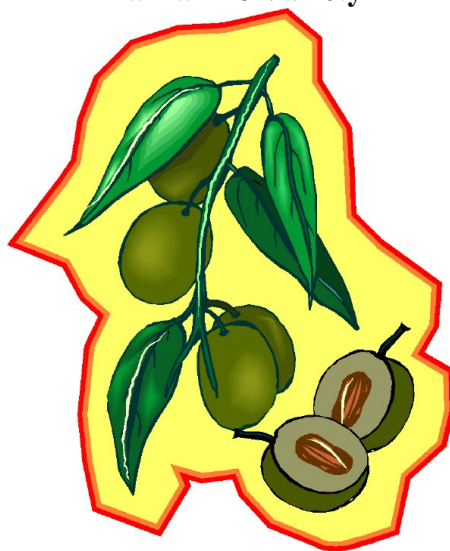

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2004

SAMPLE COSTS
TO ESTABLISH AND PRODUCE

TABLE OLIVES

Manzanillo Variety



SACRAMENTO VALLEY – Glenn/Tehama Counties
Micro-Sprinkler Irrigation

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INTRODUCTION

Sample costs to establish an olive orchard and produce table olives in the Sacramento Valley are presented in this study. This study is intended as a guide only, and can be used to make production decisions, determine potential returns, prepare budgets and evaluate production loans. Practices described are based on production practices considered typical for the crop and area, but will not apply to every situation. Sample costs for labor, materials, equipment and custom services are based on current figures. A blank column, “Your Costs”, in Tables 1 and 2 is provided for your convenience.

The hypothetical farm operation, production practices, overhead, and calculations are described under the assumptions. For additional information or an explanation of the calculations used in the study call the Department of Agricultural and Resource Economics, University of California, Davis, 530-752-2414 or your local UC Cooperative Extension office.

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Sample Cost of Production Studies for many commodities are available and can be requested through the Department of Agricultural and Resource Economics, UC Davis, 530-752-2414. Current studies can be obtained from selected county UC Cooperative Extension offices or downloaded from the department website at <http://coststudies.ucdavis.edu>.

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ASSUMPTIONS

The assumptions refer to Tables 1 to 9 and pertain to sample costs to establish an olive orchard and produce olives in the Sacramento Valley – Glenn and Tehama counties. Practices described represent production practices and materials considered typical of a well-managed orchard in the region. Costs, materials, and practices in this study will not apply to all situations. Establishment and cultural practices vary among growers within the region. **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 and farmstead. The owner farms the orchard.

Trees. Although Sevillano is the olive variety that historically accounted for the majority of the acreage and currently makes up about 50% of the acreage in Glenn and Tehama Counties, the Manzanillo is the current table variety being planted in the area and used in this study. Establishment and 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 22' X 22' spacing, 90 trees per acre. Olive trees have a long production life and in this study, the life is estimated to be 40 years.

Orchard Establishment Cultural Practices and Material Inputs

Site Preparation. The orchard is established on ground previously leveled for flood irrigated crops. The land is assumed to be well drained and either a class II or III soil. Land preparation begins with deep ripping from 2 to 4 feet deep to break up any underlying hardpan that would affect root penetration and water infiltration. The ground is disced three times and landplaned to smooth the surface. Custom operators do all operations that prepare the orchard for planting in the year prior to planting. However, for this study, these costs are included with those incurred in the first year as shown in Table 1.

Planting. Planting the orchard begins with marking tree sites with a small stake. Then holes are dug and the trees planted. In a single pass, the trunks are wrapped with tree guards for sunburn and herbicide protection, a 6-foot X 2-inch X 2-inch stake is driven in the ground next to the tree and the young tree is tied to the stake. The cost includes the labor, tree guards, stake and tying twine. In the second year, one tree per acre will be replanted.

Training/Pruning. Training, which includes some pruning, and suckering begins the first year. Regular pruning begins in the spring (April) of the fourth year. Pruning in this study is done by grower labor, although it is a common practice to hire contract labor.

Irrigation. District water, irrigation labor and the pumping cost for pressurizing the irrigation system account for the water cost of \$3.82 per acre-inch or \$45.84 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. No assumption is made about effective rainfall. The amount of water applied to the orchard during the establishment period varies each year and is shown in Table A.

Year	Acre-feet/year
1	0.5
2	1.0
3	1.5
4	2.0
5+	4.0

Fertilization. Nitrogen is the major nutrient required for proper tree growth and optimum yields. Nitrogen fertilizer is applied at increasing rates during orchard establishment. UN32 fertilizer is applied through the micro-sprinkler system in March of the first year and in equally split amounts in March and June during the subsequent years.

Table B. Applied nitrogen (N)

Year	lbs N/tree	lbs N/acre
1	0.06	5
2	0.20	18
3	0.50	45
4	0.70	63
5	1.10	99
6	1.30	117
7+	1.50	135

Orchard Floor Management. Chemical weed control in the orchard begins in spring of the first year with Roundup, a foliar herbicide, applied as a spot spray four times and two times in subsequent years. In the late winter (December) of the first and second years a residual/contact herbicide mix (Goal, Surflan, Roundup) is sprayed down the tree row (8-foot strip). Beginning in the third year a single herbicide (Princep) is sprayed on the tree row in late winter.

The middles or centers are mowed three times during the first three years and six times thereafter. Control of weeds is important in young orchards so that trees are not stressed due to competition for water and nutrients.

Disease Management. During the developmental years, pest and disease controls are minimal. Peacock spot and olive knot are major diseases that infect leaves and shoots, causing defoliation and shoot death. In this study, copper (Kocide) is used to prevent peacock spot and olive knot. It is applied in the fall of the first year, and in the spring and fall in subsequent years.

Insect Management. Except for the olive fruit fly, there are usually no insect problems that need control during orchard establishment. Beginning in the third year, eight pesticide (GF 120) treatments are made during the growing season from July through harvest in October. The olive fruit fly is a relative new pest to California that has caused economic damage in its historic range. Because most olives grown in California are destined for table fruit, processors will not tolerate olive fruit fly injury; therefore, treatments for the fly are made in this study. It is hoped that ongoing research will lead to controls applied only when needed, thereby reducing applications and costs.

Occasional chemical control may be needed for black scale, but usually it can be controlled by pruning to open up canopies and increase heat mortality of the insect.

Production Cultural Practices and Material Inputs

Pruning. In this study, pruning is done in the spring by hand every other year. Since pruning is performed on a bi-annual basis, one-half of the cost incurred is included each 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.

Irrigation. District water at \$2.16 per acre-inch, plus irrigation labor and the pumping cost at \$1.66 per acre-inch for pressurizing the micro-sprinkler irrigation system accounts for the water cost of \$3.82 per acre-inch or \$45.84 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. No assumption is made about effective rainfall.

Fertilization. Nitrogen as UN32 is split equally and applied through the micro sprinkler system in March and June. Mature tree nutrition is determined by leaf analysis in July.

Pest Management. The pesticides and rates mentioned in this cost study are listed in *UC Integrated Pest Management Guidelines, Olives*. For more information on other pesticides available, pest identification, monitoring, and management visit the above UC IPM website at www.ipm.ucdavis.edu. For information and pesticide use permits, contact the local county agricultural commissioner's office. Many pesticides require or suggest the use of various adjuvants, but these costs are not included in the 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. A PCA cost is not allocated in this study.

Weeds/Orchard Floor Management. Weeds in the tree rows (an eight foot strip) are controlled with herbicides. A residual herbicide (Princep) is applied in the fall (October). Two spot sprays using a foliar herbicide (Roundup) are applied each year during the growing season. Vegetation in the row middles is mowed six times - April through September.

Insects. Treatment for the olive fruit fly in a mature orchard is the same as for a young orchard. Beginning in July through harvest in October, eight pesticide (GF 120) applications are made for control of the olive fruit fly.

Black scale, an insect pest, requires an occasional chemical treatment. In orchards where the trees that are pruned adequately and not allowed to become dense, chemical control is seldom necessary. Treatment may be required following cool years or in orchards that have become too dense. This study does not include any treatment for black scale.

Disease. The fungal disease, peacock spot and the bacterial disease, olive knot damage leaves, shoots, and branches. Their prevention requires two copper (Kocide) sprays - the first in March or April for olive knot and the second following harvest and prior to fall rains for peacock spot. Costs in the first few years will vary due to the difference in tree size, because less total material is applied to the young trees.

Thinning. Chemical fruit thinning is usually done two to two and one-half weeks after full bloom. Naphthalene acetic acid (Liqui-Stik) is applied in May or early June beginning in the fifth season. 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 once olives begin setting 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. Harvest starts in the third year after the orchard is planted. 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 \$275 per ton is used.

Yields. As noted in the previous section, Manzanillo olives begin bearing an economic crop in the third year and yield maturity is reached in the eighth year. The mature yield is estimated as the average annual yield over the remaining orchard life. Typical annual yields for olives are measured in tons per acre and are shown in Table C.

Year	Tons per acre
3	0.50
4	1.50
5	2.00
6	3.00
7	4.00
8+	5.00

Returns. An estimated price of \$425 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.

Pickup/ATV. The grower uses the pickup for business and personal use. It is assumed that 4,000 miles are for business use. The All Terrain Vehicle (ATV) is used for inspecting and monitoring the orchard. 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. Labor rates of \$10.58 per hour for machine operators and \$9.52 for general labor includes payroll overhead of 41%. The basic hourly wages are \$7.50 for machine operators and \$6.75 for general labor. The overhead includes the employers' share of federal and California state payroll taxes, workers' compensation insurance (code 0016), and a percentage for other possible benefits. Workers' compensation insurance costs will vary among growers, but for this study the cost is based upon the average industry final rate as of January 1, 2004 (California Department of Insurance). Labor for operations involving machinery are 20% 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.

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. Additional management costs ranging from \$75 to \$125 per acre may occur if practices are contracted.

Equipment Operating Costs. Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by the American Society of Agricultural Engineers (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 \$1.45 and \$1.88 per gallon, respectively. The fuel prices are a January 2004 average based on four California delivery locations plus \$0.24 per gallon, which is one-half the high – low price range for regular gasoline in 2003 from the California State Automobile Association Monthly Survey. The cost includes a 2.25% sales tax (effective September 2001) on diesel fuel and 7.25% 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 the “Cost Per Acre to Produce” table is determined by multiplying the total hourly operating cost in the “Hourly Equipment Costs” table for each piece of equipment used from the Operation Time (Hrs/A) column by the hours per acre. Tractor time is 10% 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 6.89% 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.

Risk. The risks associated with producing and marketing table olives should not be minimized. While this study makes every effort to model a production system based on typical, real world practices, it cannot fully represent financial, agronomic and market risks, which affect the profitability and economic viability of table olive production. A market channel should be determined before table olives are planted and brought into production. Though not used in this study, crop insurance is a risk management tool available to growers through the Farm Service Agency (FSA) office.

Cash Overhead Costs

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% 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% 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 provides coverage for property loss and is charged at 0.676% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$516 for the entire farm.

Office Expense. Office and business expenses are estimated at \$142.86 per 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 for the orchard and cost the farm \$218 annually. This cost includes delivery and servicing of toilets.

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

Non-Cash Overhead Costs

Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments.

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

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 Engineers (ASAE) based on equipment type and years of life. The life in years is estimated by dividing the wear out life, as given by ASAE by the annual hours of use in this operation. For other investments including irrigation systems, buildings, and miscellaneous equipment, the value at the end of its useful life is zero. The salvage value for land is the purchase price because land does not depreciate. The purchase price and salvage value for equipment and investments are shown in the tables.

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

Interest Rate. The interest rate of 6.23% used to calculate capital recovery cost is the USDA-ERS's ten-year average of California's agricultural sector long-run rate of return to production assets from current income. It is used to reflect the long-term realized rate of return to these specialized resources that can only be used effectively in the agricultural sector.

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

Land. Land is valued at \$3,000 per acre. Because only 35 of the 40 acres are planted with olives, the land is valued at \$3,429 per producing acre.

Field/Shop. This includes shop and field tools.

Fuel Tanks. A single 100-gallon fuel tank using gravity feed is on a metal stands. The tank is setup in a cement containment pad that meets federal, state, and county regulations.

Irrigation System. The micro-sprinklers are laid out prior to planting and the labor cost is included in the system cost. The irrigation system consists of a pump, filtration and pressure system connected to a micro-sprinkler system.

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. The *Accumulated Net Cash Cost/Acre* in the third year shown in Table 1 represents the establishment cost per acre. For this study, this cost is \$3,068 per acre or \$107,380 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% 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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For information concerning the above mentioned University of California publications contact UC DANR Communications Services (1-800-994-8849) or your local county Cooperative Extension office.

UC COOPERATIVE EXTENSION
Table 1. SAMPLE COSTS PER ACRE TO ESTABLISH AN OLIVE ORCHARD
 SACRAMENTO VALLEY - GLENN & TEHAMA COUNTIES 2004

Year	Cost Per Acre		
	1st	2nd	3rd
Tons Per Acre			0.50
Planting Costs:			
Land Preparation - Subsoil	175		
Land Preparation - Level (Landplane)	25		
Land Preparation - Disc 3X	72		
Trees: 90 per acre (replant 2% in 2nd yr)	450	5	
Survey, Mark, Dig Holes & Plant	167	2	
Wrap, Stake & Tie Trees	149	23	
TOTAL PLANTING COSTS	1,038	30	
Cultural Costs:			
Pruning And Suckering	20	38	38
Fertilizer: Nitrogen (UN32)	2	6	15
Weed: Mow Centers 3X Yr 1-2, 6X Yr 3+	19	19	45
Weed: Tree Row Winter Yr 1-2 (Goal, Surflan, Roundup), Yr 3 (Princep)	76	76	10
Weed: Tree Row - Spot Spray 4X Yr 1, 2X Yr 2+ (Roundup)	45	22	22
Irrigate	42	63	88
Insect: Olive Fruit Fly (GF 120) 8X			81
Disease: Olive Knot, Peacock Spot (Kocide) 1X Yr 1, 2X Yr 2+	12	25	39
Pickup Truck Use	50	50	50
ATV Use	43	43	43
Leaf Analysis	2	2	2
TOTAL CULTURAL COSTS	310	344	433
Harvest Costs:			
Hand Pick			138
TOTAL HARVEST COSTS			138
Interest On Operating Capital @ 6.89%	82	8	12
TOTAL OPERATING COSTS/ACRE	1,430	382	583
Cash Overhead Costs:			
Office Expense	143	143	143
Sanitation Fees	6	6	6
Liability Insurance	15	15	15
Property Taxes	54	54	53
Property Insurance	37	37	36
Investment Repairs	41	41	41
TOTAL CASH OVERHEAD COSTS	296	296	294
TOTAL CASH COSTS/ACRE	1,726	678	877
INCOME/ACRE FROM PRODUCTION			213
NET CASH COSTS/ACRE FOR THE YEAR	1,726	678	665
ACCUMULATED NET CASH COSTS/ACRE	1,726	2,404	3,068

UC COOPERATIVE EXTENSION

Table 1. continued

Year	Cost Per Acre		
	1st	2nd	3rd
Dry Tons Per Acre			0.50
Non-Cash Overhead Costs (Capital Recovery):			
Shop Building	53	53	53
Irrigation System Micro-Sprinkler	107	107	107
Shop/Field Tools	11	11	11
Fuel Tank	4	4	4
Land	214	214	214
Equipment	181	181	182
TOTAL NON-CASH OVERHEAD	570	570	571
TOTAL COST/ACRE FOR THE YEAR	2,296	1,248	1,448
INCOME/ACRE FROM PRODUCTION			213
TOTAL NET COST/ACRE FOR THE YEAR	2,296	1,248	1,236
TOTAL ACCUMULATED NET COST/ACRE	2,296	3,544	4,779

UC COOPERATIVE EXTENSION
Table 2. COSTS PER ACRE TO PRODUCE OLIVES
 SACRAMENTO VALLEY – 2004

Operation	Cash and Labor Costs per Acre						
	Operation Time (Hrs/A)	Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent	Total Cost	Your Cost
Cultural:							
Fertilizer: Nitrogen (UN32)	0.10	1	0	42	0	43	
Irrigate	2.00	19	0	183	0	202	
Mow Centers - 6X	2.09	27	19	0	0	45	
Pruning & Sucker 1X/2Yrs	15.00	143	0	0	0	143	
Brush Disposal	0.37	14	3	0	0	17	
Disease: Peacock Spot/Olive Knot - 2X (Kocide)	0.50	6	4	58	0	68	
Weed: Spot Spray (Roundup)	0.67	8	5	12	0	26	
Thinning: 1X/2 Yrs (Liqui-Stik)	0.13	2	1	44	0	47	
Insect: Olive Fly - 8X (GF 120)	0.40	5	1	75	0	81	
Weed: Winter Strip (Princep)	0.25	3	2	5	0	10	
Pickup Truck Use	2.28	29	21	0	0	50	
ATV Use	2.86	36	6	0	0	43	
Leaf Analysis	0.06	1	0	0	2	2	
TOTAL CULTURAL COSTS	26.71	294	61	421	2	778	
Harvest:							
Pick Fruit	0.00	0	0	0	1,375	1,375	
TOTAL HARVEST COSTS	0.00	0	0	0	1,375	1,375	
Interest on operating capital @ 6.89%						29	
TOTAL OPERATING COSTS/ACRE		294	61	421	1,377	2,182	
CASH OVERHEAD:							
Office Expense						143	
Sanitation Fees						6	
Liability Insurance						15	
Property Taxes						68	
Property Insurance						46	
Investment Repairs						41	
TOTAL CASH OVERHEAD COSTS						319	
TOTAL CASH COSTS/ACRE						2,500	
NON-CASH OVERHEAD:							
Investment		Per producing Acre		-- Annual Cost -- Capital Recovery			
Micro-Sprinkler Irrigation System		1,200		107		107	
Land		3,429		214		214	
Orchard Establishment		3,068		214		214	
Fuel Tank: 1 - 100 Gallon		43		4		4	
Buildings		714		53		53	
Shop/Field Tools		86		11		11	
Equipment		1,309		153		153	
TOTAL NON-CASH OVERHEAD COSTS		9,848		755		755	
TOTAL COSTS/ACRE						3,255	

UC COOPERATIVE EXTENSION
Table 3. COSTS AND RETURNS PER ACRE TO PRODUCE OLIVES
 SACRAMENTO VALLEY – 2004

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Table Olives	5.00	ton	425	2,125	
TOTAL GROSS RETURNS FOR TABLE OLIVES				2,125	
OPERATING COSTS					
Fertilizer:					
UN32	135.00	lb N	0.31	42	
Water:					
Water - District	48.00	acin	2.16	104	
Pressurize Micro-System	48.00	acin	1.66	80	
Herbicide:					
Roundup Ultra Max	1.44	pint	8.56	12	
Princep Caliber 90	1.20	lb	4.56	5	
Growth Regulator:					
Liqui-Stik	36.00	oz	1.23	44	
Insecticide:					
GF 120 Fruit Fly Bait	112.00	oz	0.67	75	
Custom:					
Harvest Olives	5.00	ton	275.00	1,375	
Leaf Analysis	1.00	acre	1.75	2	
Fungicide:					
Kocide DF	20.00	lb	2.89	58	
Labor (machine)	11.45	hrs	10.58	121	
Labor (non-machine)	18.16	hrs	9.52	173	
Fuel - Gas	10.34	gal	1.88	19	
Fuel - Diesel	11.91	gal	1.45	17	
Lube				5	
Machinery repair				19	
Interest on operating capital @ 6.89%				29	
TOTAL OPERATING COSTS/ACRE				2,182	
NET RETURNS ABOVE OPERATING COSTS				-57	
CASH OVERHEAD COSTS:					
Office Expense				143	
Sanitation Fees				6	
Liability Insurance				15	
Property Taxes				68	
Property Insurance				46	
Investment Repairs				41	
TOTAL CASH OVERHEAD COSTS/ACRE				319	
TOTAL CASH COSTS/ACRE				2,500	
NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY):					
Micro-Sprinkler Irrigation System				107	
Land				214	
Olive Orchard Establishment				212	
Fuel Tank: 1 - 100 Gallon				4	
Buildings				53	
Shop/Field Tools				11	
Equipment				153	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				755	
TOTAL COSTS/ACRE				3,255	
NET RETURNS ABOVE TOTAL COSTS				-1,130	

UC COOPERATIVE EXTENSION

Table 4. MONTHLY CASH COSTS PER ACRE TO PRODUCE OLIVES

SACRAMENTO VALLEY - 2004

Beginning JAN 04	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Ending DEC 04	04	04	04	04	04	04	04	04	04	04	04	04	
Cultural:													
Fertilizer: Nitrogen (UN32)			22			22							43
Irrigate				18	26	33	33	33	33	26			202
Mow Centers - 6X				8	8	8	8	8	8				45
Pruning & Sucker 1X/2Yrs				143									143
Disease: Olive/Peacock (Kocide)				34							34		68
Brush Disposal					17								17
Weed: Spot Spray (Roundup)					13		13						26
Thinning Spray 1X/2 Yr (Liqui-Stik)					47								47
Insect: Olive Fruit Fly 8X (GF 120)						20	20	20	20				81
Weed: Winter Strip (Princep)										10			10
Pickup Truck Use	4	4	4	4	4	4	4	4	4	4	4	4	50
ATV Use	4	4	4	4	4	4	4	4	4	4	4	4	43
Leaf Analysis							2						2
TOTAL CULTURAL COSTS	8	8	29	210	118	90	84	69	69	44	42	8	778
Harvest:													
Pick Fruit										1,375			1,375
TOTAL HARVEST COSTS										1,375			1,375
Interest on operating capital	0	0	0	1	2	3	3	4	4	12	0	0	29
TOTAL OPERATING COSTS/ACRE	8	8	30	212	120	93	87	72	73	1,431	42	8	2,182
OVERHEAD:													
Office Expense			16	16	16	16	16	16	16	16	16		143
Sanitation Fees		1	1	1	1	1	1	1	1	1	1		6
Liability Insurance	15												15
Property Taxes	34						34						68
Property Insurance	23						23						46
Investment Repairs	3	3	3	3	3	3	3	3	3	3	3	3	41
TOTAL CASH OVERHEAD COSTS	75	3	20	20	20	20	77	20	20	20	20	3	319
TOTAL CASH COSTS/ACRE	83	11	50	232	140	113	164	92	93	1,451	62	11	2,500

UC COOPERATIVE EXTENSION
Table 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
 SACRAMENTO VALLEY – 2004

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	- Cash Overhead -		Total
						Insur- ance	Taxes	
04	20 Gal ATV Sprayer	475	10	84	59	2	3	64
04	55 HP 2WD Tractor	33,142	12	8,286	3,518	140	207	3,866
04	ATV 4WD	6,000	7	2,276	814	28	41	884
04	Brush Rake - 10'	1,100	20	57	96	4	6	106
04	Front End Loader	4,500	15	432	453	17	25	493
04	Mower - Flail 10'	9,163	10	1,620	1,137	36	54	1,227
04	Orchard Sprayer - 500 Gallon	9,980	10	1,765	1,238	40	59	1,337
04	Pickup Truck - 1/2 Ton	26,000	7	9,863	3,529	121	179	3,829
04	Weed Sprayer - 100 Gallon	2,630	10	465	326	10	15	352
TOTAL		92,990		24,848	11,170	398	589	12,158
60% of New Cost *		55,794		14,909	6,702	239	354	7,295

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

ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	Salvage Value	Capital Recovery	----- Cash Overhead -----			Total
					Insur- ance	Taxes	Repairs	
INVESTMENT								
Building: 1,800 SqFt	25,000	30	0	1,865	84	125	500	2,575
Micro-Sprinkler Irrigation System	42,000	20	1,950	3,736	142	210	840	4,928
Fuel Tank: 1 – 100 Gallon	1,500	20	150	129	6	8	30	173
Hand /Field Tools	3,000	10	300	390	11	17	60	477
Land	120,000	40	120,000	7,500	811	1,200	0	9,511
Orchard Establishment Cost	107,380	37		7,490	363	537	0	8,390
TOTAL INVESTMENT	298,880		120,450	21,077	1,417	2,097	1,430	26,021

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	40	acre	12.90	516
Office Expense	35	acre	142.86	5,000
Sanitation Fees	35	acre	6.23	218

UC COOPERATIVE EXTENSION
Table 6. HOURLY EQUIPMENT COSTS
 SACRAMENTO VALLEY – 2004

Description	COSTS PER HOUR							
	Actual Hours Used	Capital Recovery	- Cash Overhead - Insur- ance	Taxes	Repairs	----- Operating ----- Fuel & Lube	Total Oper.	Total Costs/Hr.
20 Gal ATV Sprayer	14.0	2.53	0.08	0.12	0.13	0.00	0.13	2.85
55 HP 2WD Tractor	154.1	13.70	0.55	0.81	1.47	4.50	5.97	21.02
ATV 4WD	114.0	4.29	0.15	0.22	0.44	1.80	2.24	6.89
Brush Rake - 10'	13.0	4.46	0.18	0.27	0.23	0.00	0.23	5.14
Front End Loader	13.0	20.95	0.77	1.14	0.67	0.00	0.67	23.53
Mower - Flail 10'	73.2	9.32	0.30	0.44	2.33	0.00	2.33	12.39
Orchard Sprayer - 500 Gallon	21.9	33.96	1.09	1.61	1.69	0.00	1.69	38.35
Pickup Truck - 1/2 Ton	222.0	9.54	0.33	0.48	1.91	7.21	9.12	19.47
Weed Sprayer - 100 Gallon	32.1	6.10	0.20	0.29	0.70	0.00	0.70	7.29

UC COOPERATIVE EXTENSION
Table 7. RANGING ANALYSIS
 SACRAMENTO VALLEY – 2004

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE TABLE OLIVES

	YIELD (tons/acre)						
	3.00	3.50	4.00	4.50	5.00	5.50	6.00
OPERATING COSTS/ACRE:							
Cultural Cost	778	778	778	778	778	778	778
Harvest Cost	825	963	1,100	1,237	1,375	1,513	1,650
Interest on operating capital	26	27	27	28	29	30	31
TOTAL OPERATING COSTS/ACRE	1,629	1,767	1,905	2,043	2,182	2,320	2,458
TOTAL OPERATING COSTS/TON	543	505	476	454	436	422	410
CASH OVERHEAD COSTS/ACRE	319	319	319	319	319	319	319
TOTAL CASH COSTS/ACRE	1,947	2,086	2,224	2,362	2,500	2,639	2,777
TOTAL CASH COSTS/TON	649	596	556	525	500	480	463
NON-CASH OVERHEAD COSTS/ACRE	755	755	755	755	755	755	755
TOTAL COSTS/ACRE	2,702	2,841	2,979	3,117	3,255	3,394	3,532
TOTAL COSTS/TON	901	812	745	693	651	617	589

NET RETURNS PER ACRE ABOVE OPERATING COSTS

PRICE \$/ton	YIELD (tons/acre)						
	3.00	3.50	4.00	4.50	5.00	5.50	6.00
275	-804	-804	-805	-806	-807	-808	-808
350	579	-542	-505	-468	-432	-695	-358
425	-354	-279	-205	-131	-57	17	92
500	-129	-17	95	207	318	430	542
575	96	246	395	544	693	842	992
650	321	508	695	882	1,068	1,255	1,442
725	546	771	995	1,219	1,443	1,667	1,892

NET RETURNS PER ACRE ABOVE CASH COSTS

PRICE \$/ton	YIELD (tons/acre)						
	3.00	3.50	4.00	4.50	5.00	5.50	6.00
275	-1,122	-1,123	-1,124	-1,125	-1,125	-1,126	-1,127
350	-897	-861	-824	-787	-750	-714	-677
425	-672	-598	-524	-450	-375	-301	-227
500	-447	-336	-224	-112	0	111	223
575	-222	-73	76	225	375	524	673
650	3	189	376	563	750	936	1,123
725	228	452	676	900	1,125	1,349	1,573

NET RETURNS PER ACRE ABOVE TOTAL COSTS

PRICE \$/ton	YIELD (tons/acre)						
	3.00	3.50	4.00	4.50	5.00	5.50	6.00
275	-1,877	-1,878	-1,879	-1,880	-1,880	-1,881	-1,882
350	-1,652	-1,616	-1,579	-1,542	-1,505	-1,469	-1,432
425	-1,427	-1,353	-1,279	-1,205	-1,130	-1,056	-982
500	-1,202	-1,091	-979	-867	-755	-644	-532
575	-977	-828	-679	-530	-380	-231	-82
650	-752	-566	-379	-192	-5	181	368
725	-527	-303	-79	145	370	594	818

UC COOPERATIVE EXTENSION
Table 8. COSTS AND RETURNS / BREAKEVEN ANALYSIS
 SACRAMENTO VALLEY - 2004
 MANZANILLO VARIETY

COSTS AND RETURNS - PER ACRE BASIS							
Crop	1. Gross Returns	2. Operating Costs	3. Net Returns Above Oper. Costs (1-2)	4. Cash Costs	5. Net Returns Above Cash Costs (1-4)	6. Total Costs	7. Net Returns Above Total Costs (1-6)
Table Olives	2,125	2,182	-57	2,500	-375	3,255	-1,130

COSTS AND RETURNS - TOTAL ACREAGE							
Crop	1. Gross Returns	2. Operating Costs	3. Net Returns Above Oper. Costs (1-2)	4. Cash Costs	5. Net Returns Above Cash Costs (1-4)	6. Total Costs	7. Net Returns Above Total Costs (1-6)
Table Olives	74,375	76,361	-1,986	87,516	-13,141	113,941	-39,566

BREAKEVEN PRICES PER YIELD UNIT					
CROP	Base Yield (Units/Acre)	Yield Units	Breakeven Price to Cover		
			Operating Costs	Cash Costs	Total Costs
\$ per Yield Unit					
Table Olives	5.0	Ton	436	500	651

BREAKEVEN YIELDS PER ACRE					
CROP	Yield Units	Base Price (\$/Unit)	Breakeven Yield to Cover		
			Operating Costs	Cash Costs	Total Costs
Yield Units/acre					
Table Olives	Ton	425	5.1	5.9	7.7

UC COOPERATIVE EXTENSION
Table 9. DETAIL OF OPERATIONS
 SACRAMENTO VALLEY - 2004
 MANZANILLO VARIETY

Operation	Operation Month	Tractor/ Power Unit	Implement	Material	Broadcast Rate/acre	Material Unit
Cultural:						
Fertilizer: Nitrogen	March			UN32	67.5	lbs
	June			UN32	67.5	lbs
Irrigate	April			Water	4.0	acin
	May			Water	6.0	acin
	June			Water	8.0	acin
	July			Water	8.0	acin
	August			Water	8.0	acin
	September			Water	8.0	acin
	October			Water	6.0	acin
Weed Control - Mow Middles 7X	April	55 HP 2WD Tractor	Mower - Flail 10'			
	May	55 HP 2WD Tractor	Mower - Flail 10'			
	June	55 HP 2WD Tractor	Mower - Flail 10'			
	June	55 HP 2WD Tractor	Mower - Flail 10'			
	July	55 HP 2WD Tractor	Mower - Flail 10'			
	August	55 HP 2WD Tractor	Mower - Flail 10'			
	September	55 HP 2WD Tractor	Mower - Flail 10'			
	October					
Prune & Sucker	April	Labor				
Brush Disposal	May	55 HP 2WD Tractor	Brush Rake - 10' Front End Loader			
Leaf Analysis	July			Contract		
Weed Control - Spot Spray	May	ATV 4WD	20 Gal ATV Sprayer	Roundup	0.72	pint
	July	ATV 4WD	20 Gal ATV Sprayer	Roundup	0.72	pint
Thinning Spray 1X/2 Yr	May	55 HP 2WD Tractor	Orchard Sprayer - 500 Gal	Liqui-Stik	36.00	oz
Insect Control - Olive Fruit Fly 8X	June	ATV 4WD	20 Gal ATV Sprayer	GF 120	28.00	oz
	July	ATV 4WD	20 Gal ATV Sprayer	GF 120	28.00	oz
	August	ATV 4WD	20 Gal ATV Sprayer	GF 120	28.00	oz
	September	ATV 4WD	20 Gal ATV Sprayer	GF 120	28.00	oz
Harvest	October			Contract		
Weed Control - Winter Strip Spray	October	55 HP 2WD Tractor	Weed Sprayer - 50 Gal	Princep	1.20	lbs
Disease: Olive Knot/Peacock Spot	April	55 HP 2WD Tractor	Orchard Sprayer - 500 Gal	Kocide DF	10.0	lbs
	November	55 HP 2WD Tractor	Orchard Sprayer - 500 Gal	Kocide DF	10.0	lbs
Pickup Truck Use	Annual	Pickup 1/2 ton				
ATV Use	Annual	ATV 4WD				