

COSTS FOR ESTABLISHING AND PRODUCING OLIVES IN SOUTHERN SAN JOAQUIN VALLEY

1989



**UNIVERSITY OF CALIFORNIA
COOPERATIVE EXTENSION**

UC Cooperative Extension

**COSTS FOR
ESTABLISHING AND PRODUCING OLIVES
SOUTHERN SAN JOAQUIN VALLEY - 1989**

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1. **YIELD:**
This study assumes a Manzanillo olive grove that produces a "year-in year-out" average of 3.0 Tons/Acre. Olives are alternate bearing and production swings may occur to develop this average.
2. **ACREAGE:**
This is a 40 acre grove of which 2.5 acres are devoted to roads and burn areas.
3. **SPACING:**
Trees are double planted and then half are removed in the 8th or 9th year. The initial spacing is 15'x30' for 96 trees per acre. After tree removal, remaining trees are spaced 30'x30', for a total of 48 trees per acre.
4. **VARIETY:**
Manzanillo olive is the variety selected for this study.
5. **IRRIGATION:**
This grove is irrigated using a low volume, fan jet system. The cost of water is \$20 per acre foot.

<u>Year</u>	<u>Acre Feet/Year</u>
1	1.2
2	1.6
3	2.4
4	3.5
5+	3.9

6. **FERTILIZATION:**
Nitrogen is the only element applied. Application is made through the irrigation system. Nitrogen is assumed to cost \$.33 per pound. The rate of nitrogen applied is as follows:

<u>Year</u>	<u>Lbs/Acre</u>
1	13
2	26
3	26
4-8	53
9+	48

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7. **PESTICIDES:**

An insecticide and oil treatment is applied every other year for Black Scale. Fixed copper fungicides are applied annually for Peacock Spot and Olive Knot. Minimum application charge is \$16/acre (equivalent to 400 gpa). Two herbicide applications are made per year (one "preemergence" and one "contact").

8. **PRUNING:**

Done annually.

9. **HARVEST:**

The crop is hand picked. The minimum charge is \$275/acre for young orchards having less than 1 ton yield per acre. Harvest costs for producing orchards can be expected to vary with crop size and range from \$175 for heavy crops to \$250 for light ones.

10. **INTEREST:**

Interest on operating capital is based on cash costs and is calculated monthly until harvest at the rate of 12% per year. Interest is charged on accumulated cash costs in the establishment years to reflect interest costs for a long-term establishment loan. Interest is also charged on investment at 12% per year to account for income foregone that could be received from an alternative investment (opportunity cost) and is based on the bare land value plus the average value of the trees, buildings and equipment.

11. **OVERHEAD:**

County taxes are calculated as 1% of the bare land value plus 1% of the average value of trees, equipment, buildings and improvements. Insurance is charged at 0.8% of the average value of the equipment. Office and business costs are estimated at \$6,000 per year for the whole ranch and include office supplies, phone, bookkeeping, accounting, legal fees, preparing roadways, general weed control, etc.

12. **LAND:**

Land is valued at \$5,000 per acre. The ranch is not enrolled in the Williamson Act.

13. **LABOR:**

Labor rates are \$8.00 per hour for skilled labor and \$6.00 per hour for field labor which includes 34% for SDI, FICA, insurance, and other benefits. The labor hours for operations involving machinery are 10% higher than the machine hours to account for the extra labor involved in equipment set-up, moving, maintenance and repairs.

14. **EQUIPMENT:**

In allocating the equipment cost per acre, the following calculations were made: (a) "Original Cost" of equipment is the estimated new cost and includes 5% sales tax. (b) "Cost Per Acre" is the new cost divided by the number of acres the equipment will be used on. (c) "Depreciation" is based on the "Per Acre Cost" divided by the expected life of the equipment. (d) "Interest" on investment is figured on one-half of the new cost per acre multiplied by 12%. (e) The investment cost per acre is calculated as 60% of the cost of all new equipment to reflect a mix of new and used equipment.

15. **FUEL & REPAIRS:**

The fuel and repair cost for each operation on the table entitled "Sample Costs to Produce Olives" is determined by multiplying the hourly operating cost for each piece of equipment (from the far right hand column of the table entitled "Equipment and Building List") by the number of hours per acre for that operation. The equipment used for an operation is identified on the table entitled "Sample Costs to Produce Olives" by the number listed in the "Tractor/Implement No." column which corresponds to the "Item Number" column on the "Equipment and Building List."

16. Pick-up truck operating costs are based on 10,000 miles/year of use at \$0.15/mile.

SAMPLE COSTS TO ESTABLISH AN OLIVE ORCHARD
Southern San Joaquin Valley - 1989

Trees are double planted (at 96 trees/acre) and then removed in the 8th or 9th year.

Skilled labor: \$8.00 per hour Interest rate: 12.0%
Field labor: \$6.00 per hour

YEAR	Costs per Acre				
	1st	2nd	3rd	4th	5th
YIELD (lbs/acre)	---	---	1,000	2,000	4,000
Planting costs					
Land preparation: subsoil contract	100				
Disk and Float: 4 hours - labor and tractor	72				
Trees: 96 @ \$3.50 (+1 2nd Yr.)	336	4			
Survey and plant: 96 @ \$.70	67	3			
TOTAL PLANTING COSTS	575	\$7			
Cultural costs:					
Suckering and Training	\$11	\$20	\$20	\$51	\$103
Irrig. labor: 2 hours	6	6	6	6	6
Water @ \$20/ac. ft. + \$6/ac. district tax	30	38	54	76	84
Fertilizer: Nitrogen	4	9	9	17	17
Herbicide materials	30	30	30	30	30
Application	11	11	11	11	11
Fungicide - contract					32
Miscellaneous labor and power - 1 hour	16	16	16	16	16
Pick-up truck costs	38	38	38	38	38
TOTAL CULTURAL COSTS	\$145	\$168	\$184	\$245	\$336
Harvesting Costs:*					
Shake, pick and haul (\$275/acre min.)			275	275	450
TOTAL HARVEST COSTS			\$275	\$275	\$450
Overhead Costs:					
Office and business costs	150	150	150	150	150
County Taxes	56	56	56	56	93
Insurance	4	4	4	4	4
TOTAL OVERHEAD COSTS	\$210	\$210	\$210	\$210	\$247
TOTAL CASH COSTS	\$931	\$384	\$669	\$730	\$1,034
ACCUMULATED CASH COSTS	\$931	\$1,315	\$1,984	\$2,713	\$3,747

* Harvest cost per ton decreases as tonnage per acre increases

YEAR	Costs per Acre				
	1st	2nd	3rd	4th	5th
Depreciation:					
Buildings, equipment and irrigation system	108	108	108	108	108
TOTAL DEPRECIATION	\$108	\$108	\$108	\$108	\$108
Interest on Investment					
Buildings, equipment and irrigation system	66	66	66	66	66
Land \$5000/acre	600	600	600	600	600
Interest on accumulated cash costs	112	158	238	326	450
TOTAL INTEREST ON INVESTMENT	\$778	\$824	\$904	\$992	\$1,116
TOTAL COST FOR THE YEAR	\$1,816	\$1,316	\$1,681	\$1,829	\$2,257
CREDIT FROM HARVEST @ \$550/TON			\$275	\$550	\$1,100
NET COST FOR THE YEAR	\$1,816	\$1,316	\$1,406	\$1,279	\$1,157
TOTAL ACCUMULATED NET COST	\$1,816	\$3,132	\$4,538	\$5,817	\$6,975

SAMPLE COSTS TO PRODUCE OLIVES
Southern San Joaquin Valley - 1989

Labor Rate: \$8.00/hr. skilled labor Interest Rate: 12%
 \$6.00/hr. field labor Yield - tons/acre: 3.0

				----- Cash and Labor Costs per Acre -----					
Operation	Tractor/ Implement No.	Implement No.	Hours	Labor Cost/A	Fuel & Repairs	Material Cost	Custom /Rent	Total Cost	Your Cost
Cultural costs:									
Pruning - contract							\$96.00	\$96	
Brush Disposal - contract							17.00	17	
Fertilize (45# N @ \$.33)						\$14.85		15	
Irrigation (3.9 ac. ft.)	4					84.00		84	
Labor			1.0	6.00				6	
Pre-emergence herbicide	1	3	.2	1.76	1.65	11.00		14	
Contact herbicide 2X	1	3	.4	3.52	3.30	11.00		18	
Insecticide - contract (1/2 yrs.)							40.50	41	
Fungicide - contract							32.00	32	
Spray thinning - contract						16.00	16.00	32	
Miscellaneous			1.0	8.00	7.50			16	
Costs for pick up truck					37.50			38	
Interest on operating capital @ 12%								23	
TOTAL CULTURAL COSTS			3	\$19	\$50	\$137	\$202	\$430	
=====									
Harvest Costs:									
Shake, pick, and haul		\$225 per ton					\$675	\$675	
TOTAL HARVEST COSTS							\$675	\$675	
=====									
Cash overhead:									
Office and business costs								\$150	
County Taxes								90	
Equipment Insurance								4	
TOTAL CASH OVERHEAD COSTS								\$245	
=====									
TOTAL CASH COSTS								\$1,350	
=====									
TOTAL CASH COST/TON:			3.0 tons/acre yield					\$450	
=====									
Investment									
		Per production Acre		----- Annual Cost -----					
				Depreciation		Interest @ 12%			
Land (bare)		\$5,000				\$600		\$600	
Equipment & buildings		1,098		\$108		66		174	
Trees (40 yr. depreciation)		6,975		174		419		593	
TOTAL INVESTMENT COSTS			\$ 13,073	\$283		\$1,084		\$1,367	
=====									
TOTAL COSTS PER ACRE								\$2,717	
TOTAL COST/TON:			3.0 tons/acre yield					\$906	

MONTHLY SUMMARY OF PER ACRE CASH COSTS FOR OLIVES

Production Year: November - October
Southern San Joaquin Valley - 1989

Operation	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	TOTAL
Cultural costs:													
Pruning					96.0								\$96
Brush Disposal					17.0								17
Fertilize (45# N)			14.9										15
Irrigation (3.9 AF)			3.4	5.0	5.0	6.7	10.1	11.8	15.1	13.4	8.4	5.0	84
Labor			.2	.4	.4	.5	.7	.8	1.1	1.0	.6	.4	6
Pre-emergence herb.												14.4	14
Contact herbicide 2X						8.9			8.9				18
Insecticide-1/2 yrs.									40.5				41
Fungicide	32.0												32
Spray thinning								32.0					32
Miscellaneous				3.9			3.9		3.9			3.9	16
Pick-up truck costs	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	38
Interest on operating capital @ 12%	.4	.4	.6	.7	2.0	2.2	2.4	2.9	3.6	3.8	4.0		23
TOTAL CULTURAL COSTS	\$35	\$4	\$22	\$13	\$123	\$21	\$20	\$51	\$76	\$21	\$16	\$27	\$430
Harvest Costs:													
Shake, pick, and haul												675.0	675
TOTAL HARVEST COSTS												\$675	\$675
Cash overhead:													
Office and business	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	150
County Taxes			45.2				45.2						90
Equipment Insurance				4.4									4
TOTAL CASH OVERHEAD	\$13	\$13	\$58	\$17	\$13	\$13	\$58	\$13	\$13	\$13	\$13	\$13	\$245
TOTAL CASH COSTS	\$48	\$16	\$80	\$30	\$136	\$34	\$78	\$63	\$89	\$34	\$29	\$714	\$1,350

EQUIPMENT AND BUILDING LIST FOR OLIVES
Southern San Joaquin Valley - 1989

Interest Rate: 12%

Fuel Cost per Gallon \$.80
\$.86

ITEM #	DESCRIPTION	NEW COST	ANNUAL USE (ACRES)	COST PER ACRE	LIFE (HRS)	YEARS TO TRADE	----OVERHEAD*----			--- HOURLY COSTS ---		
							DEPRECIATION	INTEREST*	TAR*	FUEL*	REPAIRS*	TOTAL
Tractors:												
1	55 HP wheel diesel	\$20,000	37.5	\$533	12,000	10	\$53.33	\$32.00	120%	\$2.68	\$2.00	\$4.68
2	Disc, 8'	5,000	37.5	133	2,500	10	13.33	8.00	120		2.40	2.40
3	Weed sprayer, SP	1,650	37.5	44	2,000	10	4.40	2.64	120	2.58	.99	3.57
4	Drip irrigation system	22,500	37.5	600	27,000	15	40.00	36.00	10		.08	.08
5	Pick-up, 1/2 ton	14,000	37.5	373	2,000	7	53.33	22.40	60			
6	3-Wheel motorcycle	1,000	37.5	27	2,000	7	3.81	1.60	60	.29	.30	.59
	Miscellaneous shop tools	4,500	37.5	120		10	12.00	7.20				
	Buildings	12,000	37.5	320		30	10.67	19.20				
TOTAL COST		\$68,650		\$1,831			\$180	\$110				
60% OF NEW COSTS*		\$41,190		\$1,098			\$108	\$66				

* DEFINITIONS:

YEARS TO TRADE----- The projected life of the machine in years adjusted for excessive annual use.
 OVERHEAD ----- Per acre per year.
 DEPRECIATION ----- "COST PER ACRE" divided by "YEARS TO TRADE".
 INTEREST----- ("COST PER ACRE" X "INTEREST RATE") divided by 2 = average interest cost per acre per year.
 TAR----- Total accumulated repairs. The total cost of repairs during the machine's life expressed as a percent of "NEW COST". Calculated from equations based on equipment type and annual use.
 HOURLY COST OF FUEL----- Diesel fuel, oil and lube costs per hour = HP x cost of diesel fuel/gal X 0.0667.
 Gasoline fuel, oil and lube costs per hour = HP x cost of gasoline/gal X 0.0889.
 HOURLY COST OF REPAIRS-- ("NEW COST" X "TAR") divided by ("LIFE IN HOURS").
 60% OF NEW COSTS ----- Used to reflect a mix of new and used equipment.

COST TO PRODUCE OLIVES AT VARYING PRICES AND YIELDS

	Yield (Tons per acre)					
	1	2	3	4	5	6
Cultural Costs	430	430	430	430	430	430
Harvest Costs	275	450	675	900	1,125	1,350
Cash Overhead	245	245	245	245	245	245
Cash cost/acre	950	1,125	1,350	1,575	1,800	2,025
Cash cost/ton	785	563	450	394	360	338
Investment cost	1,367	1,367	1,367	1,367	1,367	1,367
TOTAL COST/ACRE	2,317	2,492	2,717	2,942	3,167	3,392
TOTAL COST/TON	1,915	1,246	906	736	633	565

PER ACRE INCOME ABOVE CASH COSTS AT VARYING PRICES AND YIELDS

DOLLARS PER TON	Yield (Tons per acre)					
	1	2	3	4	5	6
300	-587	-525	-450	-375	-300	-225
350	-527	-425	-300	-175	-50	75
400	-466	-325	-150	25	200	375
450	-406	-225	0	225	450	675
500	-345	-125	150	425	700	975
550	-285	-25	300	625	950	1,275
600	-224	75	450	825	1,200	1,575
650	-164	175	600	1,025	1,450	1,875
700	-103	275	750	1,225	1,700	2,175

PER ACRE INCOME ABOVE TOTAL COSTS AT VARYING PRICES AND YIELDS

DOLLARS PER TON	Yield (Tons per acre)					
	1	2	3	4	5	6
300	-1,954	-1,892	-1,817	-1,742	-1,667	-1,592
350	-1,894	-1,792	-1,667	-1,542	-1,417	-1,292
400	-1,833	-1,692	-1,517	-1,342	-1,167	-992
450	-1,773	-1,592	-1,367	-1,142	-917	-692
500	-1,712	-1,492	-1,217	-942	-667	-392
550	-1,652	-1,392	-1,067	-742	-417	-92
600	-1,591	-1,292	-917	-542	-167	208
650	-1,531	-1,192	-767	-342	83	508
700	-1,470	-1,092	-617	-142	333	808