

**2023**

# **SAMPLE COSTS TO ESTABLISH AN ORCHARD AND PRODUCE TABLE OLIVES**



**MANZANILLO VARIETY**

**In the CENTRAL VALLEY**

**MODERN-STYLE MEDIUM DENSITY, MECHANICAL HARVEST**

Jeremy Murdock	Staff Research Associate, Department of Agricultural and Resource Economics, UC Davis
Brittney Goodrich	UC Cooperative Extension Specialist, Department of Agricultural and Resource Economics, UC Davis

---

**Funding Source:** This cost study was funded by the California Olive Committee

*Disclaimer: The modern-style medium density table olive orchard system is new to California and its long-term performance is not known.*

UC AGRICULTURE AND NATURAL RESOURCES  
COOPERATIVE EXTENSION  
UC DAVIS DEPARTMENT OF AGRICULTURAL AND RESOURCE ECONOMICS  
**SAMPLE COST TO PRODUCE TABLE OLIVES**  
CENTRAL VALLEY - 2023

CONTENTS

INTRODUCTION	2
ASSUMPTIONS	3
Establishment Cultural Practices and Material Inputs	3
Production Cultural Practices and Material Inputs	5
Labor, Equipment, and Interest	7
Cash Overhead	8
Non-Cash Overhead	9
REFERENCES	11
TABLE 1. COSTS PER ACRE TO ESTABLISH A TABE OLIVE ORCHARD	12
TABLE 2. COSTS PER ACRE TO PRODUCE TABLE OLIVES	14
TABLE 3. COSTS AND RETURNS PER ACRE TO PRODUCE TABLE OLIVES	15
TABLE 4. MONTHLY CASH COSTS – TABLE OLIVES	16
TABLE 5. RANGING ANALYSIS - TABLE OLIVES	17
TABLE 6. WHOLE FARM EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS	18
TABLE 7. HOURLY EQUIPMENT COSTS	18
TABLE 8. OPERATIONS WITH EQUIPMENT & MATERIAL INPUTS	19

INTRODUCTION

The sample costs to produce table olives in the Central Valley are presented in this study. The study is intended as a guide only, and can be used to make production decisions, estimate potential returns, prepare budgets and evaluate production loans. The practices described are based on production procedures considered typical for this crop and area, but will not apply to every situation. Sample costs for labor, materials, equipment, and custom services are based on September, 2023 figures. A “Your Costs” column in Tables 2 and 3 is provided for you to enter your estimated costs.

For an explanation of calculations used in the study refer to the section titled Assumptions. For more information contact Jeremy Murdock; Department of Agricultural and Resource Economics at (530) 752-4651, [jmmurdock@ucdavis.edu](mailto:jmmurdock@ucdavis.edu). You can contact the local UCCE Advisor through the county offices: [http://ucanr.edu/County\\_Offices/](http://ucanr.edu/County_Offices/)

Sample Cost of Production studies for many commodities are available and can be down loaded from the website, <http://coststudies.ucdavis.edu>. Archived studies are also available on the website.

**Costs and Returns Study Program/Acknowledgements.** A cost and returns study is a compilation of specific crop data collected from meetings with professionals working in production agriculture from the region. The authors thank farmer cooperators, UC Cooperative Extension, and other industry representatives who provided information, assistance, and expert advice. **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.** The University of California, Division of Agriculture and Natural Resources (UC ANR) is an equal opportunity provider.

## ASSUMPTIONS

The following assumptions refer to tables 1 to 8 and pertain to sample costs to establish a modern table olive orchard and produce table olives using a temporary trellis system and mechanical harvest in the Central Valley. The medium density modern-style table olive orchard system is still fairly new to California and its long term performance is not known. The described practices are not University of California recommendations, but represent operations and materials considered typical of a well-managed orchard in the region. The costs, materials, and practices shown in this study are based on the assumptions and are not applicable to all farms. Establishment and cultural practices vary by farm and the differences can be significant. **The use of trade names in this report does not constitute an endorsement or recommendation by the University of California.**

**Farm.** The hypothetical farm consists of 45 acres of land farmed by the owner. The olive orchard is established on 40 acres and the remaining 5 acres are used for roads, the irrigation system, headlands, and farmstead.

### Establishment Cultural Practices and Material Inputs

**Trees.** The cost of trees for this study is \$5.00 per tree. Costs will vary depending on variety, tree size, and quantity purchased. Manzanillo olive trees are planted at a medium density spacing of 18 X 10 (242 trees per acre). Olive trees have a long production life if they are well maintained. In this study, the economic productive life of the orchard at the time of planting is estimated to be 40 years before removal.

**Irrigation.** The cost per acre-foot for water will vary by grower in the region depending on well characteristics and other irrigation factors. In this study, water is assumed to cost \$225/acre foot or \$18.75/acre inch. Irrigation rates, shown in Table A, increase each year as the orchard develops through year five. Water use remains the same after year five. Repairs to the double line drip irrigation system are included as an annual \$56 per acre investment repair cost which represents 0.5 percent of the orchard establishment cost.

Table A. Annual water applications

Year	Acre-inches/year	Acre-feet/year
1	12	1.0
2	18	1.5
3	18	1.5
4	24	2.0
5+	30	2.5

**Site Preparation.** Preparation of bare ground begins in the fall by ripping two ways to a depth of three feet to break up compaction. The ground is then disced twice with a stubble disc to break up large clods. Berms are then pulled to establish the tree rows and then a finish disc and float smooths out the row middles. Custom operators perform the ripping, stubble discing, pulling of the berms, finish discing, and floating. All operations that prepare the orchard for planting are done in the same year when the trees are planted. In this study, the costs are included in the first year.

**Planting.** In the spring, the tree sites are marked by a global positioning (GPS) system so the tree rows are in a north to south orientation. The double line drip irrigation system is laid on the ground. Seven-foot bamboo stakes are placed in the ground where the trees will be planted. The trellis system is installed, the holes are dug, and the trees planted. Later the trees are tied with green tape to the bamboo stakes. The trees are spaced 10 feet in-row by 18 feet between rows or 242 trees per acre. Trees that die are replanted in the second year. It is estimated that 3 percent of the trees will need to be replaced in the 2nd year.

**Trellis System.** The trellis is installed in the first year and consists of angled anchor post, t-posts, and two horizontal wires. The trellis is removed in year 5 to allow for mechanical harvest with a prune or pistachio catch frame shaker. For each tree row the trellis consists of two ten-foot, metal end posts with spade-shaped bottoms to anchor the ends firmly in the ground. Two strands of 12-gauge wire is strung between the two end posts. Every 50 feet an eight-foot, metal T-post is placed in the ground and the 12-gauge wire is clipped to them to maintain a straight tree row. The seven-foot bamboo stake next to each tree is buried only a few inches and is attached to the horizontal wire for training the tree upwards.

**Training.** Training the new trees starts by tying the tree to the bamboo stake once after planting as the central leader grows. The trees are trained to be upright with a single central leader trunk.

*First through Third Year.* The trees are pruned, trained, and tied by hand.

*Fourth Year and Beyond.* Trees are pruned mechanically beginning in the fourth year. Trees are mechanically skirted to keep the bottom three feet of the tree open which allows for good catch frame seal around the lower trunks during harvest and to avoid foliage contact with weed control sprays. Some larger side branches can be left the first three years to help fill the space in the row and produce more fruit early. Tree rows are mechanically hedged alternating rows to stimulate new growth and maintain tree shape. Hand pruning of crossed branches and excess woody growth is also completed. Trees are not mechanically topped.

*Fifth Year.* Beginning in the fifth year, prunings are shredded in the row middles.

**Insect and Disease Management.** Copper sprays are used to prevent olive knot, the major olive diseases that infects leaves and shoots, causing defoliation and shoot death. Control begins in the first year with one spray in March. Beginning in year three, an application in March and November is needed for olive knot control. Control of insects and other diseases during the orchard establishment period in olive orchards is normally minimal. Rarely, black scale control may be needed. Olive fruit fly treatments begin in year 3. Refer to the pest management section in the production section of this study.

**Weeds/Orchard Floor Management.** Orchard floors are managed differently within and between the tree rows. Resident vegetation is allowed to grow between the tree rows to maintain a cover crop. This vegetation in the row middles is mowed five times during the growing season in all years, starting in the first year.

After the trees have been planted in the spring, four-foot wide strip sprays with Gramoxone are necessary within the tree row to clean up later emerging weeds during the growing season. Gramoxone applications are completed three times per year for the first 3 years. Beginning in year three Roundup is used three times per year as a strip spray. A pre-emergent strip spray of Alion occurs once a year beginning in year 1.

Table B. Orchard Establishment Weed Management

Year	Mowing	Herbicide Treatments
1-3	Mow row middles 5X	Strip spray: Gramoxone 3X Strip spray: Alion 1X
3-7	Mow row middles 5X	Strip spray: Roundup 3X Strip spray: Alion 1X

**Fertilization.** Nitrogen is the major nutrient required for proper tree growth and optimum yields. Young trees receive liquid nitrogen fertilizer through the drip irrigation system at increasing rates during orchard

establishment as shown in Table C. In the first two years the nitrogen is delivered as CAN 17. In this study, 25 lbs. of N in the form of CAN17 is applied the first year. The nitrogen source is switched to UAN-32 for the second year and beyond. Annual nitrogen rates are split equally and applied four times through the drip system from April through August.

Table C. Pounds of Nutrients Per Acre for Table Olives

Year	Pounds of N
1	25
2	40
3	60
4	80
5+	100

**Harvest and Yield.** Harvest begins in year three. The olives are hand harvested in years three and four for \$600 per ton. Year three yields is 2 tons per acre and year four yields 3.5 tons per acre. In year five the trellis is removed prior to harvest so mechanical harvesting with a prune or pistachio type tree shaker can be used. Refer to harvest and yield data in the production section of this study.

### Production Cultural Practices and Material Inputs

**Pruning.** Pruning manipulates tree growth to facilitate mechanical harvest and to maintain fruit production. Pruning is done mechanically every year and by hand every third year starting in year three. Mechanical hedging is completed every other row annually and both skirting and hedging are contracted services. The prunings are placed in the row middles and shredded.

**Fertilization.** Nitrogen as UAN-32 is split equally and applied four times through the drip system from April through August. In this study, 100 pounds of nitrogen per acre is applied annually. Leaf analysis is useful to identify potassium and phosphorous deficiencies. This study does not account for additional potassium or phosphorous fertilizer costs because it is not needed annually and deficiencies vary greatly based on soil type

**Irrigation.** Total applied water through the irrigation system is 30 acre-inches. A combination of district water and pumped groundwater is used in this study. Irrigation labor and the pumping cost for pressurizing the drip irrigation system is included in the water cost of \$18.75 per acre-inch or \$225 per acre-foot. Price per acre-foot for water will vary from grower to grower in this region depending on the irrigation district and pumping costs.

**Pest Management.** The pesticides and rates mentioned in this cost study are listed in *UC Integrated Pest Management Guidelines, Olives* and the *Olive Production Manual*. For information on other pesticides available, pest identification, monitoring, and management visit the UC IPM website at [www.ipm.ucdavis.edu](http://www.ipm.ucdavis.edu). **Although growers commonly use the pesticides mentioned, many other pesticides are available. Check with your PCA and/or the UC IPM website for current recommendations.** To purchase pesticides for commercial use, a grower must be a Certified Private Applicator to obtain a Pesticide Identification number. For information and pesticide use permits, contact the local county agricultural commissioner's office. Pesticides with different active ingredients, mode of action, and sites of action should be rotated as needed to combat species shift and resistance. Adjuvants are recommended for use with many pesticides for effective control, but the adjuvants and their costs are not included in this study.

**Application Methods.** Pesticide and fertilizer applications are made by either fertigation (pesticides and/or fertilizers applied through the irrigation water), by tractor mounted ground sprayer or foliar-broadcast with tractor mounted air blast sprayer. Check individual pesticide labels for compatibility, mixing and usage.

*Pest Control Adviser/Certified Crop Advisor (PCA/CCA).* Written recommendations are required for many pesticides and are available from licensed pest control or certified crop advisers. In addition, the PCA/CCA or an independent consultant will monitor the field for agronomic problems including irrigation and nutrition. Growers may hire a private PCA/CCA or receive the service as part of a service agreement with an agricultural chemical and fertilizer company. In this study there is a PCA fee of \$35 per acre due to monitoring olive fruit fly populations.

*Weeds/Orchard Floor Management.* Weeds in the tree rows are controlled with herbicides. Three in-season strip sprays using a contact herbicide (Roundup and Rely), are applied in May, June, and August. Pre-emergent herbicide Alion is applied in December as a dormant strip spray. In addition to shredding the prunings in the row middles, the middles are mowed 5 times from April through September.

*Insects.* Because the olives are destined for the table market protective sprays are applied to prevent olive fruit fly damage. In this study, olive fruit fly is treated with a bait spray (GF-120) 15 times during the growing season, May through October. The liquid insecticide for olive fruit fly is applied to every other row in each week. A McPhail trap baited with Torula yeast tablets, at a density of one trap per ten acres, is used to monitor olive fruit fly populations. The traps are checked every week for the pest during the same 15 weeks that the insecticide is used. In this study, the cost of hanging, baiting, and monitoring the traps is included in the PCA fees. When olive fruit fly populations become severe Danitol can be applied, but the cost of such a treatment is not included in this study.

*Disease.* The fungal disease, peacock spot (not common), damages leaves and the bacterial disease, olive knot (common), damages shoots and branches. Their prevention requires two copper (Kocide 3000) sprays - the first in March for olive knot and the second following harvest and prior to fall rains for olive knot and peacock spot

**Harvest.** Beginning in year 5 olives are mechanically harvested by a contract harvesting company. The trees are harvested with a prune or pistachio type tree shaker which removes 75% of the crop at a cost of \$750 per acre. The remaining 25% of the crop is handpicked at a cost of \$600 per ton. The cost of hauling the harvested crop to the processor is charged by a separate trucking company and it can range from \$400 to \$600 for a 25-ton load hauled 40 miles. The hauling cost of \$20/ton is used in this study.

**Yield.** Table olives begin bearing an economic crop in the third year after planting and in this study a maximum yield of 7.0 tons is reached in the 8<sup>th</sup> year. Annual olive yield tonnage is shown in Table D.

Table D. Annual Table Olive Yield

Year	Tons of Fruit (Fresh weight)
3	2.0
4	3.5
5	4.5
6	5.5
7	6.0
8+	7.0

**Returns.** An estimated price of \$1,150 per ton of Manzanillo olives is used in this study. Returns, shown in Table 3, will vary and the yields and prices used in this study are estimated, based on current markets. See Table 5 for a ranging analysis of returns based on different yields and prices.

**Assessments.** The California Olive Committee (COC) under a federal marketing order collects a mandatory assessment fee. These assessments are charged to the processor to pay for olive marketing order administration, research, and market development. Growers do not directly pay the assessment.

**Pickup/ATV.** The grower uses the pickup and it is assumed that 4,000 miles are for business use. The All-Terrain Vehicle (ATV) is used for inspecting and monitoring the orchard and spraying GF-120. It is also used for irrigating and checking the system, but is not included in the irrigation cost. It is assumed that the ATV travels 2,500 miles per year.

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

**Labor.** Hourly wages for workers are \$20.00 for machine operators and \$18.00 per hour non-machine labor. Adding 43 percent for the employers' share of federal and state payroll taxes, insurance, and other possible benefits for orchard crops gives the labor rates shown of \$28.60 and \$25.74 per hour for machine labor and non-machine labor, respectively. Labor for operations involving machinery are 20 percent 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. Workers compensation will vary among growers, but for this study the cost is based upon the average industry final rate as of September, 2023.

**Supervisor/Management Salaries.** Management salaries are not included as a cash cost. Any returns above total costs are considered returns on investment or management.

**Equipment Operating Costs.** Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by American Society of Agricultural and Biological Engineers (ASABE). Fuel and lubrication costs are also determined by ASABE equations based on maximum power takeoff (PTO) horsepower, and fuel type. Prices for on-farm delivery of diesel and gasoline are \$4.80 and \$4.40 per gallon, respectively. The cost includes a 13.0 percent local sales tax on diesel fuel and 10.17 percent sales tax on gasoline. Gasoline also includes federal and state excise tax, which may be refundable for on-farm use when filing your income tax.

*Fuel/Lube/Repair.* The fuel, lube, and repair cost per acre for each operation in Table 1 is determined by multiplying the total hourly operating cost in Table 7 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.

**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 8.50 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 September, 2023.

**Risk.** The risks associated with producing and marketing a table olive crop are considered high. While this study makes every effort to model a production system based on typical, real world practices, it cannot fully represent the production, financial, market, legal, and human resource risks that ultimately affect the profitability and economic viability of table olive. Crop insurance is one tool that growers may use to protect against loss. The market for table olives is volatile for both price and quantity. A market channel should be determined before any table olives 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. These costs can include property taxes, interest on operating capital, office expense, liability and property insurance, sanitation services, equipment repairs, and



management.

**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.

**Insurance.** Insurance for farm investments varies depending on the assets included and the amount of coverage.

*Property Insurance.* This 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.* A standard farm liability insurance policy will help cover the expenses for which you become legally obligated to pay for bodily injury claims on your property and damages to another person's property as a result of a covered accident. Common liability expenses covered under your policy include attorney fees and court costs, medical expenses for people injured on your property, injury or damage to another's property. In this study, liability insurance costs \$638 for the entire farm.

*Crop Insurance.* A significant number of growers purchase crop insurance in this region. Crop insurance is available to table olive growers for any unavoidable loss of production, damage or poor quality resulting from adverse weather conditions such as cool wet weather, freeze, frost, hail, excessive heat, rain, wind and damage from birds, drought, earthquakes and fire. Coverage levels are from 50 to 85 percent of the approved average yield as established by verifiable production records from the farm. For this study, crop insurance is purchased at the 75% coverage level at a cost of \$137 per acre. Actual insurance coverage is by unit, not by acre. The olive crop insurance program is administered by the [USDA Risk Management Agency \(RMA\)](#).

**Office Expense.** Office and business expenses are estimated at \$75 per producing acre. These expenses include office supplies, telephones, bookkeeping, accounting, shop and office utilities, and miscellaneous administrative charges.

**Sanitation Services.** Sanitation services provide portable toilets and washing facilities for the orchard and cost the farm \$13.68/acre annually. The cost includes a double toilet, delivery and 7 months of weekly service from April through November.

**Management.** Wages for management are not included in this study. Any return above total costs is considered a return to management.

**Investment Repairs.** Annual maintenance is calculated as 2 percent of the purchase price.

### Non-Cash Overhead

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



**Capital Recovery Costs.** Capital recovery cost is the annual depreciation and interest costs for a capital investment. It is the amount of money required each year to recover the difference between the purchase price and salvage value (unrecovered capital). It is equivalent to the annual payment on a loan for the investment with the down payment equal to the discounted salvage value. This is a more complex method of calculating ownership costs than straight-line depreciation and opportunity costs, but more accurately represents the annual costs of ownership because it takes the time value of money into account (Boehlje and Eidman). The formula for the calculation of the annual capital recovery costs is  $((\text{Purchase Price} - \text{Salvage Value}) \times (\text{Capital Recovery Factor})) + (\text{Salvage Value} \times \text{Interest Rate})$ .

**Salvage Value.** Salvage value is an estimate of the remaining value of an investment at the end of its useful life. For farm machinery (tractors and implements), the remaining value is a percentage of the new cost of the investment (Boehlje and Eidman). The percent remaining value is calculated from equations developed by the American Society of Agricultural and Biological Engineers (ASABE) based on equipment type and years of life. The life in years is estimated by dividing the wear out life, as given by ASABE, by the annual hours of use in the operation. For other investments including irrigation systems, buildings, and miscellaneous equipment, the value at the end of its useful life is zero. The salvage value for land is the purchase price because land does not depreciate. The purchase price and salvage value for equipment and investments are shown in Table 7.

**Capital Recovery Factor.** Capital recovery factor is the amortization factor or annual payment whose present value at compound interest is 1. The amortization factor is a table value that corresponds to the interest rate used and the life of the machine.

**Interest Rate.** An interest rate of 7.00 percent is used to calculate capital recovery. Note this long term interest rate is lower than the interest rate used for capital invested in annual production operations. The rate will vary depending upon loan amount and other lending agency conditions, but is the basic suggested rate by a farm lending agency as of September, 2023.

**Building.** The shop building is a 1,800 square foot metal building or buildings on a cement slab.

**Land.** Based on grower input, crop land with irrigation availability plantable to olives is valued at \$18,000 per acre. Olives can be grown on class 3 or 4 soil and hilly land. Also, the water demand for an olive orchard is relatively low, so land suitable for olive production can be less expensive than most fruit and nut crops. For this study, the producing acreage is estimated to be worth 29,114 per acre. It is the crop land value plus the establishment cost ( $\$18,000 + \$11,114 = \$29,114$ ).

**Well and Irrigation System.** The pumping cost is based on two 100-horsepower electric motors pumping from a depth of 250 feet. Price per acre-foot of water will vary by grower depending on power source, well characteristics, and irrigation district. Water is pumped through a filtration system, into the buried main lateral lines, and out into the orchard and double line drip irrigation. The well is 500 feet deep and is equipped with filters. The main laterals and solid set sprinklers are installed separately, after the orchard has been laid out and prior to planting.

**Fuel Tank.** Two 1000-gallon fuel tank using gravity feed are on metal stands. The tanks are setup in a cement containment pad that meets federal, state, and county regulations

**Shop Tools.** Includes shop equipment/tools, hand tools, and field tools such as pruning equipment and shovels.

**Establishment Cost.** Costs to establish the orchard are used to determine the non-cash overhead expenses, capital recovery, and interest on investment for the production years. The establishment cost is the sum of cash costs for land preparation, trees, planting, production expenses, and cash overhead for growing olive

trees until oil is produced, minus any returns. In this study, production begins the 3rd year. The Accumulated Net Cash Cost in the third year shown in Table 1 represents the establishment cost per acre. For this study, the cost is \$11,147 per acre or \$445,880 for the 40 acres planted to olives. Establishment cost is amortized beginning in the fourth year over the remaining 40 years that the orchard is assumed to be in production.

**Equipment.** 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 60 percent to indicate a mix of new and used equipment. 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.

## REFERENCES

- American Society of Agricultural and Biological Engineers (ASABE). *2011 ASABE Standards Book with 2015 Standards Supplement*. St. Joseph, MI: Curran Associates, Inc., 2015.
- Boehlje, Michael D., and Vernon R. Eidman. *Farm Management*. New York: John Wiley and Sons, 1984.
- California State Board of Equalization. *Fuel Tax Division Tax Rates*.  
<http://www.boe.ca.gov/sptaxprog/spftdrates.htm>
- "Economic Research Service - Publications." United States Department of Agriculture.  
[www.ers.usda.gov/data-products.aspx](http://www.ers.usda.gov/data-products.aspx).
- Energy Information Administration. *Weekly Retail on Highway Diesel Prices*, January 2018.  
<http://tonto.eia.doe.gov/oog/info/wohdp>
- Ferguson, Louise, and G. Steven Sibbett. *Olive Production Manual*, 2nd ed. Oakland, CA: University of California, Division of Agriculture and Natural Resources, 2005.
- "National Agricultural Statistics Service." United States Department of Agriculture.  
[www.nass.usda.gov/Quick\\_Stats/](http://www.nass.usda.gov/Quick_Stats/).
- "Workers' Compensation Rate Comparison." California Department of Insurance.  
<http://www.insurance.ca.gov/01-consumers/105-type/9-compare-prem/wc-rate/index.cfm>.
- Lightle, Danielle, Daniel A. Sumner, Jeremy Murdock. "Sample Costs to Establish a Super-High Density Olive Orchard and Produce Olive Oil, Sacramento Valley- 2016" UC Davis Cost Studies.  
<http://coststudies.ucdavis.edu/en/current/>.
- Lightle, Danielle, Karen Klonsky, Daniel Sumner, Donald Stewart, and Jeremy Murdock. "Sample Costs to Produce Table Olives, Sacramento Valley- 2016" UC Davis Cost Studies.  
<http://coststudies.ucdavis.edu/en/current/>.
- TRENDS® In Agricultural Land and Lease Values. (ASFMRA)*, 2022. California Chapter, of the American Society of Farm Managers & Rural Appraisers, Inc. Woodbridge, CA. [www.calasfmra.com](http://www.calasfmra.com)
- UC IPM Pest Management Guidelines: University of California. Division of Agriculture and Natural Resources. Oakland, CA. <http://ipm.ucdavis.edu/>
- Vossen, Paul M., Joseph H. Connell, ET AL. *Organic Olive Production Manual*, Oakland, CA: University of California, Division of Agriculture and Natural Resources, 2007.

UC COOPERATIVE EXTENSION-AGRICULTURAL AND RESOURCE ECONOMICS, UC DAVIS  
**TABLE 1. COSTS PER ACRE TO ESTABLISH A MODERN TABLE OLIVE ORCHARD**  
CENTRAL VALLEY – 2023

Year	Table Olive Price- \$1,150/Ton	Cost Per Acre					
		1st	2nd	3rd	4th	5th	6th
Tons Per Acre				2.0	3.5	4.5	5.5
Pre-Plant Costs:							
Laser Leveling		500					
Rip 3' Depth, 2-Way		600					
Stubble Disc 2X		80					
Pull Ridges		20					
Finish Disc		40					
Triplane		75					
TOTAL PRE-PLANT COSTS		1,315					
Planting Costs:							
Survey and Layout Orchard		35					
Trellis Install & Tree Planting (Materials and Labor)		2100					
Trees: 242 Per Acre		1210					
Drip Irrigation (Double Line) Install- Labor and Materials		2100					
Wrap Trees – Labor and Materials		75					
Replant Trees (3% in 2 <sup>nd</sup> Year) No Tree Cost, Only Labor		0	10				
TOTAL PLANTING COSTS		5,520	10				
Cultural Costs:							
Irrigate (Water & Labor)	243	358	358	471	583	583	
Fertigate- Nitrogen (CAN17 1 <sup>st</sup> Year, UAN-32 Year 2+)	60	53	73	93	113	113	
Pests- Weeds/Pre-emergent	64	64	64	64	64	64	
Pests- Weeds/Mow Middles 5X	56	56	56	56	56	56	
Pests- Disease/Olive Knot (1X Yr. 1-2, 2X Yr. 3+)	54	54	172	172	172	172	
Pests- Olive Fruit Fly 15X			132	132	132	132	
PCA			35	35	35	35	
Hand Prune, Train, & Tie (Year 1-3)	100	100	100				
Pruning- Mechanical Hedging (alternating rows)				100	100	100	
Pests- Weeds/Strip Spray 3X- Gramoxone Yr.1-3, RU Yr.3+	54	54	54	81	81	81	
Pruning- Mechanical Skirting				50	50	50	
Hand Pruning (Year 3+, every third year, 1/3 of cost shown)				75	75	75	
Shredding Brush					100	100	
Trellis Removal					300		
Pickup Truck Use	117	117	117	117	117	117	
ATV Use	99	99	99	99	99	99	
TOTAL CULTURAL COSTS	849	957	1,261	1,545	2,077	1,777	
Harvest:							
Harvest (Hand Yr. 3-4, Mechanical Yr. 5+)			1200	2,100	1,425	1,575	
Haul Fruit to Processor			40	70	90	110	
TOTAL HARVEST COSTS			1,240	2,170	1,515	1,685	
Interest on Operating Capital at 8.50%	457	31	45	66	79	74	
TOTAL OPERATING COST/ACRE	8,141	997	2,546	3,781	3,671	3,536	
Cash Overhead Costs:							
Liability Insurance	16	16	16	16	16	16	
Office Expense	75	75	75	75	75	75	
Sanitation Fees	14	14	14	14	14	14	
Regulatory Compliance Fees	40	40	40	40	40	40	
Property Taxes	232	232	232	288	288	288	
Property Insurance	16	16	16	20	20	20	
Investment Repairs	195	195	195	251	251	251	
TOTAL CASH OVERHEAD COSTS	588	588	588	703	703	703	
TOTAL CASH COSTS/ACRE	8,728	1,585	3,134	4,484	4,375	4,240	
<b>INCOME/ACRE FROM PRODUCTION</b>			<b>2,300</b>	<b>4,025</b>	<b>5,175</b>	<b>6,325</b>	
NET CASH COSTS/ACRE FOR THE YEAR	8,728	1,585	834	459			
PROFIT/ACRE ABOVE CASH COSTS					<b>800</b>	<b>2,085</b>	
ACCUMULATED NET CASH COSTS/ACRE	8,728	10,313	<b>11,147</b>	11,606	10,806	8,721	

**TABLE 1. CONTINUED**  
CENTRAL VALLEY – 2023

Year	Table Olive Price- \$1,150/Ton					
	Cost Per Acre					
	1st	2nd	3rd	4th	5th	6th
Tons Per Acre			2.0	3.5	4.5	5.5
Capital Recovery Cost:						
Shop Building	283	283	283	283	283	283
Modern Table Olive Orchard Establishment				836	836	836
Fuel Tank: 2-1000 Gallon	25	25	25	25	25	25
Land	1,260	1,260	1,260	1,260	1,260	1,260
Well/Pump/Filter	467	467	467	467	467	467
Shop Tools	32	32	32	32	32	32
Equipment	53	53	60	60	60	60
TOTAL CAPITAL RECOVERY COST	2,120	2,120	2,127	2,963	2,963	2,945
TOTAL COST/ACRE FOR THE YEAR	10,849	3,706	5,261	7,447	7,338	7,203
<b>INCOME/ACRE FROM PRODUCTION</b>			<b>2,300</b>	<b>4,025</b>	<b>5,175</b>	<b>6,325</b>
TOTAL NET COST/ACRE FOR THE YEAR	10,849	3,706	2,961	3,422	2,163	878
NET PROFIT/ACRE FOR THE YEAR						
<b>TOTAL ACCUMULATED NET COST/ACRE</b>	10,849	14,555	17,516	20,938	23,101	23,979

**TABLE 2. COSTS PER ACRE TO PRODUCE TABLE OLIVES**

CENTRAL VALLEY - 2023

Operation	Equipment Time	Labor	Fuel	Cash and Labor Costs per Acre			Total Cost	Your Cost
	(Hrs/A)	Cost		Lube & Repairs	Material Cost	Custom/ Rent		
Cultural:								
Fertigate- UAN 32	0.00	13	0	0	100	0	113	
Pruning- Mechanical Hedging, alternate rows	0.00	0	0	0	0	125	125	
Irrigate (Water and Labor)	0.00	72	0	0	563	0	635	
Weeds- Mow Middles 5X	0.86	29	19	8	0	0	56	
Disease- Olive Knot 2X	0.70	24	16	7	125	0	171	
Weeds- Summer Strip Spray 3X	0.65	22	14	4	71	0	112	
Pruning- Mechanical Skirting	0.00	0	0	0	0	75	75	
Hand Prune- every third year, 1/3 of cost shown	0.00	0	0	0	0	250	250	
Shred Prunings	0.00	0	0	0	0	100	100	
Insects- Olive Fruit Fly 15X	0.40	14	1	1	117	0	132	
PCA	0.00	0	0	0	0	35	35	
Weeds- Pre-emergent Strip Spray	0.22	7	5	1	51	0	64	
Pickup Truck Use	2.59	89	19	9	0	0	117	
ATV Use	2.59	89	8	3	0	0	99	
TOTAL CULTURAL COSTS	8.01	360	81	33	1,026	585	2,085	
Harvest:								
Machine Harvest (25% by Hand)	0.00	0	0	0	0	1,800	1,800	
Haul Fruit to Processor	0.00	0	0	0	0	140	140	
TOTAL HARVEST COSTS	0.00	0	0	0	0	1,940	1,940	
Interest on Operating Capital at 8.50%							75	
TOTAL OPERATING COSTS/ACRE	8	360	81	33	1,026	2,525	4,101	
CASH OVERHEAD:								
Liability Insurance							16	
Office Expense							75	
Sanitation Fee							14	
Regulatory Compliance Fees							40	
Crop Insurance (75% Coverage)							137	
Property Taxes							288	
Property Insurance							20	
Investment Repairs							251	
TOTAL CASH OVERHEAD COSTS/ACRE							840	
TOTAL CASH COSTS/ACRE							4,941	
NON-CASH OVERHEAD:								
		Per Producing Acre		Annual Cost Capital Recovery				
Buildings		3,000		283			283	
Fuel Tank: 2-1000 Gal.		274		25			25	
Land		18,000		1,260			1,260	
Shop Tools		250		32			32	
Well/Pump/Filter		6,220		467			467	
Orchard Establishment- Modern		11,147		836			836	
Equipment		463		60			60	
TOTAL NON-CASH OVERHEAD COSTS		39,354		2,963			2,963	
TOTAL COSTS/ACRE							7,904	

**TABLE 3. COSTS AND RETURNS PER ACRE TO PRODUCE TABLE OLIVES**

CENTRAL VALLEY – 2023

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
<b>GROSS RETURNS</b>					
Production- Year 8+	7	Ton	1150.00	8,050	
<b>TOTAL GROSS RETURNS</b>	7	Ton		8,050	
<b>OPERATING COSTS</b>					
<b>Herbicide:</b>				<b>121</b>	
Roundup PowerMax	4.50	Pint	8.75	39	
Rely 280	36.00	FLOz	0.87	31	
Alion	3.50	FLOz	14.50	51	
<b>Fungicide:</b>				<b>125</b>	
Kocide 3000	16.00	Lb	7.80	125	
<b>Insecticide:</b>				<b>117</b>	
GF 120	60.00	Oz	1.95	117	
<b>Custom:</b>				<b>2,525</b>	
Mechanical Hedging	1.00	Acre	125.00	125	
Mechanical Skirting	1.00	Acre	75.00	75	
Hand Prune- every third year	1.00	Acre	250.00	250	
Shred Prunings	1.00	Acre	100.00	100	
PCA Fee	1.00	Acre	35.00	35	
Harvest-Mechanical	1.00	Acre	750.00	750	
Hand Harvest	1.75	Ton	600.00	1,050	
Hauling	7.00	Ton	20.00	140	
<b>Irrigation:</b>				<b>563</b>	
Water-Pumped	30.00	AcIn	18.75	563	
<b>Fertilizer:</b>				<b>100</b>	
UAN-32	100.00	Lb N	1.00	100	
<b>Labor</b>				<b>360</b>	
Equipment Operator Labor	9.61	hrs	28.60	275	
Non-Machine Labor	0.50	hrs	25.74	13	
Irrigation Labor	2.80	hrs	25.74	72	
<b>Machinery</b>				<b>115</b>	
Fuel-Gas	6.31	gal	4.40	28	
Fuel-Diesel	11.16	gal	4.80	54	
Lube				12	
Machinery Repair				21	
Interest on Operating Capital @ 8.50%				75	
<b>TOTAL OPERATING COSTS/ACRE</b>				<b>4,101</b>	
<b>TOTAL OPERATING COSTS/TON</b>				<b>586</b>	
<b>NET RETURNS ABOVE OPERATING COSTS</b>				<b>3,949</b>	
<b>CASH OVERHEAD COSTS</b>					
Liability Insurance				16	
Office Expense				75	
Sanitation Fee				14	
Regulatory Compliance Fees				40	
Crop Insurance (75% Coverage)				137	
Property Taxes				288	
Property Insurance				20	
Investment Repairs				251	
<b>TOTAL CASH OVERHEAD COSTS/ACRE</b>				<b>840</b>	
<b>TOTAL CASH OVERHEAD COSTS/TON</b>				<b>120</b>	
<b>TOTAL CASH COSTS/ACRE</b>				<b>4,941</b>	
<b>TOTAL CASH COSTS/TON</b>				<b>706</b>	
<b>NET RETURNS ABOVE CASH COSTS</b>				<b>3,109</b>	
<b>NON-CASH OVERHEAD COSTS (Capital Recovery)</b>					
Buildings				283	
Fuel Tank: 2-1000 Gal.				25	
Land				1,260	
Shop Tools				32	
Well/Pump/Filter				467	
Orchard Establishment- Modern				836	
Equipment				60	
<b>TOTAL NON-CASH OVERHEAD COSTS/ACRE</b>				<b>2,963</b>	
<b>TOTAL NON-CASH OVERHEAD COSTS/TON</b>				<b>423</b>	
<b>TOTAL COST/ACRE</b>				<b>7,904</b>	
<b>TOTAL COST/TON</b>				<b>1,129</b>	
<b>NET RETURNS ABOVE TOTAL COST</b>				<b>146</b>	



UC COOPERATIVE EXTENSION-AGRICULTURAL AND RESOURCE ECONOMICS, UC DAVIS  
**TABLE 4. MONTHLY CASH COSTS – TABLE OLIVES**  
CENTRAL VALLEY – 2023

	APR 23	MAY 23	JUN 23	JUL 23	AUG 23	SEP 23	OCT 23	NOV 23	Total
Cultural:									
Fertigate- UAN 32	28	28	28		28				113
Pruning- Mechanical Hedging, alternate rows	125								125
Irrigate	67	85	104	104	104	85	85		635
Weeds- Mow Middles 5X	11	11	11	11		11			56
Disease- Olive Knot 2X	86							86	171
Weeds- Summer Strip Spray 3X		37	37		37				112
Pruning- Mechanical Skirting			75						75
Hand Prune			250						250
Shred Prunings			100						100
Insects- Olive Fruit Fly 15X			35	35	35	27			132
PCA			35						35
Weeds- Pre-emergent Strip Spray								64	64
Pickup Truck Use	15	15	15	15	15	15	15	15	117
ATV Use	12	12	12	12	12	12	12	12	99
<b>TOTAL CULTURAL COSTS</b>	<b>344</b>	<b>189</b>	<b>703</b>	<b>177</b>	<b>232</b>	<b>151</b>	<b>112</b>	<b>177</b>	<b>2,085</b>
Harvest:									
Machine Harvest (25% by Hand)							1,800		1,800
Haul Fruit to Processor							140		140
<b>TOTAL HARVEST COSTS</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,940</b>	<b>0</b>	<b>1,940</b>
Interest on Operating Capital @ 8.50%	2	4	9	10	12	13	27	-1	75
<b>TOTAL OPERATING COSTS/ACRE</b>	<b>346</b>	<b>193</b>	<b>712</b>	<b>187</b>	<b>243</b>	<b>164</b>	<b>2,080</b>	<b>176</b>	<b>4,101</b>
CASH OVERHEAD									
Liability Insurance						16			16
Office Expense	9	9	9	9	9	9	9	9	75
Sanitation Fee						14			14
Regulatory Compliance Fees	5	5	5	5	5	5	5	5	40
Crop Insurance (75% Coverage)						137			137
Property Taxes				144					288
Property Insurance				10					20
Investment Repairs	31	31	31	31	31	31	31	31	251
<b>TOTAL CASH OVERHEAD COSTS</b>	<b>46</b>	<b>46</b>	<b>46</b>	<b>200</b>	<b>46</b>	<b>212</b>	<b>46</b>	<b>46</b>	<b>840</b>
<b>TOTAL CASH COSTS/ACRE</b>	<b>392</b>	<b>239</b>	<b>757</b>	<b>387</b>	<b>289</b>	<b>376</b>	<b>2,125</b>	<b>222</b>	<b>4,941</b>

**TABLE 5. RANGING ANALYSIS – TABLE OLIVES**

CENTRAL VALLEY – 2023

COSTS PER ACRE AND PER TON AT VARYING YIELDS TO PRODUCE TABLE OLIVES

	YIELD (TON)						
	4.00	5.00	6.00	7.00	8.00	9.00	10.00
OPERATING COSTS/ACRE:							
Cultural	2,085	2,085	2,085	2,085	2,085	2,085	2,085
Harvest	1,880	1,900	1,920	1,940	1,960	1,980	2,000
Interest on Operating Capital @ 8.50%	75	75	75	75	75	76	76
TOTAL OPERATING COSTS/ACRE	4,040	4,060	4,080	4,101	4,121	4,141	4,161
TOTAL OPERATING COSTS/TON	1,010.04	812.06	680.08	585.80	515.09	460.10	416.10
CASH OVERHEAD COSTS/ACRE	840	840	840	840	840	840	840
TOTAL CASH COSTS/ACRE	4,881	4,901	4,921	4,941	4,961	4,981	5,002
TOTAL CASH COSTS/TON	1,220.16	980.16	820.16	705.87	620.15	553.48	500.15
NON-CASH OVERHEAD COSTS/ACRE	2,963	2,963	2,963	2,963	2,963	2,963	2,963
TOTAL COSTS/ACRE	7,844	7,864	7,884	7,904	7,924	7,944	7,965
TOTAL COSTS/TON	1,961.00	1,573.00	1,314.00	1,129.00	991.00	883.00	796.00

Net Return per Acre above Operating Costs for Table Olives

PRICE (\$/ton )	YIELD (ton /acre)						
Table Olives	4.00	5.00	6.00	7.00	8.00	9.00	10.00
850.00	-640	190	1,020	1,849	2,679	3,509	4,339
950.00	-240	690	1,620	2,549	3,479	4,409	5,339
1050.00	160	1,190	2,220	3,249	4,279	5,309	6,339
1150.00	560	1,690	2,820	3,949	5,079	6,209	7,339
1250.00	960	2,190	3,420	4,649	5,879	7,109	8,339
1350.00	1,360	2,690	4,020	5,349	6,679	8,009	9,339
1450.00	1,760	3,190	4,620	6,049	7,479	8,909	10,339

Net Return per Acre above Cash Costs for Table Olives

PRICE (\$/ton )	YIELD (ton /acre)						
Table Olives	4.00	5.00	6.00	7.00	8.00	9.00	10.00
850.00	-1,481	-651	179	1,009	1,839	2,669	3,498
950.00	-1,081	-151	779	1,709	2,639	3,569	4,498
1050.00	-681	349	1,379	2,409	3,439	4,469	5,498
1150.00	-281	849	1,979	3,109	4,239	5,369	6,498
1250.00	119	1,349	2,579	3,809	5,039	6,269	7,498
1350.00	519	1,849	3,179	4,509	5,839	7,169	8,498
1450.00	919	2,349	3,779	5,209	6,639	8,069	9,498

Net Return per Acre above Total Costs for Table Olives

PRICE (\$/ton )	YIELD (ton /acre)						
Table Olives	4.00	5.00	6.00	7.00	8.00	9.00	10.00
850.00	-4,444	-3,614	-2,784	-1,954	-1,124	-294	535
950.00	-4,044	-3,114	-2,184	-1,254	-324	606	1,535
1050.00	-3,644	-2,614	-1,584	-554	476	1,506	2,535
1150.00	-3,244	-2,114	-984	146	1,276	2,406	3,535
1250.00	-2,844	-1,614	-384	846	2,076	3,306	4,535
1350.00	-2,444	-1,114	216	1,546	2,876	4,206	5,535
1450.00	-2,044	-614	816	2,246	3,676	5,106	6,535

UC COOPERATIVE EXTENSION-AGRICULTURAL AND RESOURCE ECONOMICS, UC DAVIS  
**TABLE 6. WHOLE FARM EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS**  
 CENTRAL VALLEY – 2023

ANNUAL EQUIPMENT COSTS

Yr.	Description	Price	Years Life	Salvage Value	Capital Recovery	Cash Overhead		Total
						Insurance	Taxes	
23	ATV 4WD	9,300	7	3,528	1,318	5	64	1,387
23	Orchard.Sprayer 500 G	26,000	10	4,598	3,369	11	153	3,533
23	Pickup Truck - 1/2	35,000	7	13,277	4,960	17	241	5,219
23	Weed Sprayer 100 G	5,646	10	998	732	2	33	767
23	85hp 4WD Tractor	76,400	15	14,874	7,796	32	456	8,285
23	Mower- Flail 8'	8,950	10	1,583	1,160	4	53	1,216
23	Weed Sprayer 25 Ga	624	10	110	81	0	4	85
TOTAL		161,920	-	38,968	19,416	71	1,004	20,492
60% of New Cost*		97,152	-	23,381	11,649	43	603	12,295

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

ANNUAL INVESTMENT COSTS

Description	Price	Years Life	Salvage Value	Capital Recovery	Cash Overhead			Total
					Insurance	Taxes	Repairs	
INVESTMENT								
Buildings	120,000	20	0	11,327	43	600	2,400	14,370
Fuel Tank: 2-1000 Gal.	10,975	20	768	1,017	4	59	220	1,300
Land- Olives	720,000	30	720,000	50,400	511	7,200	0	58,111
Shop Tools	10,000	10	2,000	1,279	4	60	200	1,543
Well/Pump/Filter	248,800	40	0	18,662	88	1,244	4,976	24,971
Orchard Establishment- Modern	445,880	40	0	33,445	158	2,229	2,229	38,062
TOTAL INVESTMENT	1,555,655	-	722,768	116,131	809	11,392	10,025	138,357

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	40.00	Acre	15.95	638
Office Expense	40.00	Acre	75.00	3,000
Sanitation Fee	40.00	Acre	13.68	547
Regulatory Compliance Fees	40.00	Acre	40.00	1,600
Crop Insurance (75% Coverage)	40.00	Acre	137.00	5,480

UC COOPERATIVE EXTENSION-AGRICULTURAL AND RESOURCE ECONOMICS, UC DAVIS  
**TABLE 7. HOURLY EQUIPMENT COSTS**  
 CENTRAL VALLEY – 2023

Yr.	Description	Table Olives	Total	Cash Overhead		Operating			Total Costs/Hr.
		Hours Used	Hours Used	Capital Recovery	Insurance	Taxes	Lube & Repairs	Fuel	
23	ATV 4WD	120	285	2.77	0.01	0.14	1.12	2.93	6.97
23	Orchard.Sprayer 500 G	28	200	10.11	0.03	0.46	4.36	0.00	14.96
23	Pickup Truck - 1/2	104	285	10.44	0.04	0.51	3.65	7.33	21.97
23	Weed Sprayer 100 G	35	150	2.93	0.01	0.13	1.50	0.00	4.57
23	85hp 4WD Tractor	107	1066	4.39	0.02	0.26	4.84	20.04	29.54
23	Mower- Flail 8'	34	200	3.48	0.01	0.16	3.66	0.00	7.31
23	Weed Sprayer 25 Ga	16	150	0.32	0.00	0.01	0.17	0.00	0.50

**TABLE 8. OPERATIONS WITH EQUIPMENT & MATERIALS**

CENTRAL VALLEY – 2023

Operation	Operation Month	Tractor	Implement	Labor Type/ Material	Rate/ acre	Unit
Fertigate- UAN 32	Mar			Non-Machine Labor	0.13	hour
				UAN-32	25.00	Lb N
	May			Non-Machine Labor	0.13	hour
				UAN-32	25.00	Lb N
	June			Non-Machine Labor	0.13	hour
Pruning- Mechanical Irrigate				UAN-32	25.00	Lb N
	Aug			Non-Machine Labor	0.13	hour
				UAN-32	25.00	Lb N
	Apr			Mechanical Hedging- Prod. yr./	1.00	Acre
	Apr			Irrigation Labor	0.40	hour
				Water-Pumped	3.00	AcIn
	May			Irrigation Labor	0.40	hour
				Water-Pumped	4.00	AcIn
	June			Irrigation Labor	0.40	hour
				Water-Pumped	5.00	AcIn
	July			Irrigation Labor	0.40	hour
				Water-Pumped	5.00	AcIn
	Aug			Irrigation Labor	0.40	hour
				Water-Pumped	5.00	AcIn
	Sept			Irrigation Labor	0.40	hour
				Water-Pumped	4.00	AcIn
	Oct			Irrigation Labor	0.40	hour
				Water-Pumped	4.00	AcIn
Weeds- Mow Middles	Apr	85hp 4WD Tractor	Mower- Flail 8'	Equipment Operator Labor	0.21	hour
	May	85hp 4WD Tractor	Mower- Flail 8'	Equipment Operator Labor	0.21	hour
	June	85hp 4WD Tractor	Mower- Flail 8'	Equipment Operator Labor	0.21	hour
	July	85hp 4WD Tractor	Mower- Flail 8'	Equipment Operator Labor	0.21	hour
	Sept	85hp 4WD Tractor	Mower- Flail 8'	Equipment Operator Labor	0.21	hour
Disease- Olive Knot	Apr	85hp 4WD Tractor	Orch.Sprayer 500 G	Equipment Operator Labor	0.42	hour
				Kocide 3000	8.00	Lb
	Nov	85hp 4WD Tractor	Orch.Sprayer 500 G	Equipment Operator Labor	0.42	hour
Weeds- Strip Spray				Kocide 3000	8.00	Lb
	May	85hp 4WD Tractor	Weed Sprayer 100 G	Equipment Operator Labor	0.26	hour
				Roundup PowerMax	1.50	Pint
				Rely 280	12.00	FLOz
	June	85hp 4WD Tractor	Weed Sprayer 100 G	Equipment Operator Labor	0.26	hour
				Roundup PowerMax	1.50	Pint
				Rely 280	12.00	FLOz
	Aug	85hp 4WD Tractor	Weed Sprayer 100 G	Equipment Operator Labor	0.26	hour
				Roundup PowerMax	1.50	Pint
				Rely 280	12.00	FLOz
Pruning- Mechanical	June			Mechanical Skirting	1.00	Acre
Hand Prune	June			Hand Prune- every third year	1.00	Acre
Shred Prunings	June			Shred Prunings	1.00	Acre
Insects- Olive Fruit Fly	June		ATV 4WD	Equipment Operator Labor	0.12	hour
				GF 120	16.00	Oz
	July		Weed Sprayer 25 Ga ATV 4WD	Equipment Operator Labor	0.12	hour
				GF 120	16.00	Oz
	Aug		Weed Sprayer 25 Ga ATV 4WD	Equipment Operator Labor	0.12	hour
				GF 120	16.00	Oz
	Sept		Weed Sprayer 25 Ga ATV 4WD	Equipment Operator Labor	0.12	hour
				GF 120	12.00	Oz
PCA	June			PCA Fee	1.00	Acre
				Alion	3.50	FLOz
Pickup Truck Use	Nov		Pickup Truck - 1/2	Equipment Operator Labor	3.11	hours
ATV Use	Nov		ATV 4WD	Equipment Operator Labor	3.11	hours
Machine Harvest	Oct			Harvest-Mechanical	1.00	Acre
				Hand Harvest	1.75	Ton
Haul Fruit to Processor	Oct			Hauling	7.00	Ton