



**1989
SWEET
CHERRY
ORCHARD**

NORTHERN SAN JOAQUIN VALLEY

by

Joseph A. Grant, Farm Advisor, San Joaquin County
Wes Asai, Farm Advisor, Stanislaus County
Karen Klonsky, Farm Management Specialist, U.C. Davis
and
Jim Du Bruille, Staff Research Associate, U.C. Davis

UC Cooperative Extension

1989 SWEET CHERRY ORCHARD SAMPLE ESTABLISHMENT AND PRODUCTION COSTS Northern San Joaquin Valley

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This cost study provides detailed information on the sample costs of producing sweet cherries in the northern San Joaquin Valley using a solid set sprinkler irrigation system. Costs are projected for a hypothetical 30 acre orchard with 3 non-producing acres for buildings, roads, ditches, burn area, etc. The 30 acre orchard is assumed to be part of an 80 acre tree fruit and nut operation.

This study contains five tables and a List of General Assumptions. The tables include a ten year Establishment Cost Worksheet, a Cost of Production Worksheet, a Monthly Summary of Sample Costs, an Equipment List, and a Ranging Analysis showing returns over costs at varying yields and prices. Costs given in this sample study are for those of a typical well-managed orchard and are not intended to reflect an average of all orchards in the northern San Joaquin Valley.

Practices listed are based on those production procedures considered typical for this crop and area. Sample costs given for labor, materials, equipment and contract services are based on 1989 figures. Some costs or practices listed in this study may not be applicable to your situation. Production costs for cherries can vary based on a number of factors including age of orchard, spacing of trees, type of irrigation system, annual variations in pest pressure and differing management practices. This study is intended only as a guide and can be used as an aid in making production decisions, determining potential returns, preparing budgets and evaluating production loans. A blank "Your Costs" column is provided to enter your actual costs on the Cost of Production Worksheets.

For an explanation of calculations used in this study refer to the attached list of General Assumptions or call Agricultural Economics Extension, University of California, Davis, California, (916) 752-2745, or call the farm advisor in your county. SuperCalc4 templates of this cost study on IBM formatted 5 1/4" floppy discs are also available through your farm advisor.

ESTABLISHMENT AND PRODUCTION ASSUMPTIONS FOR GROWING SWEET CHERRIES

Northern San Joaquin Valley - 1989

The following list contains a description of some general assumptions pertaining to the sample costs of establishing and producing sweet cherries in the northern San Joaquin Valley. The establishment assumptions apply to current sample costs for establishing a new orchard. The production assumptions apply to typical sample costs for a well managed, 11 year old cherry orchard in full production.

1. Land and trees for establishing a new orchard in 1989:
Bare land value (33 acres): \$ 4,500 /acre
Trees - 90 Trees/acre - 22' X 22' square

Since only 30 of the 33 total acres are in production, the land value per acre needs to be adjusted to \$4950 per producing acre. To obtain the annual costs for depreciation, the establishment costs are divided by 20 years. Land is not depreciated. Interest on the investment in land and trees is calculated by multiplying the interest rate (11%) by the average value of land and trees. The average value of the trees is estimated to be one-half of the establishment costs.

2. Labor rates: (includes 27% for SDI, FICA, insurance, and other benefits)

Skilled labor:	\$8.90/hr
Field labor:	\$5.40/hr

To account for maintenance and repair time, labor hours for operations involving machinery are 10% higher than the machine hours.

3. Equipment costs:

In allocating the equipment costs per acre the following calculations were made: (a) "Original Cost" of equipment is the new cost including sales tax. (b) "Depreciation" is straight line with no adjustment for Salvage Value. It is calculated by dividing the new cost per acre by the years to trade. (c) "Interest" on investment is figured at one-half of the new cost per acre multiplied by the interest rate. One-half of the new cost is the average value of the equipment during its useful life. (d) The investment per acre used in the cost study is calculated at 60% of the depreciation and interest costs for all new equipment to reflect a mix of new and used equipment.

4. Fuel and repair costs:

The cost of production worksheets contain numbers in two columns with the headings Tractor/Implement No. and Implement No. which refer to the item number on the equipment table. The far right hand column on the equipment table shows the fuel and repair costs per hour which is multiplied by the hours used per acre for each piece of equipment to obtain the cost per acre for fuel and repairs.

5. Office and business costs include phone, office supplies, legal and accounting fees, etc.
6. County taxes are calculated at 1% of land at acquisition plus 1% of the average assessed value of trees, equipment, buildings and improvements.
7. Equipment insurance is calculated at 0.8% of the average value of the equipment.
8. Pickup costs are based on 8,000 miles/year of operation at \$0.20/mile for a new truck.
9. Supervisory fees are not included in this cost study but estimated to be between \$30 - \$100/acre.
10. Safe chemical storage is included with the shop building.
11. Irrigation assumptions:
Solid set sprinkler irrigation system. Well water - 125' lift.
8 irrigations at 4 inches per irrigation - 32 acre inches/year.
50 hp pump. Electricity costs @ 50% plant efficiency = \$41/AF.

Material (pumping) and ownership costs reflect these assumptions.
12. Interest on operating capital is based on cultural costs and assumes a 9 month loan at 11%.
13. Orchard floor management:
Herbicide strip spray is applied in the fall. Middles are disked 4X per season through year 4 of orchard establishment. Middles are mowed 4X per year from year 5 on.
14. Harvest costs and credits assume 100% (in-out basis) packout with 5% of gross harvested tonnage being sold for brining at \$0.20/lb.
15. The dormant pruning cost shown in the Cost of Production Worksheet assumes annual hand pruning. If pruning is done mechanically or less often, this cost should be adjusted accordingly.

SAMPLE COSTS TO ESTABLISH SWEET CHERRIES
Northern San Joaquin Valley - 1989

Skilled labor: \$8.90 per hour
Field labor: \$5.40 per hour

Interest rate 11.0%
90 Trees per acre, 22' X 22'.

Costs per Acre

YEAR	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
YIELD (Boxes/acre)					30	50	100	200	350	450
Planting costs										
Pre-plant fumigation	\$400									
Land preparation	90									
Survey and mark (custom)	20									
Plant (custom)	90									
Trees - 90 @ \$5.00	450									
TOTAL PLANTING COSTS	\$1,050									
Cultural costs:										
Training and prune	0	20	40	50	60	75	90	105	120	135
Brush disposal	0	0	0	2	4	6	8	12	16	21
Tillage 4X	14	14	14	14	0	0	0	0	0	0
Mow weeds 4X	0	0	0	0	17	17	17	17	17	17
Hoe weeds	16	5	5	0	0	0	0	0	0	0
Irrigation water @ \$41/ac. ft. + R&N	71	71	71	95	95	95	119	119	119	119
Irrigation labor	43	43	43	43	43	43	54	54	65	65
Fertilizer applied	3	3	6	9	12	15	18	21	24	27
Herbicide strip spray	38	38	38	38	38	38	38	38	38	38
Dormant spray	0	0	0	0	27	45	45	45	45	45
Dorm/foliar nutrient spray	0	0	0	0	29	29	29	29	29	29
Fungicide sprays 2X (bloom & preharvest)	0	0	0	0	21	42	42	42	42	42
Leafhopper/mite spray 3X	0	22	22	57	57	57	57	57	57	57
Remove and replant trees	0	6	6	12	12	15	22	29	35	42
Bees, 1 hive/acre	0	0	0	0	0	0	8	8	8	8
Costs for pick-up truck	53	53	53	53	53	53	53	53	53	53
TOTAL CULTURAL COSTS	\$239	\$276	\$299	\$374	\$469	\$531	\$600	\$629	\$668	\$698
Harvesting Costs:										
Pick - paid to picker	\$3.25/box				98	163	325	650	1,138	1,463
Pick - paid to contractor	\$1.40/box				42	70	140	280	490	630
Load and haul	\$0.25/box				8	13	25	50	88	113
Pack	\$4.00/box				120	200	400	800	1,400	1,800
Commission (9% of F.O.B. price)	\$1.35/box				41	68	135	270	473	608
Load and pre-cool	\$0.40/box				12	20	40	80	140	180
TOTAL HARVEST COSTS	\$10.65/box				\$320	\$533	\$1,065	\$2,130	\$3,728	\$4,793
Overhead Costs:										
Office and business costs	70	70	70	70	70	70	70	70	70	70
County Taxes	56	56	56	56	140	158	177	184	185	182
Insurance	7	7	7	7	7	7	7	7	7	7
TOTAL OVERHEAD COSTS	\$133	\$133	\$133	\$133	\$217	\$235	\$254	\$261	\$262	\$259
TOTAL CASH COSTS	\$1,422	\$409	\$432	\$507	\$1,005	\$1,298	\$1,920	\$3,021	\$4,658	\$5,749
ACCUMULATED CASH COSTS	\$1,422	\$1,831	\$2,263	\$2,770	\$3,774	\$5,073	\$6,992	\$10,013	\$14,671	\$20,420

Costs per Acre

YEAR	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Depreciation:										
Building & equipment	108	108	108	108	108	108	108	108	108	108
TOTAL DEPRECIATION	\$108	\$108	\$108	\$108	\$108	\$108	\$108	\$108	\$108	\$108
Interest on Investment at 11%										
Building & equipment	94	94	94	94	94	94	94	94	94	94
Land \$4500/acre	545	545	545	545	545	545	545	545	545	545
Interest on accumulated cash costs	156	201	249	305	415	558	769	0	0	0
TOTAL INTEREST ON INVESTMENT	\$795	\$840	\$887	\$943	\$1,054	\$1,197	\$1,408	\$639	\$639	\$639
TOTAL COST FOR THE YEAR	\$2,325	\$1,357	\$1,427	\$1,558	\$2,167	\$2,603	\$3,435	\$3,767	\$5,404	\$6,496
CREDIT FROM HARVEST @ \$15.22/BOX					\$457	\$761	\$1,522	\$3,044	\$5,327	\$6,849
(Includes receipts equivalent to \$0.22/box from sale of culls for brining)										
NET COST FOR THE YEAR	\$2,325	\$1,357	\$1,427	\$1,558	\$1,710	\$1,842	\$1,913	\$723	\$77	\$-353
TOTAL ACCUMULATED NET COST	\$2,325	\$3,682	\$5,109	\$6,667	\$8,377	\$10,219	\$12,132	\$12,855	\$12,933	\$12,579

SAMPLE COSTS TO PRODUCE SWEET CHERRIES
Northern San Joaquin Valley - 1989

Labor Rate: \$8.90/hr. skilled labor
 \$5.40/hr. field labor

Interest Rate: 11%
Yield (22 lb boxes/acre) 450

Operation	Tractor/ Implement		Hours	Cash and Labor Costs per Acre				Your Cost
	No.	No.		Labor Cost/A	Fuel & Repairs	Material Cost	Custom /Rent	
Pruning - 90 trees/acre	8		25.0	\$134.94				\$135
Brush Disposal	1	7	1.0	15.19	\$5.83			21
Dormant spray	1	2	.2	1.96	2.25	\$41.00		45
Worm/foliar nutrient spray	1	2	.2	1.96	2.25	24.88		29
Bloom fungicide	1	2	.2	1.96	2.25	17.00		21
Preharvest fungicide	1	2	.2	1.96	2.25	17.00		21
Fertilize (100 lbs. N)	1		.1	1.17	.63	25.00		27
Row (4X)	1	5	1.0	9.79	7.63			17
Leafhopper/mite spray 3X	1	2	.6	5.87	6.74	44.78		57
Remove and replant trees			4.0	21.59		20.00		42
Herbicide strip spray	10	6	.3	2.94	.38	34.50		38
Irrigation (8 X 4")	11	12			10.00	109.33		119
Labor			12.0	64.77				65
Bees - 1 Hive/acre @ \$8							8.00	8
Costs for pick up truck					53.33			53
Interest on operating capital @ 11%								154
TOTAL CULTURAL COSTS			45	\$264	\$94	\$333	\$8	\$853
Pick - paid to picker				\$3.25 per box				\$1,463
Pick - paid to contractor				1.40 per box				630
Load and haul				.25 per box				113
Pack				4.00 per box				1,800
Commission (9% of F.O.B. price)				1.35 per box				608
Load and pre-cool				.40 per box				180
TOTAL HARVEST COSTS				\$10.65 per box				\$4,793
Office and business costs								\$70
County Taxes								121
Equipment Insurance								7
TOTAL CASH OVERHEAD COSTS								\$198
TOTAL CASH COSTS								\$5,844
TOTAL CASH COST/BOX:	450 boxes							\$12.99
Investment		Per production Acres		Annual Cost				
				Depreciation	Interest @ 11%			
Land @ \$4,500/acre (bare)		\$4,950			\$545			\$545
Equipment & buildings		1,706		\$108	94			202
Trees (20 yr. depreciation)		12,579		629	692			1,321
TOTAL INVESTMENT COSTS		\$ 19,235		\$737	\$1,330			\$2,067
TOTAL COSTS PER ACRE								\$7,911
TOTAL COST/BOX:	450 boxes							\$17.58

**MONTHLY SUMMARY OF
SAMPLE COSTS TO PRODUCE SWEET CHERRIES**

Northern San Joaquin Valley - 1989

Operation	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	TOTAL
Cultural costs:													
Pruning - 90 trees/A			134.9										\$135
Brush Disposal			21.0										21
Dormant spray	45.2												45
Worm/foliar nutrient				29.1									29
Bloom fungicide			21.2										21
Preharvest fungicide					21.2								21
Fertilize (100 lbs N)						26.8							27
Mow (4X)				4.4		4.4		4.4	4.4				17
Leafhopper/mite spray						21.8		21.8	13.8				57
Remove and replant		8.3				11.1	11.1	11.1					42
Herbicide strip spray											37.8		38
Irrigation (8 X 4")				14.9	14.9	14.9	29.8	29.8	14.9				119
Labor				8.1	8.1	8.1	16.2	16.2	8.1				65
Bees - 1 Hive/acre		8.0											8
Pick-up truck costs	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	53
Int.operating capital	.5	.8	2.3	2.9	23.6	24.6	49.2	50.4					154
TOTAL CULTURAL COSTS	\$50	\$22	\$184	\$64	\$72	\$116	\$111	\$138	\$46	\$4	\$42	\$4	\$853
Harvest Costs:													
Pick - to picker					1,463								1,463
Pick - to contractor					630								630
Load and haul					113								113
Pack							1,800						1,800
Commission							608						608
Load and pre-cool							180						180
TOTAL HARVEST COSTS					2,205		\$2,588						\$4,793
Cash overhead:													
Office and business	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	70
County Taxes				60.1								60.1	120
Equipment Insurance	6.8												7
TOTAL CASH OVERHEAD	\$13	\$6	\$6	\$66	\$6	\$6	\$6	\$6	\$6	\$6	\$6	\$66	\$197
TOTAL CASH COSTS	\$63	\$27	\$190	\$130	\$2,283	\$122	\$2,704	\$144	\$51	\$10	\$48	\$70	\$5,843

**EQUIPMENT AND BUILDING LIST FOR SWEET CHERRIES
Northern San Joaquin Valley - 1989**

Interest Rate: 11%

Fuel Cost per Gallon \$.68 diesel
\$.90 unleaded

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	75 HP 2WD diesel	\$25,000	80	\$313	12,000	10	\$31.25	\$17.19	120	\$2.73	\$2.50	\$5.23
2	PTO sprayer, 500 gal.	15,000	80	188	2,000	10	18.75	10.31	80		6.00	6.00
3	Disc, 10'	6,500	80	81	2,500	10	8.13	4.47	120		3.12	3.12
4	Ring roller	2,000	80	25	2,500	10	2.50	1.38	120		.96	.96
5	Flail mower, 10 foot	4,000	80	50	2,000	10	5.00	2.75	120		2.40	2.40
6	Weed sprayer	1,500	80	19	1,200	10	1.88	1.03	100		1.25	1.25
7	Brush rake	1,000	80	13	2,000	10	1.25	.69	120		.60	.60
8	Ladders - 50 @ \$120	6,000	30	200		10	20.00	11.00	100			
9	Pick-up, 1/2 ton	12,000	80	150	2,000	5	30.00	8.25	60			
10	ATV	2,400	80	30	2,000	5	6.00	1.65	60			
11	Sprinkler irrig. system	80,000	80	1,000	27,000	40	25.00	55.00	36		1.07	1.07
12	Irrigation pump (50 HP)	10,000	80	125	35,000	20	6.25	6.88	36		.10	.10
	Buildings	40,000	80	500		35	14.29	27.50				
	Miscellaneous shop tools	12,000	80	150		15	10.00	8.25				
TOTAL COST		\$217,400		\$2,843			\$180	\$156				
60% OF NEW COSTS*		\$130,440		\$1,706			\$108	\$94				

*** 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.

PER ACRE COST TO PRODUCE SPRINKLER SWEET CHERRIES AT VARYING PRICES AND YIELDS

	YIELD (Boxes/acre)						
	100	200	300	400	500	600	700
Cultural Costs	853	853	853	853	853	853	853
Harvest Costs	1,065	2,130	3,195	4,260	5,325	6,390	7,455
Cash Overhead	197	197	197	197	197	197	197
Cash cost/acre	2,115	3,180	4,245	5,310	6,375	7,440	8,505
Cash cost/box	21.15	15.90	14.15	13.28	12.75	12.40	12.15
Investment cost	2,053	2,053	2,053	2,053	2,053	2,053	2,053
TOTAL COST/ACRE	4,168	5,233	6,298	7,363	8,428	9,493	10,558
TOTAL COST/BOX	41.68	26.17	20.99	18.41	16.86	15.82	15.08

PER ACRE INCOME ABOVE CASH COSTS AT VARYING PRICES AND YIELDS
(Income includes receipts from sale of culls for brining)

\$ per Box	YIELD (Boxes/acre)						
	100	200	300	400	500	600	700
12	-893	-736	-579	-422	-265	-108	49
15	-593	-136	321	778	1,235	1,692	2,149
18	-293	464	1,221	1,978	2,735	3,492	4,249
21	7	1,064	2,121	3,178	4,235	5,292	6,349
24	307	1,664	3,021	4,378	5,735	7,092	8,449
28	707	2,464	4,221	5,978	7,735	9,492	11,249
32	1,107	3,264	5,421	7,578	9,735	11,892	14,049

PER ACRE INCOME ABOVE TOTAL COSTS AT VARYING PRICES AND YIELDS
(Income includes receipts from sale of culls for brining)

\$ per Box	YIELD (Boxes/acre)						
	100	200	300	400	500	600	700
12	-2,946	-2,789	-2,632	-2,475	-2,318	-2,161	-2,004
15	-2,646	-2,189	-1,732	-1,275	-818	-361	96
18	-2,346	-1,589	-832	-75	682	1,439	2,196
21	-2,046	-989	68	1,125	2,182	3,239	4,296
24	-1,746	-389	968	2,325	3,682	5,039	6,396
28	-1,346	411	2,168	3,925	5,682	7,439	9,196
32	-946	1,211	3,368	5,525	7,682	9,839	11,996