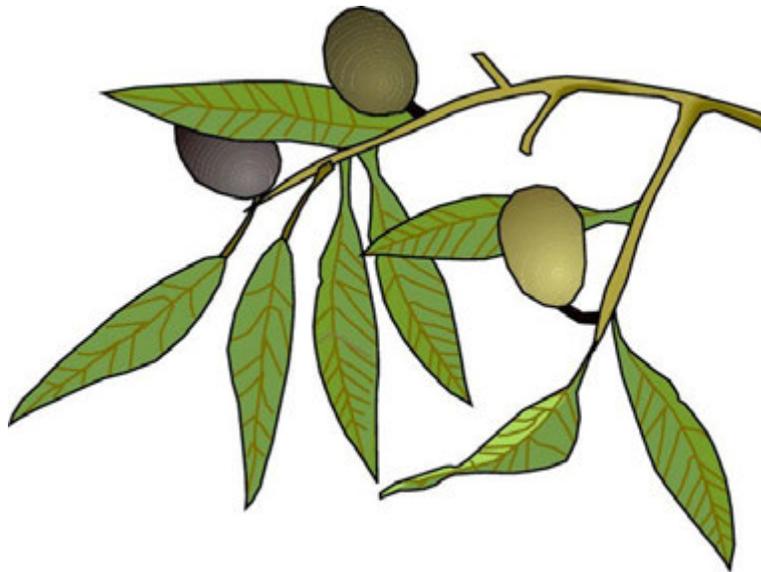

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION
AGRICULTURE AND NATURAL RESOURCES
AGRICULTURAL ISSUES CENTER

2016

SAMPLE COSTS TO PRODUCE

TABLE OLIVES



MANZANILLO VARIETY

In the SACRAMENTO VALLEY - DRIP IRRIGATION

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Sacramento Valley - 2016

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INTRODUCTION

The sample costs to produce table olives in the Sacramento 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-2016 figures. A “Your Costs” column in Tables 1 and 2 is provided for you to enter your estimated farm costs.

For an explanation of calculations used in the study refer to the section titled Assumptions. For more information contact Jeremy Murdock or Donald Stewart; University of California Agriculture and Natural Resources, Agricultural Issues Center, Department of Agricultural and Resource Economics at (530) 752-4651, jmmurdock@ucdavis.edu or destewart@ucdavis.edu.

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.

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ASSUMPTIONS

The following assumptions refer to tables 1 to 7 and pertain to sample costs to produce table olives in the Sacramento 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. **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.**

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 and in this study, the 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.

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. District water plus irrigation labor and the pumping cost for pressurizing the drip irrigation system accounts for the water cost of \$7.50 per acre-inch or \$90 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 monthly through the drip system from March 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. Two strip or spot sprays using a contact herbicide, (glyphosate) are applied in May and September. Pre- or early post emergent use herbicides, (Simazine and Diuron) are tank mixed with a contact herbicide and applied in November. In addition to shredding the prunings in the row middles in April, the middles are mowed four times from June 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) 19 to 20 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 19 to 20 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) damage 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.

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 \$500 per ton is used. This cost includes hauling to the cannery.

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 \$1,020 per ton of Manzanillo olives is used in this study so that a ranging analysis for different yields and price can be calculated. Returns, shown in Table 6, will vary and the yields and prices used in this study are estimated, based on current markets.

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 through 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 \$15.00 for machine operators and \$12.00 per hour non-machine labor. Adding 46 percent for the employers' share of federal and state payroll taxes, insurance, and other possible benefits for orchard crops (Code 0016) gives the labor rates shown of \$21.90 and \$17.52 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 2 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, 2016.

Management. Wages for management are not included as a cash overhead cost. The owner farms the orchard and the returns above total costs are considered a return to management.

Equipment Operating Costs. Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by ASAE. Fuel and lubrication costs are also determined by ASAE equations based on maximum PTO horsepower, and fuel type. Prices for on-farm delivery of diesel and gasoline are \$2.49 and \$2.77 per gallon, respectively. The cost includes a 9.25 percent sales tax (effective January 2016) on diesel fuel and 2.25 percent sales tax on gasoline. Gasoline also includes federal and state excise tax, which can be refunded for on-farm use when filing your income tax. The fuel, lube, and repair cost per acre for each operation in Table 2 is determined by multiplying the total hourly operating cost in Table 6 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 4.25 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 2016.

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 0.843 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 60 percent of the approved average yield as established by verifiable production records from the orchard. Actual insurance coverage is by unit, not by acre. A significant number of growers purchase crop insurance in this region. Due to variability in coverages no level is specified in this study. 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.

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 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 3.25 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 2016.

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

Land. Crop land with irrigation availability plantable to an olive orchard is valued at \$8,000 per acre. For this study, the producing acreage estimated worth is; \$13,000 per acre. It is the crop land value plus the establishment cost, $(\$8,000 + \$5,000 = \$13,000)$ Established olive orchards range in value from \$3,500 to \$13,000 per acre - the upper level price of land is due to recent almond and walnut plantings in the region.

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 2004 table olive orchard establishment cost is adjusted by using the USDA-NASS index to change the investment value to an approximate 2016 establishment cost. This cost is \$5,000 per acre or \$175,000 for the 35-acre orchard. Establishment cost is depreciated beginning in the fourth 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.

Acknowledgements. Appreciation is expressed to the UC Cooperative Extension, growers, packers, input suppliers, and other industry representatives who provided information, assistance, and expertise for this study.

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TABLE 1. COSTS PER ACRE TO PRODUCE TABLE OLIVES MEDIUM DENSITY
 SACRAMENTO VALLEY - 2016

Operation	Operation	Cash and Labor Costs per Acre						Total Cost	Your Cost
	Time (Hrs/A)	Labor Cost	Fuel	Lube & Repairs	Material Cost	Custom/Rent			
Cultural:									
Irrigate	0.00	14	0	0	270	0	284		
Fertigate- UAN-32	0.00	14	0	0	59	0	73		
Pests- Disease/Olive Knot	0.50	13	5	4	62	0	84		
Prune: Spring-Hand Crew	0.00	425	0	0	0	0	425		
Shred Prunings	0.27	7	3	2	0	0	11		
Pests- Insects- Olive Fly 20X	0.89	23	2	1	197	0	224		
Thinning Spray- Alt. Years	0.13	3	1	1	41	0	47		
Pests- Weeds/Strip Spray 3X	0.43	12	4	2	47	0	65		
Pests- Weeds/Mow Middles 4X	1.07	28	11	7	0	0	46		
PCA	0.00	0	0	0	0	35	35		
Pickup Truck Use	0.41	11	2	1	0	0	14		
ATV Use	0.41	11	1	0	0	0	12		
TOTAL CULTURAL COSTS	4.10	561	30	18	677	35	1,321		
Harvest:									
Hand Pick/Load/Haul	0.00	0	0	0	0	2,500	2,500		
TOTAL HARVEST COSTS	0.00	0	0	0	0	2,500	2,500		
Interest on Operating Capital at 4.25%							32		
TOTAL OPERATING COSTS/ACRE	4	561	30	18	677	2,535	3,853		
CASH OVERHEAD:									
Liability Insurance							16		
Office Expense							75		
Sanitation Fees							18		
Property Taxes							135		
Property Insurance							11		
Investment Repairs							108		
TOTAL CASH OVERHEAD COSTS/ACRE							363		
TOTAL CASH COSTS/ACRE							4,215		
NON-CASH OVERHEAD:									
		Per Producing Acre		Annual Cost		Capital Recovery			
Buildings		3,000		158		158			
Orchard Establishment		5,000		234		234			
Irrigation System- Double Drip		1,800		81		81			
Land - Olives SV		8,000		260		260			
Shop Tools		250		16		16			
Pruning Equipment		80		5		5			
Fuel Tank: 2-1000 GA		274		18		18			
Equipment		291		28		28			
TOTAL NON-CASH OVERHEAD COSTS		18,695		801		801			
TOTAL COSTS/ACRE							5,016		

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TABLE 2. COSTS AND RETURNS PER ACRE TO PRODUCE TABLE OLIVES MEDIUM DENSITY
 SACRAMENTO VALLEY – 2016

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Production	5	Ton	1,020	5,100	
TOTAL GROSS RETURNS	5	Ton		5,100	
OPERATING COSTS					
Custom:				2,535	
Harvest Olives	5.00	Ton	500.00	2,500	
PCA Fees	1.00	Acre	35.00	35	
Water:				270	
Water	36.00	AcIn	7.50	270	
Herbicide:				47	
Roundup Ultra Max	2.76	Pint	4.31	12	
Simazine 4L	7.00	Pint	3.40	24	
Diuron 4L	3.20	Pint	3.53	11	
Insecticide:				197	
GF 120	140.00	Oz	1.41	197	
Fertilizer:				59	
UAN-32	100.00	Lb N	0.59	59	
Fungicide:				62	
Kocide 3000	8.00	Lb	7.80	62	
Thinning Aid:				41	
Liqui-Stik	36.00	FlOz	1.15	41	
Labor				561	
Equipment Operator Labor	4.92	hrs	21.90	108	
Non-Machine Labor	25.85	hrs	17.52	453	
Machinery				48	
Fuel-Gas	2.11	gal	2.77	6	
Fuel-Diesel	9.72	gal	2.49	24	
Lube				5	
Machinery Repair				13	
Interest on Operating Capital @ 4.25%				32	
TOTAL OPERATING COSTS/ACRE				3,853	
TOTAL OPERATING COSTS/TON				771	
NET RETURNS ABOVE OPERATING COSTS				1,247	

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TABLE 3. MONTHLY COSTS PER ACRE TO PRODUCE TABLE OLIVES MEDIUM DENSITY
 SACRAMENTO VALLEY - 2016

	JAN 16	FEB 16	MAR 16	APR 16	MAY 16	JUN 16	JUL 16	AUG 16	SEP 16	OCT 16	NOV 16	Total
Cultural:												
Irrigate			17	24	36	45	51	49	47	17		284
Fertigate- UAN-32			9	9	9	9	9	9	9	9		73
Pests- Disease/Olive Knot			42							42		84
Prune: Spring-Hand Crew				425								425
Shred Prunings				11								11
Pests- Insects- Olive Fly 20X					22	45	45	45	45	22		224
Thinning Spray- Alt. Years					47							47
Pests- Weeds/Strip Spray 2X					10				10			20
Pests- Weeds/Mow Middles 4X						11	11	11	11			46
Pest- Weed/Pre-Emergence Strip Spray											45	45
PCA	3	3	3	3	3	3	3	3	3	3	3	35
Pickup Truck Use	1	1	1	1	1	1	1	1	1	1	1	14
ATV Use	1	1	1	1	1	1	1	1	1	1	1	12
TOTAL CULTURAL COSTS	6	6	74	475	129	116	122	120	128	96	50	1,321
Harvest:												
Hand Pick/Load/Haul										2,500		2,500
TOTAL HARVEST COSTS	0	0	0	0	0	0	0	0	0	2,500	0	2,500
Interest on Operating Capital @ 4.25%	0	0	0	2	2	3	3	4	4	13	0	32
TOTAL OPERATING COSTS/ACRE	6	6	74	477	132	119	125	123	132	2,609	50	3,853
CASH OVERHEAD												
Liability Insurance									16			16
Office Expense	7	7	7	7	7	7	7	7	7	7	7	75
Sanitation Fees									18			18
Property Taxes	135											135
Property Insurance	6								6			11
Investment Repairs	10	10	10	10	10	10	10	10	10	10	10	108
TOTAL CASH OVERHEAD COSTS	157	17	17	17	17	17	17	17	57	17	17	363
TOTAL CASH COSTS/ACRE	163	22	91	494	148	135	141	140	188	2,626	67	4,216

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TABLE 4. RANGING ANALYSIS - TABLE OLIVES MEDIUM DENSITY
 SACRAMENTO VALLEY - 2016

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

	YIELD (TONS)						
	2.00	3.00	4.00	5.00	6.00	7.00	8.00
OPERATING COSTS/ACRE:							
Cultural	1,321	1,321	1,321	1,321	1,321	1,321	1,321
Harvest	1,000	1,500	2,000	2,500	3,000	3,500	4,000
Interest on Operating Capital @ 4.25%	26	28	30	32	34	35	37
TOTAL OPERATING COSTS/ACRE	2,347	2,849	3,351	3,852	4,354	4,856	5,358
TOTAL OPERATING COSTS/TON	1,173.56	949.63	837.67	770.49	725.70	693.71	669.72
CASH OVERHEAD COSTS/ACRE	363	363	363	363	363	363	363
TOTAL CASH COSTS/ACRE	2,710	3,211	3,713	4,215	4,717	5,219	5,720
TOTAL CASH COSTS/TON	1,354.86	1,070.50	928.31	843.01	786.13	745.51	715.04
NON-CASH OVERHEAD COSTS/ACRE	801	801	801	801	801	801	801
TOTAL COSTS/ACRE	3,510	4,012	4,514	5,016	5,517	6,019	6,521
TOTAL COSTS/TON	1,755.00	1,337.00	1,128.00	1,003.00	920.00	860.00	815.00

Net Return per Acre above Operating Costs for Table Olives Medium Density

PRICE (\$/ton)	YIELD (Tons/acre)						
Production	2.00	3.00	4.00	5.00	6.00	7.00	8.00
720.00	-907	-689	-471	-253	-34	184	402
820.00	-707	-389	-71	247	566	884	1,202
920.00	-507	-89	329	747	1,166	1,584	2,002
1020.00	-307	211	729	1,247	1,766	2,284	2,802
1120.00	-107	511	1,129	1,747	2,366	2,984	3,602
1220.00	93	811	1,529	2,247	2,966	3,684	4,402
1320.00	293	1,111	1,929	2,747	3,566	4,384	5,202

Net Return per Acre above Cash Costs for Table Olives Medium Density

PRICE (\$/ton)	YIELD (Tons/acre)						
Production	2.00	3.00	4.00	5.00	6.00	7.00	8.00
720.00	-1,271	-1,053	-834	-616	-398	-180	39
820.00	-1,071	-753	-434	-116	202	520	839
920.00	-871	-453	-34	384	802	1,220	1,639
1020.00	-671	-153	366	884	1,402	1,920	2,439
1120.00	-471	147	766	1,384	2,002	2,620	3,239
1220.00	-271	447	1,166	1,884	2,602	3,320	4,039
1320.00	-71	747	1,566	2,384	3,202	4,020	4,839

Net Return per Acre above Total Costs for Table Olives Medium Density

PRICE (\$/ton)	YIELD (Tons/acre)						
Production	2.00	3.00	4.00	5.00	6.00	7.00	8.00
720.00	-2,070	-1,852	-1,634	-1,416	-1,197	-979	-761
820.00	-1,870	-1,552	-1,234	-916	-597	-279	39
920.00	-1,670	-1,252	-834	-416	3	421	839
1020.00	-1,470	-952	-434	84	603	1,121	1,639
1120.00	-1,270	-652	-34	584	1,203	1,821	2,439
1220.00	-1,070	-352	366	1,084	1,803	2,521	3,239
1320.00	-870	-52	766	1,584	2,403	3,221	4,039

UC COOPERATIVE EXTENSION-AGRICULTURAL ISSUES CENTER
TABLE 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
 SACRAMENTO VALLEY - 2016

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Years Life	Salvage Value	Capital Recovery	Cash Overhead		Total
						Insurance	Taxes	
16	ATV 4WD	8,500	7	3,224	960	5	59	1,023
16	Weed Sprayer 100 G	3,447	10	610	357	2	20	379
16	Mower - Flail 10'	11,800	10	2,087	1,221	6	69	1,296
16	Orch. Sprayer 500 G	26,000	10	4,598	2,691	13	153	2,856
16	Pickup Truck 1/2 T	28,000	7	10,621	3,161	16	193	3,370
16	75HP 4WD Tractor	58,000	16	10,388	4,201	29	342	4,572
16	20 Gal Sprayer-ATV	624	10	110	65	0	4	69
TOTAL		136,371	-	31,639	12,654	71	840	13,565
60% of New Cost*		81,823	-	18,983	7,593	42	504	8,139

*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	30	0	6,322	51	600	2,400	9,372
Orchard Establishment	175,000	37	0	8,198	74	875	0	9,147
Irrigation System- Double Drip	63,000	40	0	2,837	27	315	1,260	4,438
Land - Olives SV	320,000	40	320,000	10,400	270	3,200	0	13,870
Shop Tools	10,000	20	1,000	652	5	55	200	911
Pruning Equipment	3,197	20	320	208	1	18	64	291
Fuel Tank: 2-1000 GA	10,975	20	768	727	5	59	220	1,011
TOTAL INVESTMENT	702,172	-	322,088	29,343	432	5,121	4,144	39,040

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	40	Acre	15.95	638
Office Expense	35.00	Acre	75	2,625
Sanitation Fees	35.00	Acre	18.43	645

UC COOPERATIVE EXTENSION-AGRICULTURAL ISSUES CENTER
TABLE 6. HOURLY EQUIPMENT COSTS
 SACRAMENTO VALLEY - 2016

Yr	Description	Table Olives Medium Density		Total Hours Used	Capital Recovery	Cash Overhead		Operating		Total Costs/Hr.
		Hours Used	Total Hours Used			Insurance	Taxes	Lube & Repairs	Fuel	
16	ATV 4WD	45	285	2.02	0.01	0.12	1.05	2.77	3.82	5.97
16	Weed Sprayer 100 G	15	150	1.43	0.01	0.08	0.94	0.00	0.94	2.45
16	Mower - Flail 10'	47	100	7.33	0.04	0.42	3.12	0.00	3.12	10.90
16	Orch. Sprayer 500 G	22	200	8.07	0.04	0.46	4.56	0.00	4.56	13.12
16	Pickup Truck 1/2 T	14	285	6.65	0.03	0.41	2.92	5.54	8.46	15.55
16	75HP 4WD Tractor	92	1000	2.52	0.02	0.21	2.90	9.17	12.08	14.82
16	20 Gal Sprayer-ATV	31	150	0.26	0.00	0.01	0.17	0.00	0.17	0.44

UC COOPERATIVE EXTENSION-AGRICULTURAL ISSUES CENTER
TABLE 7. OPERATIONS WITH EQUIPMENT & MATERIALS
 SACRAMENTO VALLEY – 2016

Operation	Operation Month	Tractor	Implement	Labor Type/ Material	Rate/ acre	Unit
Irrigate	Mar			Non-Machine Labor	0.10	hour
				Water	2.00	AcIn
	Apr			Non-Machine Labor	0.10	hour
				Water	3.00	AcIn
	May			Non-Machine Labor	0.10	hour
				Water	4.50	AcIn
	June			Non-Machine Labor	0.10	hour
				Water	5.75	AcIn
	July			Non-Machine Labor	0.10	hour
				Water	6.50	AcIn
Fertigate- UAN-32	Aug			Non-Machine Labor	0.10	hour
				Water	6.25	AcIn
	Sept			Non-Machine Labor	0.10	hour
				Water	6.00	AcIn
	Oct			Non-Machine Labor	0.10	hour
				Water	2.00	AcIn
	Mar			Non-Machine Labor	0.10	hour
				UAN-32	12.50	Lb N
	Apr			Non-Machine Labor	0.10	hour
				UAN-32	12.50	Lb N
May			Non-Machine Labor	0.10	hour	
			UAN-32	12.50	Lb N	
June			Non-Machine Labor	0.10	hour	
			UAN-32	12.50	Lb N	
July			Non-Machine Labor	0.10	hour	
			UAN-32	12.50	Lb N	
Aug			Non-Machine Labor	0.10	hour	
			UAN-32	12.50	Lb N	
Sept			Non-Machine Labor	0.10	hour	
			UAN-32	12.50	Lb N	
Oct			Non-Machine Labor	0.10	hour	
			UAN-32	12.50	Lb N	
Pests- Disease/Olive	Mar	75HP 4WD Tractor	Orch.Sprayer 500 G	Equipment Operator Labor	0.30	hour
				Kocide	4.00	Lb
	Oct	75HP 4WD Tractor	Orch.Sprayer 500 G	Equipment Operator Labor	0.30	hour
				Kocide	4.00	Lb
Prune: Spring Hand	Apr			Non-Machine Labor	24.25	hours
	Apr	75HP 4WD Tractor	Mower - Flail 10'	Equipment Operator Labor	0.32	hour
Shred Prunings	May		ATV 4WD	Equipment Operator Labor	0.11	hour
				GF 120	14.00	Oz
Pests- Insects			20 Gal Sprayer-ATV	alt rows weekly		
				start mid-May		
	June		ATV 4WD	Equipment Operator Labor	0.21	hour
				GF 120	28.00	Oz
			20 Gal Sprayer-ATV	alt rows weekly		
				start mid-May		
	July		ATV 4WD	Equipment Operator Labor	0.21	hour
				GF 120	28.00	Oz
			20 Gal Sprayer-ATV	alt rows weekly		
				start mid-May		
	Aug		ATV 4WD	Equipment Operator Labor	0.21	hour
				GF 120	28.00	Oz
			20 Gal Sprayer-ATV	alt rows weekly		
				start mid-May		
	Sept		ATV 4WD	Equipment Operator Labor	0.21	hour
				GF 120	28.00	Oz
			20 Gal Sprayer-ATV	alt rows weekly		
				start mid-May		
	Oct		ATV 4WD	Equipment Operator Labor	0.11	hour
				GF 120	14.00	Oz
			20 Gal Sprayer-ATV	alt rows weekly		
				start mid-May		
Thinning Spray- Alt.	May	75HP 4WD Tractor	Orch.Sprayer 500 G	Equipment Operator Labor	0.15	hour
				Liqui-Stik	36.00	FIOz
Pests- Weeds/Strip S	May	75HP 4WD Tractor	Weed Sprayer 100 G	Equipment Operator Labor	0.17	hour
				Roundup Ultra Max	0.92	Pint
	Sept	75HP 4WD Tractor	Weed Sprayer 100 G	Equipment Operator Labor	0.17	hour
				Roundup Ultra Max	0.92	Pint
Pests- Weeds/Mow Mid	June	75HP 4WD Tractor	Mower - Flail 10'	Equipment Operator Labor	0.32	hour

UC COOPERATIVE EXTENSION-AGRICULTURAL ISSUES CENTER
TABLE 7. CONTINUED
 SACRAMENTO VALLEY - 2016

Operation	Operation Month	Tractor	Implement	Labor Type/ Material	Rate/ acre	Unit
	July	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
	Sept	75HP 4WD Tractor	Mower - Flail 10'	Equipment Operator Labor	0.32	hour
Pest- Weed/Residual	Nov	75HP 4WD Tractor	Weed Sprayer 100 G	Equipment Operator Labor	0.17	hour
				Roundup Ultra Max	0.92	Pint
				Simazine 4L	7.00	Pint
				Diuron 4L	3.20	Pint
PCA	Nov			PCA Fees	1.00	Acre
Pickup Truck Use	Nov		Pickup Truck 1/2 T	Non-Machine Labor		
ATV Use	Nov		ATV 4WD	Equipment Operator Labor	0.49	hour
Hand Pick/Load/Haul	Oct			Harvest Olives	5.00	Ton