UNIVERSITY OF CALIFORNIA AGRICULTURE AND NATURAL RESOURCES
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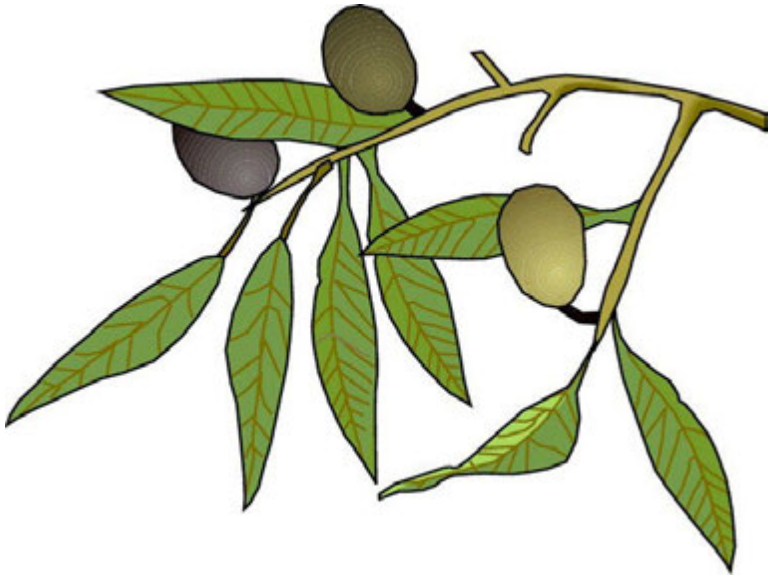
UC DAVIS DEPARTMENT OF AGRICULTURAL AND RESOURCE ECONOMICS

2023

SAMPLE COSTS TO PRODUCE

TABLE OLIVES



MANZANILLO VARIETY

In the CENTRAL VALLEY – DRIP IRRIGATION

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

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CENTRAL VALLEY - 2023

CONTENTS

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 January 2023 figures. A "Your Costs" column in Tables 1 and 2 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. You can contact the local UCCE Advisor through the 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.

ASSUMPTIONS

The following assumptions refer to tables 1 to 7 and pertain to sample costs to produce table olives in the Central Valley. Cultural practices and costs for table olive production vary considerably among growers within the region; therefore, many of the costs, practices, and materials in this study will not be applicable to every farm. The practices and inputs used in this cost study serve as a guide only.

Farm. The farm consists of 40 contiguous acres. Thirty-five acres are planted to olives and five acres include roads, irrigation systems, equipment yard, and shop. It is assumed that the orchard is already developed and producing. Therefore, establishment practices and materials are not described or individually costed in this study, although an establishment cost for the entire orchard is listed in the Non-cash Overhead sections in the appropriate tables. The owner farms the orchard.

Trees. The Manzanillo variety is the current table variety being planted in the area, although Sevillano is the olive cultivar that historically accounted for the majority of the acreage and currently makes up about 50 percent of the acreage in Glenn and Tehama Counties. In Butte County the predominant variety is Mission. Production costs should not vary significantly between varieties with the exception of chemical thinning costs that are rarely if ever used for Sevillano. The trees are planted at 11' X 22' spacing, 180 trees per acre. Although the orchard is considered Manzanillo about 5 percent of the trees are the Sevillano variety and serve as pollinators. Olive trees have a long production life. In this study, orchard life is estimated to be 40 years.

PRODUCTION CULTURAL PRACTICES AND MATERIAL INPUTS

Pruning. In this study, pruning is done in the spring every year. Prunings are stacked in the row middles and shredded. Pruning is critical to production and is dependent on several factors such as olive cultivar and planting density. Hand pruning the entire tree is normally done every other year in the spring. A much quicker and less comprehensive pruning of the canopy with a pole saw is done on alternating years to maintain an open tree canopy to help control black scale. For this study, an average of the labor costs for both pruning practices is used for annual pruning cost. This pruning operations are completed with a contract labor crew.

Irrigation. A mature Manzanillo orchard will use 48 acre-inches of water annually and this study assumes that 12 acre-inches is from effective rainfall. Total applied water through the irrigation system is 36 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.

Fertilization. Nitrogen as UAN-32 is split equally and applied every other month through the drip system from April through October. In this study, 100 pounds of nitrogen per acre is applied annually. Mature tree nutrition is determined by leaf analysis in July. 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.

Pest Management. The pesticides and rates mentioned in this cost study are listed in *UC Integrated Pest Management Guidelines, Olives.* For information on other pesticides available, pest identification, monitoring, and management visit the UC IPM website at 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.** 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.

Pest Control Adviser (PCA). Written recommendations are required for many pesticides and are made by licensed Pest Control Advisors. In addition, the PCA will monitor the field for agronomic problems including pests and nutrition. Growers may hire private PCA's or receive the service as part of a service agreement with an agricultural chemical and fertilizer company. PCA fees of $35 per acre have been included in this study.

Weeds/Orchard Floor Management. Weeds in the tree rows are controlled with herbicides. Three in-season strip spays using a contact herbicide (Roundup and Rely), are applied in May, July, and September. Pre-emergent herbicide Alion is applied in December as a dormant strip spray. In addition to shredding the prunings in the row middles in April, the middles are mowed 3 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.

Black scale, requires an occasional chemical treatment. In orchards where the trees are pruned adequately and do not allow the canopy to become dense, chemical control is seldom necessary. Treatment may be required following cool years or in orchards that have canopies that have become too crowded. Black scale has become more prevalent in recent years and a common insecticide treatment is Sevin (carbaryl). This study does not include any treatment for black scale.

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

Thinning. Chemical fruit thinning is usually done twelve to eighteen days after full bloom. Naphthalene acetic acid (Liqui-Stik) is applied in May or early June. Thinning is generally not needed every year, therefore this study includes a treatment once every two years with one-half of the cost allocated to the crop each year. Fruit thinning is needed when olives set fruit in large quantities. Thinning improves fruit size, quality, uniformity, and promotes regular bearing each year. Application timing is critical to achieve the best results. Fruit thinning is not common in the San Joaquin Valley due to lighter fruit set.

Harvest. Olives are hand harvested and in this study, a contractor harvests the crop. All costs for contracted harvest operations are on a tonnage basis. A charge of $650 per ton is used. This cost includes hauling to the cannery. Harvest costs in the San Joaquin Valley may be higher and may range from $700 to $750 per ton.

Yields. Manzanillo olives are assumed to be at full bearing from the eighth year on. The mature yield is estimated as the average annual yield over the remaining orchard life. Typical annual yields for olives vary greatly because olives are alternate bearing. A well-managed orchard can yield an annual average of 6 tons per acre compared to other orchards that may average 3 tons per acre. For this study, it is assumed the orchard will average 5 tons per acre.

Returns. An estimated price of $1,250 per ton of Manzanillo olives is used in this study. Returns, shown in Table 2, will vary and the yields and prices used in this study are estimated, based on current markets. See

Table 4 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. County pest control fees are paid by the grower though property taxes. Pest management districts include Tehama and Glenn Counties. Tehama County charges 1 cent per tree and Glenn County charges 4 cents per tree.

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 January, 2023.

Supervisor/Management Salaries. Management salaries are not included as a cash cost. Any returns above totalcosts 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 $4.10 and $3.70 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 January 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 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. Average value equals new cost plus salvage value divided by 2 on a per acre basis.

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. This is available to table olive growers for any unavoidable loss of production. Coverage levels are 75 percent of the approved average yield as established by verifiable production records from the orchard. The cost for a policy with 75 coverage is $137 per acre and is included this study. Actual insurance coverage is by unit, not by acre. A significant number of growers purchase crop insurance in this region. An 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, legal fees, 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 $18 per acre annually. The cost includes a double toilet, delivery, and three months of weekly service.

Regulatory Compliance Fees. Costs to comply with regulations such as CUPA (Certified Unified Program Agency), FSMA (Food Safety Modernization Act), and SGMA (Sustainable Groundwater Management Act). Costs will vary based on based on 3rd party audits and grower operations.

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

Salvage Value. Salvage value is an estimate of the remaining value of an investment at the end of its useful life. For farm machinery (tractors and implements), the remaining value is a percentage of the new cost of the investment (Boehlje and Eidman). The percent remaining value is calculated from equations developed by the American Society of Agricultural and Biological Engineers (ASABE) based on equipment type and years of life. The life in years is estimated by dividing the wear out life, as given by ASABE, by the annual hours of use in 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 5.

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. 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 January 2023.

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

Land. Bare ground with irrigation availability plantable to an olive orchard is valued at $8,000 per acre. For this study, the producing acreage estimated worth is; $23,000 per acre. It is the bare land value plus the establishment cost, ($18,000 + $5,000 = $23,000).

Field/Shop. There is no inventory of tools, this includes shop and field tools.

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

Irrigation System. For this study, water is delivered to the orchard from the district ditch or deep well. This part of the system is already in place and no charges are shown. The life of the irrigation system is estimated at 40 years. A pressurized (above ground double drip line system) is used in this orchard. A new 125 horsepower pump is installed to irrigate the 35 acres. The main, laterals, connectors and drip lines for the 35 acres are included in the irrigation system costs. The irrigation system is installed at planting. The irrigation system is considered an improvement to the property and is shown in the capital recovery sections in the tables. The installation labor is included in the system cost.

Establishment Cost. The cost to establish the orchard is used to determine non-cash overhead expenses, depreciation, and interest on investment for production years. The establishment cost is the sum of cash costs for land preparation, planting, trees, production expenses, and cash overhead for growing olive trees from planting until the end of the first year fruit is harvested. For this study, the 2016 establishment cost of $5,000 per acre or $175,000 for the 35-acre orchard is used. The 2016 establishment cost was not adjusted because the orchard system depicted in this study has not been planted in recent years. Establishment cost is depreciated beginning in the fourth year (first production year) over the remaining 37 of the 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.

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TABLE 1. COSTS PER ACRE TO PRODUCE TABLE OLIVES

CENTRAL VALLEY - 2023

Operation	Equipment Time (Hrs/A)	Labor Cost	Fuel	Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
			Cash and Labor Costs per Acre					
Cultural:								
Pruning & Sucker	0.00	0	0	0	0	868	868	
Shred Prunings	0.00	0	0	0	0	114	114	
Disease: Olive Knot 2X	0.50	17	8	4	125	0	155	
Fertigate: UAN-32	0.00	0	0	0	100	0	100	
Irrigate	0.00	18	0	0	675	0	693	
Weeds: Mow Middles 3X	0.80	28	13	6	0	0	47	
PCA	0.00	0	0	0	0	35	35	
Thinning Spray (Alt. Years)	0.13	4	2	1	112	0	120	
Weeds: In Season Strip Spray 3X	0.43	15	7	2	71	0	95	
Insects: Olive Fly 15X	0.40	14	1	1	117	0	133	
Weeds: Winter Strip Spray	0.25	9	3	1	51	0	64	
Pickup Truck Use	1.90	65	14	7	0	0	86	
ATV Use	1.90	65	7	2	0	0	75	
TOTAL CULTURAL COSTS	6.32	235	57	24	1,251	1,017	2,583	
Harvest:								
Hand Pick/Load/Haul	0.00	0	0	0	0	3,250	3,250	
TOTAL HARVEST COSTS	0.00	0	0	0	0	3,250	3,250	
Interest on Operating Capital at 8.50%							123	
TOTAL OPERATING COSTS/ACRE	6	235	57	24	1,251	4,267	5,956	
CASH OVERHEAD:								
Liability Insurance							14	
Office Expense							200	
Sanitation Fees							8	
Regulatory Compliance Fees							40	
Crop Insurance (75% Coverage)							137	
Property Taxes							276	
Property Insurance							20	
Investment Repairs							265	
TOTAL CASH OVERHEAD COSTS/ACRE							960	
TOTAL CASH COSTS/ACRE							6,916	
NON-CASH OVERHEAD:		Per Producing Acre		Annual Cost Capital Recovery				
Buildings		3,000		283			283	
Irrigation System- Double Drip		2,600		195			195	
Fuel Tank: 2-1000 GA		274		12			12	
Land - Olives		18,000		1,260			1,260	
Shop Tools		250		32			32	
Orchard Establishment		5,000		381			381	
Well/Pump/Filters		7,109		533			533	
Equipment		388		50			50	
TOTAL NON-CASH OVERHEAD COSTS		36,621		2,747			2,747	
TOTAL COSTS/ACRE							9,663	

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TABLE 2. 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
GROSS RETURNS					
Olives	5	Ton	1250.00	6,250	
TOTAL GROSS RETURNS	5	Ton		6,250	
OPERATING COSTS					
Custom:				**4,267**	
Hand Prune in Spring	1.00	Acre	868.00	868	
Shred Prunings	1.00	Acre	114.00	114	
PCA Fees	1.00	Acre	35.00	35	
Harvest Olives	5.00	Ton	650.00	3,250	
Water:				**675**	
Water	36.00	AcIn	18.75	675	
Herbicide:				**121**	
Roundup PowerMax	4.50	Pint	8.75	39	
Rely	36.00	FlOz	0.87	31	
Alion	3.50	FlOz	14.50	51	
Insecticide:				**117**	
GF 120	60.00	Oz	1.95	117	
Fertilizer:				**100**	
UAN-32	100.00	Lb N	1.00	100	
Fungicide:				**125**	
Kocide	16.00	Lb	7.80	125	
Thinning A:				**112**	
Liqua-stik	48.00	Oz	2.34	112	
Labor				**235**	
Equipment Operator Labor	7.58	hrs	28.60	217	
Irrigation Labor	0.70	hrs	25.74	18	
Machinery				**81**	
Fuel-Gas	6.11	gal	3.70	23	
Fuel-Diesel	8.29	gal	4.10	34	
Lube				8	
Machinery Repair				16	
Interest on Operating Capital @ 8.50%				123	
TOTAL OPERATING COSTS/ACRE				5,956	
TOTAL OPERATING COSTS/TON				1,191	
NET RETURNS ABOVE OPERATING COSTS				294	
CASH OVERHEAD COSTS					
Liability Insurance				14	
Office Expense				200	
Sanitation Fees				8	
Regulatory Compliance Fees				40	
Crop Insurance				137	
Property Taxes				276	
Property Insurance				20	
Investment Repairs				265	
TOTAL CASH OVERHEAD COSTS/ACRE				960	
TOTAL CASH OVERHEAD COSTS/TON				192	
TOTAL CASH COSTS/ACRE				6,916	
TOTAL CASH COSTS/TON				1,383	
NET RETURNS ABOVE CASH COSTS				-666	
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Buildings				283	
Irrigation System- Double Drip				195	
Fuel Tank: 2-1000 GA				12	
Land - Olives SV				1,260	
Shop Tools				32	
Orchard Establishment				381	
Well/Pump/Filters				533	
Equipment				50	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				2,747	
TOTAL NON-CASH OVERHEAD COSTS/TON				549	
TOTAL COST/ACRE				9,663	
TOTAL COST/TON				1,933	
NET RETURNS ABOVE TOTAL COST				-3,413	

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TABLE 3. MONTHLY COSTS PER ACRE TO PRODUCE TABLE OLIVES

CENTRAL VALLEY - 2023

	MAR 23	APR 23	MAY 23	JUN 23	JUL 23	AUG 23	SEP 23	OCT 23	NOV 23	DEC 23	JAN 24	FEB 24	Total
Cultural:													
Pruning & Sucker	868												868
Shred Prunings	114												114
Disease- Olive Knot 2X	77							77					155
Fertigate- UAN-32		25		25		25		25					100
Irrigate		59	87	106	115	115	115	96					693
Pests- Weeds- Mow Middles 3X		16		16		16							47
PCA			35										35
Thinning Spray (Alt. Years)			120										120
Weeds: In Season Strip Spray 3X			32		32		32						95
Insects- Olive Fly 15X				35	35	35	27						133
Weeds: Winter Strip Spray								64					64
Pickup Truck Use	7	7	7	7	7	7	7	7	7	7	7	7	86
ATV Use	6	6	6	6	6	6	6	6	6	6	6	6	75
TOTAL CULTURAL COSTS	1,073	113	287	195	195	204	187	276	13	13	13	13	2,583
Harvest:													
Hand Pick/Load/Haul								3,250					3,250
TOTAL HARVEST COSTS	0	0	0	0	0	0	0	3,250	0	0	0	0	3,250
Interest on Operating Capital @ 8.50%	8	8	10	12	13	15	16	41	0	0	0	0	122
TOTAL OPERATING COSTS/ACRE	1,080	121	297	207	208	219	203	3,567	13	13	13	13	5,955
CASH OVERHEAD													
Liability Insurance													14
Office Expense	25	25	25	25	25	25	25	25					200
Sanitation Fees													8
Regulatory Compliance Fees	5	5	5	5	5	5	5	5					40
Crop Insurance							137						137
Property Taxes					138							138	276
Property Insurance					10							10	20
Investment Repairs	22	22	22	22	22	22	22	22	22	22	22	22	265
TOTAL CASH OVERHEAD COSTS	52	52	52	52	200	52	211	52	22	22	22	170	960
TOTAL CASH COSTS/ACRE	1,132	173	349	259	409	271	414	3,619	35	35	35	183	6,915

UC COOPERATIVE EXTENSION-AGRICULTURAL AND RESOURCE ECONOMICS, UC DAVIS

TABLE 4. RANGING ANALYSIS - TABLE OLIVES

CENTRAL VALLEY - 2023

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

	YIELD(TON)						
	2.00	3.00	4.00	5.00	6.00	7.00	8.00
OPERATING COSTS/ACRE:							
Cultural	2,583	2,583	2,583	2,583	2,583	2,583	2,583
Harvest	1,300	1,950	2,600	3,250	3,900	4,550	5,200
Interest on Operating Capital @ 8.50%	109	114	118	123	128	132	137
TOTAL OPERATING COSTS/ACRE	3,993	4,647	5,302	5,956	6,611	7,266	7,920
TOTAL OPERATING COSTS/TON	1,996.29	1,549.06	1,325.45	1,191.28	1,101.83	1,037.94	990.03
CASH OVERHEAD COSTS/ACRE	960	960	960	960	960	960	960
TOTAL CASH COSTS/ACRE	4,952	5,607	6,261	6,916	7,571	8,225	8,880
TOTAL CASH COSTS/TON	2,476.07	1,868.91	1,565.34	1,383.19	1,261.76	1,175.02	1,109.97
NON-CASH OVERHEAD COSTS/ACRE	2,747	2,747	2,747	2,747	2,747	2,747	2,747
TOTAL COSTS/ACRE	7,699	8,354	9,008	9,663	10,318	10,972	11,627
TOTAL COSTS/TON	3,850.00	2,785.00	2,252.00	1,933.00	1,720.00	1,567.00	1,453.00

Net Return per Acre above Operating Costs for Table Olives

PRICE ($/ton)	YIELD (ton/acre)						
Olives	2.00	3.00	4.00	5.00	6.00	7.00	8.00
950.00	-2,093	-1,797	-1,502	-1,206	-911	-616	-320
1050.00	-1,893	-1,497	-1,102	-706	-311	84	480
1150.00	-1,693	-1,197	-702	-206	289	784	1,280
1250.00	-1,493	-897	-302	294	889	1,484	2,080
1350.00	-1,293	-597	98	794	1,489	2,184	2,880
1450.00	-1,093	-297	498	1,294	2,089	2,884	3,680
1550.00	-893	3	898	1,794	2,689	3,584	4,480

Net Return per Acre above Cash Costs for Table Olives

PRICE ($/ton)	YIELD (ton/acre)						
Olives	2.00	3.00	4.00	5.00	6.00	7.00	8.00
950.00	-3,052	-2,757	-2,461	-2,166	-1,871	-1,575	-1,280
1050.00	-2,852	-2,457	-2,061	-1,666	-1,271	-875	-480
1150.00	-2,652	-2,157	-1,661	-1,166	-671	-175	320
1250.00	-2,452	-1,857	-1,261	-666	-71	525	1,120
1350.00	-2,252	-1,557	-861	-166	529	1,225	1,920
1450.00	-2,052	-1,257	-461	334	1,129	1,925	2,720
1550.00	-1,852	-957	-61	834	1,729	2,625	3,520

Net Return per Acre above Total Costs for Table Olives

PRICE ($/ton)	YIELD (ton/acre)						
Olives	2.00	3.00	4.00	5.00	6.00	7.00	8.00
950.00	-5,799	-5,504	-5,208	-4,913	-4,618	-4,322	-4,027
1050.00	-5,599	-5,204	-4,808	-4,413	-4,018	-3,622	-3,227
1150.00	-5,399	-4,904	-4,408	-3,913	-3,418	-2,922	-2,427
1250.00	-5,199	-4,604	-4,008	-3,413	-2,818	-2,222	-1,627
1350.00	-4,999	-4,304	-3,608	-2,913	-2,218	-1,522	-827
1450.00	-4,799	-4,004	-3,208	-2,413	-1,618	-822	-27
1550.00	-4,599	-3,704	-2,808	-1,913	-1,018	-122	773

UC COOPERATIVE EXTENSION-AGRICULTURAL AND RESOURCE ECONOMICS, UC DAVIS

TABLE 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS

CENTRAL VALLEY - 2023

ANNUAL EQUIPMENT COSTS

Yr.	Description	Price	Yrs. Life	Salvage Value	Capital Recovery	Cash Overhead Insurance	Cash Overhead Taxes	Total
23	20 Gal Sprayer-ATV	624	10	110	81	0	4	85
23	55 HP 2WD Tractor	43,465	12	10,867	4,865	19	272	5,156
23	ATV 4WD	9,300	7	3,528	1,318	5	64	1,387
23	Mower - Flail 10'	11,800	10	2,087	1,529	5	69	1,603
23	Pickup Truck 1/2 T	35,000	7	13,277	4,960	17	241	5,219
23	Weed Sprayer 100 G	3,447	10	610	447	1	20	468
23	75HP 4WD Tractor	64,500	16	11,552	6,414	27	380	6,821
23	Orchard Sprayer 500 G	26,000	10	4,598	3,369	11	153	3,533
	TOTAL	194,136	-	46,628	22,982	85	1,204	24,271
	60% of New Cost*	116,482	-	27,977	13,789	51	722	14,563

*Used to reflect a mix of new and used equipment

ANNUAL INVESTMENT COSTS

Description	Price	Yrs. Life	Salvage Value	Capital Recovery	Cash Overhead Insurance	Cash Overhead Taxes	Cash Overhead Repairs	Total
INVESTMENT								
Buildings	120,000	20	0	11,327	43	600	2,400	14,370
Irrigation System- Double Drip	91,000	40	0	6,826	32	455	1,820	9,133
Fuel Tank: 2-1000 GA	10,975	20	21,975	500	12	165	220	896
Land - Olives SV	630,000	40	630,000	44,100	447	6,300	0	50,847
Shop Tools	10,000	10	2,000	1,279	4	60	200	1,543
Orchard Establishment	175,000	37	0	13,341	62	875	0	14,279
Well/Pump/Filters	248,800	40	0	18,662	88	1,244	4,976	24,971
TOTAL INVESTMENT	1,285,775	-	653,975	96,036	689	9,699	9,616	116,039

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	35	Acre	15.95	558
Office Expense	35	Acre	200	7,000
Sanitation Fees	35	Acre	8.00	280
Regulatory Compliance Fees	35	Acre	40.00	1,400
Crop Insurance	35	Acre	137.00	4,795

UC COOPERATIVE EXTENSION-AGRICULTURAL AND RESOURCE ECONOMICS, UC DAVIS

TABLE 6. HOURLY EQUIPMENT COSTS

CENTRAL VALLEY - 2023

Yr.	Description	Table Olives Hours Used	Total Hours Used	Cash Overhead Capital Recovery	Cash Overhead Insurance	Cash Overhead Taxes	Operating Lube & Repairs	Operating Fuel	Total Oper.	Total Costs/Hr.
23	20 Gal. Sprayer-ATV	14	150	0.32	0.00	0.01	0.17	0.00	0.17	0.50
23	55 HP 2WD Tractor	20	1000	2.92	0.01	0.16	3.56	11.07	14.63	17.73
23	ATV 4WD	81	285	2.77	0.01	0.14	1.23	3.70	4.93	7.85
23	Mower - Flail 10'	38	100	9.17	0.03	0.42	2.97	0.00	2.97	12.59
23	Pickup Truck 1/2 T	67	285	10.44	0.04	0.51	3.66	7.40	11.06	22.05
23	Weed Sprayer 100 G	24	150	1.79	0.01	0.08	0.92	0.00	0.92	2.79
23	75HP 4WD Tractor	72	1000	3.85	0.02	0.23	3.80	15.10	18.90	22.99
23	Orchard Sprayer 500 G	22	200	10.11	0.03	0.46	4.36	0.00	4.36	14.96

UC COOPERATIVE EXTENSION-AGRICULTURAL AND RESOURCE ECONOMICS, UC DAVIS

TABLE 7. OPERATIONS WITH EQUIPMENT & MATERIALS

CENTRAL VALLEY – 2023

Operation	Operation Month	Tractor	Implement	Labor Type/ Material	Rate/ acre	Unit
Pruning & Sucker	Mar			Hand Prune in Spring	1.00	Acre
Shred Prunings	Mar			Shred Prunnings	1.00	Acre
Disease: Olive Knot 2X	Mar	75HP 4WD Tractor	Orch.Sprayer 500 G	Equipment Operator Labor	0.30	hour
				Kocide	8.00	Lb
	Oct	75HP 4WD Tractor	Orch.Sprayer 500 G	Equipment Operator Labor	0.30	hour
				Kocide	8.00	Lb
Fertigate: UAN-32	Apr			Non-Machine Labor		
				UAN-32	25.00	Lb N
	June			UAN-32	25.00	Lb N
	Aug			UAN-32	25.00	Lb N
	Oct			UAN-32	25.00	Lb N
Irrigate	Apr			Irrigation Labor	0.10	hour
				Water	3.00	AcIn
	May			Irrigation Labor	0.10	hour
				Water	4.50	AcIn
	June			Irrigation Labor	0.10	hour
				Water	5.50	AcIn
	July			Irrigation Labor	0.10	hour
				Water	6.00	AcIn
	Aug			Irrigation Labor	0.10	hour
				Water	6.00	AcIn
	Sept			Irrigation Labor	0.10	hour
				Water	6.00	AcIn
	Oct			Irrigation Labor	0.10	hour
				Water	5.00	AcIn
Pests- Weeds- Mow	Apr	75HP 4WD Tractor	Mower - Flail 10'	Equipment Operator Labor	0.32	hour
	June	75HP 4WD Tractor	Mower - Flail 10'	Equipment Operator Labor	0.32	hour
	Aug	75HP 4WD Tractor	Mower - Flail 10'	Equipment Operator Labor	0.32	hour
PCA	May			PCA Fees	1.00	Acre
Thinning Spray	May	75HP 4WD Tractor	Orch.Sprayer 500 G	Equipment Operator Labor	0.15	hour
				Liqua-stik	48.00	Oz
Weeds: In Season Strip	May	75HP 4WD Tractor	Weed Sprayer 100 G	Equipment Operator Labor	0.17	hour
				Roundup PowerMax	1.50	Pint
				Rely	12.00	FlOz
	July	75HP 4WD Tractor	Weed Sprayer 100 G	Equipment Operator Labor	0.17	hour
				Roundup PowerMax	1.50	Pint
				Rely	12.00	FlOz
	Sept	75HP 4WD Tractor	Weed Sprayer 100 G	Equipment Operator Labor	0.17	hour
				Roundup PowerMax	1.50	Pint
				Rely	12.00	FlOz
Insects: Olive Fly 15X	June		ATV 4WD	Equipment Operator Labor	0.12	hour
				GF 120	16.00	Oz
			20 Gal Sprayer-ATV			
	July		ATV 4WD	Equipment Operator Labor	0.12	hour
				GF 120	16.00	Oz
			20 Gal Sprayer-ATV			
	Aug		ATV 4WD	Equipment Operator Labor	0.12	hour
				GF 120	16.00	Oz
			20 Gal Sprayer-ATV			
	Sept		ATV 4WD	Equipment Operator Labor	0.12	hour
				GF 120	12.00	Oz
			20 Gal Sprayer-ATV			
Weeds: Winter Strip Spray	Oct	55 HP 2WD Tractor	Weed Sprayer 100 G	Non-Machine Labor		
				Alion	3.50	FlOz
Pickup Truck Use	Oct		Pickup Truck 1/2 T	Non-Machine Labor		
ATV Use	Oct		ATV 4WD	Equipment Operator Labor	2.28	hours
Hand Pick/Load/Haul	Oct			Harvest Olives	5.00	Ton