
	8700	9900	11200	12400	13600	14900	16100
Avocados							
0.77	2,669	3,414	4,221	4,966	5,712	6,519	7,264
0.87	3,539	4,404	5,341	6,206	7,072	8,009	8,874
0.97	4,409	5,394	6,461	7,446	8,432	9,499	10,484
1.07	5,279	6,384	7,581	8,686	9,792	10,989	12,094
1.17	6,149	7,374	8,701	9,926	11,152	12,479	13,704
1.27	7,019	8,364	9,821	11,166	12,512	13,969	15,314
1.37	7,889	9,354	10,941	12,406	13,872	15,459	16,924

RETURNS PER ACRE ABOVE OPERATING AND CASH COSTS AT VARIOUS YIELDS AND PRICE COMBINATION

PRICE(\$/Lb)	YIELD(lb/acre)						
	8700	9900	11200	12400	13600	14900	16100
Avocados							
0.77	1,365	2,110	2,917	3,662	4,407	5,215	5,960
0.87	2,235	3,100	4,037	4,902	5,767	6,705	7,570
0.97	3,105	4,090	5,157	6,142	7,127	8,195	9,180
1.07	3,975	5,080	6,277	7,382	8,487	9,685	10,790
1.17	4,845	6,070	7,397	8,622	9,847	11,175	12,400
1.27	5,715	7,060	8,517	9,862	11,207	12,665	14,010
1.37	6,585	8,050	9,637	11,102	12,567	14,155	15,620

RETURNS PER ACRE ABOVE TOTAL COSTS AT VARIOUS YIELDS AND PRICE COMBINATION

(RETURN TO MANAGEMENT)

PRICE(\$/Lb)	YIELD(lb/acre)						
	8700	9900	11200	12400	13600	14900	16100
Avocados							
0.77	-3,662	-2,917	-2,110	-1,364	-619	188	933
0.87	-2,792	-1,927	-990	-124	741	1,678	2,543
0.97	-1,922	-937	130	1,116	2,101	3,168	4,153
1.07	-1,052	53	1,250	2,356	3,461	4,658	5,763
1.17	-182	1,043	2,370	3,596	4,821	6,148	7,373
1.27	688	2,033	3,490	4,836	6,181	7,638	8,983
1.37	1,558	3,023	4,610	6,076	7,541	9,128	10,593

Table 10. Range Analysis: Income and Cost Analyses for Producing Avocados in San Luis Obispo County using Conventional Production Practices in 2011

UC COOPERATIVE EXTENSION

COSTS PER ACRE AND PER POUND AT VARIOUS YIELDS OF PRODUCTION

	YIELD (lbs./acre)						
	7,800	9,000	10,100	11,200	12,300	13,400	14,600
OPERATING COSTS:							
Cultural	2,362	2,362	2,362	2,362	2,362	2,362	2,362
Harvest	981	1,132	1,270	1,409	1,547	1,685	1,836
Interest on operating capital @ 5.75%	79.62	83.21	86.51	89.80	93.09	96.39	99.98
TOTAL OPERATING COSTS/ACRE	3,423	3,577	3,719	3,860	4,002	4,144	4,298
Total Operating Costs/Lb	0.44	0.40	0.37	0.34	0.33	0.31	0.29
CASH OVERHEAD COSTS/ACRE	1305	1305	1305	1305	1305	1305	1305
TOTAL CASH COSTS/ACRE	4,727	4,882	5,023	5,165	5,307	5,448	5,603
Total Cash Costs/Lb	0.61	0.54	0.50	0.46	0.43	0.41	0.38
NON-CASH OVERHEAD COSTS/ACRE	5,031	5,031	5,031	5,031	5,031	5,031	5,031
TOTAL COSTS/ACRE	9,758	9,913	10,054	10,196	10,337	10,479	10,634
Total Costs/Lb	1.25	1.10	1.00	0.91	0.84	0.78	0.73

RETURNS PER ACRE ABOVE OPERATING COSTS AT VARIOUS YIELDS AND PRICE COMBINATION

PRICE(\$/Lb)	YIELD(lb/acre)						
	7800	9000	10100	11200	12300	13400	14600
Avocados							
0.77	2,583	3,353	4,058	4,764	5,469	6,174	6,944
0.87	3,363	4,253	5,068	5,884	6,699	7,514	8,404
0.97	4,143	5,153	6,078	7,004	7,929	8,854	9,864
1.07	4,923	6,053	7,088	8,124	9,159	10,194	11,324
1.17	5,703	6,953	8,098	9,244	10,389	11,534	12,784
1.27	6,483	7,853	9,108	10,364	11,619	12,874	14,244
1.37	7,263	8,753	10,118	11,484	12,849	14,214	15,704

RETURNS PER ACRE ABOVE OPERATING AND CASH COSTS AT VARIOUS YIELDS AND PRICE COMBINATION

PRICE(\$/Lb)	YIELD(lb/acre)						
	7800	9000	10100	11200	12300	13400	14600
Avocados							
0.77	1,279	2,048	2,754	3,459	4,164	4,870	5,639
0.87	2,059	2,948	3,764	4,579	5,394	6,210	7,099
0.97	2,839	3,848	4,774	5,699	6,624	7,550	8,559
1.07	3,619	4,748	5,784	6,819	7,854	8,890	10,019
1.17	4,399	5,648	6,794	7,939	9,084	10,230	11,479
1.27	5,179	6,548	7,804	9,059	10,314	11,570	12,939
1.37	5,959	7,448	8,814	10,179	11,544	12,910	14,399

RETURNS PER ACRE ABOVE TOTAL COSTS AT VARIOUS YIELDS AND PRICE COMBINATION
(RETURN TO MANAGEMENT)

PRICE(\$/Lb)	YIELD(lb/acre)						
	7800	9000	10100	11200	12300	13400	14600
Avocados							
0.77	-3,752	-2,983	-2,277	-1,572	-866	-161	608
0.87	-2,972	-2,083	-1,267	-452	364	1,179	2,068
0.97	-2,192	-1,183	-257	668	1,594	2,519	3,528
1.07	-1,412	-283	753	1,788	2,824	3,859	4,988
1.17	-632	617	1,763	2,908	4,054	5,199	6,448
1.27	148	1,517	2,773	4,028	5,284	6,539	7,908
1.37	928	2,417	3,783	5,148	6,514	7,879	9,368

Table 11. Hourly Costs for Equipment used in Avocados Production in Ventura, Santa Barbara, and San Luis Obispo Counties in 2011

UC COOPERATIVE EXTENSION									
Description	Conventional Avocados		COSTS PER HOUR					Operating	
	Hours	Hours	Total	Cash Overhead			Total	Total	
	Used	Used	Capital Recovery	Insur- ance	Taxes	Lube & Repairs	Fuel	Oper.	Costs/Hr.
Truck	300	300	10.58	0.43	0.56	3.67	5.78	9.44	21.01
ATV	165	180	4.32	0.14	0.18	1.93	5.04	6.97	11.61

Table 12. Farm Investment for Producing Avocados: Values and Annual Costs based on 20 Acres in Ventura, Santa Barbara, and San Luis Obispo Counties using Conventional Production Practices in 2011

UC COOPERATIVE EXTENSION									
Description	Price	Yrs Life	Salvage Value	ANNUAL EQUIPMENT COSTS				Total	
				Capital Recovery	Insur- ance	Taxes	Repairs		
Truck	23,600	6	9,730.79	3,172.88	129.16	166.65	3,468.69		
ATV	5,000	6	1,345.30	778.2	24.59	31.73	834.51		
TOTAL	28,600		11,076.08	3,951.08	153.74	198.38	4,303.20		
60% of new cost*	17,160		6,645.65	2,370.65	92.244	119.028	2,581.92		

*Used to reflect a mix of new and used equipment

Ventura and Santa Barbara Counties

Description	Price	Yrs Life	Salvage Value	ANNUAL INVESTMENT COSTS					Total
				Capital Recovery	Insur- ance	Taxes	Repairs		
INVESTMENT									
Land	1,000,000	36	1,000,000	47,500	3,255	10,000	0	60,755	
Building	20,000	36	2,000	1,148.12	85.25	110	400	1,743.37	
Tools	8,000	30	800	493.11	34.1	44	160	731.21	
Irrigation System	53,200	36	5,320	3,054.01	226.76	292.6	1,064.00	4,637.37	
Amortized Establishment Cost	702,220	30	0	44,386.94	2,721.10	3,511.10	0	50,619.14	
TOTAL INVESTMENT	1,783,420		1,008,120.00	96,582.18	6,322.21	13,957.70	1,624.00	118,486.09	

San Luis Obispo County

Description	Price	Yrs Life	Salvage Value	ANNUAL INVESTMENT COSTS					Total
				Capital Recovery	Insur- ance	Taxes	Repairs		
INVESTMENT									
Land	1,000,000	36	1,000,000	47,500	3,255	10,000	0	60,755	
Building	20,000	36	2,000	1,148.12	85.25	110	400	1,743.37	
Tools	8,000	30	800	493.11	34.1	44	160	731.21	
Irrigation System	53,200	36	5,320	3,054.01	226.76	292.6	1,064.00	4,637.37	
Amortized Establishment Cost	703,520	30	0	44,469.12	2,726.14	3,517.60	0	50,712.86	
TOTAL INVESTMENT	1,784,720		1,008,120.00	96,664.35	6,327.25	13,964.20	1,624.00	118,579.80	

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	20	acre	23.85	477
Interest on Operating Capital	20	acre	38.40	768
Leaf Analysis	20	acre	4	80
Soil Analysis	20	acre	5	100
Office Expenses	20	acre	120	2,400

Table 13. Operations with Equipment for Avocados Production in Ventura and Santa Barbara Counties using Conventional Production Practices in 2011

UC COOPERATIVE EXTENSION								
Operation	Operation			Labor Type	Labor Hour	Material	Rate/App/Acre	Unit
	Month	Tractor	Implement					
Erosion Control	Mar			Manual Labor	3			
Weed Control - herbicide	Mar			Manual Labor	1.33	Generic Glyphosate	2.67	oz
Weed Control - herbicide	June			Manual Labor	1.33	Generic Glyphosate	2.67	oz
Weed Control - herbicide	Sept			Manual Labor	1.34	Generic Glyphosate	2.66	oz
Weed Control - whipping	Feb			Manual Labor	0.5			
Weed Control - whipping	June			Manual Labor	0.5			
Squirrel Control	Jan			Manual Labor	0.08	Squirrel Bait	0.22	lb
						Squirrel Trap	1	acre
						Squirrel Bait Station	1	acre
Squirrel Control	Feb			Manual Labor	0.08	Squirrel Bait	0.22	lb
Squirrel Control	Mar			Manual Labor	0.08	Squirrel Bait	0.22	lb
Squirrel Control	Apr			Manual Labor	0.08	Squirrel Bait	0.22	lb
Squirrel Control	May			Manual Labor	0.08	Squirrel Bait	0.22	lb
Squirrel Control	June			Manual Labor	0.08	Squirrel Bait	0.22	lb
Squirrel Control	July			Manual Labor	0.08	Squirrel Bait	0.22	lb
Squirrel Control	Aug			Manual Labor	0.08	Squirrel Bait	0.22	lb
Squirrel Control	Sept			Manual Labor	0.08	Squirrel Bait	0.22	lb
Squirrel Control	Oct			Manual Labor	0.08	Squirrel Bait	0.22	lb
Squirrel Control	Nov			Manual Labor	0.08	Squirrel Bait	0.22	lb
Squirrel Control	Dec			Manual Labor	0.08	Squirrel Bait	0.22	lb
Fertilizer Potassium Thiosulfate	Mar					Potassium Thiosulfate	100	lb
Fertilizer - UN32%	Mar					UN-32%	5.85	gal
Fertilizer - UN32%	Apr					UN-32%	5.85	gal
Fertilizer - UN32%	May					UN-32%	5.85	gal
Fertilizer - UN32%	June					UN-32%	5.85	gal
Fertilizer - UN32%	July					UN-32%	5.85	gal
Fertilizer - UN32%	Aug					UN-32%	5.85	gal
Fertilizer - UN32%	Sept					UN-32%	5.84	gal
Fertilizer - UN32%	Oct					UN-32%	5.84	gal
Root Rot Treatment	May					Potassium Phosphite	1	gal
Root Rot Treatment	Sept					Potassium Phosphite	1	gal
Irrigation & Walk Lines	Apr			Irrigation Labor	0.72	Water	4.29	ac-in
Irrigation & Walk Lines	May			Irrigation Labor	0.72	Water	4.29	ac-in
Irrigation & Walk Lines	June			Irrigation Labor	0.72	Water	4.29	ac-in
Irrigation & Walk Lines	July			Irrigation Labor	0.71	Water	4.29	ac-in
Irrigation & Walk Lines	Aug			Irrigation Labor	0.71	Water	4.29	ac-in
Irrigation & Walk Lines	Sept			Irrigation Labor	0.71	Water	4.29	ac-in
Irrigation & Walk Lines	Oct			Irrigation Labor	0.71	Water	4.29	ac-in
Misc. Pickup truck	Jan	Truck		Equip. Operator Labor	1.5			
Misc. Pickup truck	Feb	Truck		Equip. Operator Labor	1.5			
Misc. Pickup truck	Mar	Truck		Equip. Operator Labor	1.5			
Misc. Pickup truck	Apr	Truck		Equip. Operator Labor	1.5			
Misc. Pickup truck	May	Truck		Equip. Operator Labor	1.5			
Misc. Pickup truck	June	Truck		Equip. Operator Labor	1.5			
Misc. Pickup truck	July	Truck		Equip. Operator Labor	1.5			
Misc. Pickup truck	Aug	Truck		Equip. Operator Labor	1.5			
Misc. Pickup truck	Sept	Truck		Equip. Operator Labor	1.5			
Misc. Pickup truck	Oct	Truck		Equip. Operator Labor	1.5			
Misc. Pickup truck	Nov	Truck		Equip. Operator Labor	1.5			
Misc. Pickup truck	Dec	Truck		Equip. Operator Labor	1.5			
Misc. ATV	Jan	ATV		Equip. Operator Labor	0.75			
Misc. ATV	Feb	ATV		Equip. Operator Labor	0.75			
Misc. ATV	Mar	ATV		Equip. Operator Labor	0.75			
Misc. ATV	Apr	ATV		Equip. Operator Labor	0.75			
Misc. ATV	May	ATV		Equip. Operator Labor	0.75			
Misc. ATV	June	ATV		Equip. Operator Labor	0.75			
Misc. ATV	July	ATV		Equip. Operator Labor	0.75			
Misc. ATV	Aug	ATV		Equip. Operator Labor	0.75			
Misc. ATV	Sept	ATV		Equip. Operator Labor	0.75			
Misc. ATV	Oct	ATV		Equip. Operator Labor	0.75			
Misc. ATV	Nov	ATV		Equip. Operator Labor	0.75			
Misc. ATV	Dec	ATV		Equip. Operator Labor	0.75			
Pollination	May&Sept			Manual Labor		Beehive	2	unit
Pest Control - Helicopter rental	Mar					Helicopter rental	1	acre
Pest Control - Abamectin						Abamectin	15	oz
Pest Control - NR415 Oil						Oil Spray - NR 415	1	gal
Pest Control - Helicopter rental	Aug					Helicopter rental	1	acre
Pest Control - NR415 Oil						Oil Spray - NR 415	4	gal
Fertilizer Zinc sulfate 12%	Apr					Zinc sulfate 12%	5	gal
Orchard Pruning	Jan			Manual Labor	30			
Picking	May					Picking - \$0.13	6,200	lb
Picking	Sept					Picking - \$0.13	6,200	lb
Hauling	May					Hauling - \$0.004	6,200	lb
Hauling	Sept					Hauling - \$0.004	6,200	lb
CAC Assessment fee	May					CAC - \$0.011	\$6,634	production value
CAC Assessment fee	Sept					CAC - \$0.011	\$6,634	production value

Table 14. Operations with Equipment for Avocados Production in San Luis Obispo County using Conventional Production Practices in 2011

UC COOPERATIVE EXTENSION								
Operation	Operation			Labor Type	Labor Hour	Material	Rate/App/Acre	Unit
	Month	Tractor	Implement					
Erosion Control	Mar			Manual Labor	3			
Weed Control - herbicide	Mar			Manual Labor	1.33	Generic Glyphosate	2.67	oz
Weed Control - herbicide	June			Manual Labor	1.33	Generic Glyphosate	2.67	oz
Weed Control - herbicide	Sept			Manual Labor	1.34	Generic Glyphosate	2.66	oz
Weed Control - whipping	Feb			Manual Labor	0.5			
Weed Control - whipping	June			Manual Labor	0.5			
Squirrel Control	Jan			Manual Labor	0.08	Squirrel Bait	0.22	lb
						Squirrel Trap	1	acre
						Squirrel Bait Station	1	acre
Squirrel Control	Feb			Manual Labor	0.08	Squirrel Bait	0.22	lb
Squirrel Control	Mar			Manual Labor	0.08	Squirrel Bait	0.22	lb
Squirrel Control	Apr			Manual Labor	0.08	Squirrel Bait	0.22	lb
Squirrel Control	May			Manual Labor	0.08	Squirrel Bait	0.22	lb
Squirrel Control	June			Manual Labor	0.08	Squirrel Bait	0.22	lb
Squirrel Control	July			Manual Labor	0.08	Squirrel Bait	0.22	lb
Squirrel Control	Aug			Manual Labor	0.08	Squirrel Bait	0.22	lb
Squirrel Control	Sept			Manual Labor	0.08	Squirrel Bait	0.22	lb
Squirrel Control	Oct			Manual Labor	0.08	Squirrel Bait	0.22	lb
Squirrel Control	Nov			Manual Labor	0.08	Squirrel Bait	0.22	lb
Squirrel Control	Dec			Manual Labor	0.08	Squirrel Bait	0.22	lb
Fertilizer Potassium Thiosulfate	Mar					Potassium Thiosulfate	100	lb
Fertilizer - UN32%	Mar					UN-32%	5.85	gal
Fertilizer - UN32%	Apr					UN-32%	5.85	gal
Fertilizer - UN32%	May					UN-32%	5.85	gal
Fertilizer - UN32%	June					UN-32%	5.85	gal
Fertilizer - UN32%	July					UN-32%	5.85	gal
Fertilizer - UN32%	Aug					UN-32%	5.85	gal
Fertilizer - UN32%	Sept					UN-32%	5.84	gal
Fertilizer - UN32%	Oct					UN-32%	5.84	gal
Root Rot Treatment	May					Potassium Phosphite	1	gal
Root Rot Treatment	Sept					Potassium Phosphite	1	gal
Irrigation & Walk Lines	Apr			Irrigation Labor	0.72	Water	4.29	ac-in
Irrigation & Walk Lines	May			Irrigation Labor	0.72	Water	4.29	ac-in
Irrigation & Walk Lines	June			Irrigation Labor	0.72	Water	4.29	ac-in
Irrigation & Walk Lines	July			Irrigation Labor	0.71	Water	4.29	ac-in
Irrigation & Walk Lines	Aug			Irrigation Labor	0.71	Water	4.29	ac-in
Irrigation & Walk Lines	Sept			Irrigation Labor	0.71	Water	4.29	ac-in
Irrigation & Walk Lines	Oct			Irrigation Labor	0.71	Water	4.29	ac-in
Misc. Pickup truck	Jan		Truck	Equip. Operator Labor	1.5			
Misc. Pickup truck	Feb		Truck	Equip. Operator Labor	1.5			
Misc. Pickup truck	Mar		Truck	Equip. Operator Labor	1.5			
Misc. Pickup truck	Apr		Truck	Equip. Operator Labor	1.5			
Misc. Pickup truck	May		Truck	Equip. Operator Labor	1.5			
Misc. Pickup truck	June		Truck	Equip. Operator Labor	1.5			
Misc. Pickup truck	July		Truck	Equip. Operator Labor	1.5			
Misc. Pickup truck	Aug		Truck	Equip. Operator Labor	1.5			
Misc. Pickup truck	Sept		Truck	Equip. Operator Labor	1.5			
Misc. Pickup truck	Oct		Truck	Equip. Operator Labor	1.5			
Misc. Pickup truck	Nov		Truck	Equip. Operator Labor	1.5			
Misc. Pickup truck	Dec		Truck	Equip. Operator Labor	1.5			
Misc. ATV	Jan		ATV	Equip. Operator Labor	0.75			
Misc. ATV	Feb		ATV	Equip. Operator Labor	0.75			
Misc. ATV	Mar		ATV	Equip. Operator Labor	0.75			
Misc. ATV	Apr		ATV	Equip. Operator Labor	0.75			
Misc. ATV	May		ATV	Equip. Operator Labor	0.75			
Misc. ATV	June		ATV	Equip. Operator Labor	0.75			
Misc. ATV	July		ATV	Equip. Operator Labor	0.75			
Misc. ATV	Aug		ATV	Equip. Operator Labor	0.75			
Misc. ATV	Sept		ATV	Equip. Operator Labor	0.75			
Misc. ATV	Oct		ATV	Equip. Operator Labor	0.75			
Misc. ATV	Nov		ATV	Equip. Operator Labor	0.75			
Misc. ATV	Dec		ATV	Equip. Operator Labor	0.75			
Pollination	May&Sept			Manual Labor		Beehive	2	unit
Pest Control - Helicopter rental	Mar					Helicopter rental	1	acre
Pest Control - Abamectin						Abamectin	15	oz
Pest Control - NR415 Oil						Oil Spray - NR 415	1	gal
Pest Control - Helicopter rental	Aug					Helicopter rental	1	acre
Pest Control - NR415 Oil						Oil Spray - NR 415	4	gal
Fertilizer Zinc sulfate 12%	Apr					Zinc sulfate 12%	5	gal
Orchard Pruning	Jan			Manual Labor	30			
Picking	May					Picking - \$0.11	5,600	lb
Picking	Sept					Picking - \$0.11	5,600	lb
Hauling	May					Hauling - \$0.004	5,600	lb
Hauling	Sept					Hauling - \$0.004	5,600	lb
CAC Assessment fee	May					CAC - \$0.011	\$5,992	production value
CAC Assessment fee	Sept					CAC - \$0.011	\$5,992	production value

Etaferahu Takele
Area Farm Advisor, Agricultural Economics
UCCE - Southern Region
21150 Box Springs Road
Moreno Valley, CA 92557-8718
Phone: (951) 683-6491 x 221
Fax: (951) 788-2615
E-mail: ettakele@ucdavis.edu

Ben Faber
Farm Advisor, Soils and Water, Avocados and Minor Subtropical
UCCE – Santa Barbara & Ventura Counties
669 County Square Drive, #100
Ventura, CA 93003-5401
Phone: (805) 645-1462
Fax: (805) 645-1474
E-mail: bafaber@ucdavis.edu

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