
1998

UNIVERSITY OF CALIFORNIA - COOPERATIVE EXTENSION

SAMPLE COSTS
TO ESTABLISH A CLING PEACH ORCHARD AND PRODUCE

~CLING PEACHES~

SACRAMENTO AND SAN JOAQUIN VALLEYS
FLOOD IRRIGATION

Prepared by:

Janine Hasey	U.C. Cooperative Extension Farm Advisor, Sutter & Yuba Counties
Roger Duncan	U.C. Cooperative Extension Farm Advisor, Stanislaus County
Heidi Sanders	California Canning Peach Association, Lafayette, CA
Bob Beede	U.C. Cooperative Extension Farm Advisor, Kings County
Maxwell Norton	U.C. Cooperative Extension Farm Advisor, Merced County
Joe Grant	U.C. Cooperative Extension Farm Advisor, San Joaquin County
Bill Olson	U.C. Cooperative Extension Farm Advisor, Butte County
Karen Klonsky	U.C. Cooperative Extension Economist, Department of Agricultural and Resource Economics, U.C. Davis
Pete Livingston	U.C. Cooperative Extension Staff Research Associate, Department of Agricultural and Resource Economics, U.C. Davis

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INTRODUCTION

Detailed costs of establishing a cling peach orchard and production of cling peaches under flood irrigated conditions in the Sacramento and San Joaquin Valleys are presented in this study. The hypothetical farm used in this report is 100 acres, 40 of which are planted to cling peaches.

This study consists of assumptions for establishing a cling peach orchard and producing cling peaches, and eight tables, and is intended as a guide only. It can be used to make production decisions, determine potential returns, prepare budgets and evaluate production loans. Sample costs given for labor, materials, equipment and contract services are based on current figures. Some costs and practices detailed in this study may not be applicable to every situation. A blank, *Your Cost*, column is provided to enter your actual costs on Table 2 Costs Per Acre To Produce Cling Peaches and Table 3 Costs And Returns Per Acre to Produce Cling Peaches.

Tables included:

Table 1.	Costs Per Acre to Establish A Cling Peach Orchard
Table 2.	Costs and Returns Per Acre to Produce Cling Peaches
Table 3.	Costs Per Acre to Produce Cling Peaches
Table 4.	Monthly Cash Costs Per Acre to Produce Cling Peaches
Table 5.	Whole Farm Annual Equipment, Investment and Business Overhead
Table 6.	Hourly Equipment Costs
Table 7.	Ranging Analysis
Table 8.	Cost and Returns/Breakeven Analysis

This and other studies can be obtained through the Department of Agricultural and Resource Economics, U.C. Davis (530-752-1515), or from selected county Cooperative Extension offices. For an explanation of calculations or assumptions used in this study refer to the attached General Assumptions or call the Department of Agricultural and Resource Economics, Cooperative Extension, University of California, Davis, California, (530-752-3589) or the farm advisor in the county of interest.

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ASSUMPTIONS

The following are assumptions pertaining to sample costs of establishing a cling peach orchard and producing cling peaches using flood irrigation in the Sacramento and San Joaquin Valleys. Practices described are not recommendations by the University of California, but represent production procedures and materials considered typical of a well managed orchard for the Sacramento and San Joaquin Valleys. Costs and practices detailed in this study may not be applicable to all situations. Establishment and cultural practices vary by grower and region; variations can be significant. These costs are on an annual, per acre basis. *The use of trade names 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.*

Land. The farm consists of 100 acres of land. Of that, other crops occupy 55 acres, 40 acres are being established to peaches, and five acres are comprised of roads, irrigation system, and farmstead. The orchard is farmed by the owner. The orchard is in land previously planted to other tree crops. Land is valued at \$7,000 per acre. Because only 95 of the 100 acres is in production the land cost is \$7,368 per producing acre.

Trees. It is assumed that an early maturing variety of cling peach is used in this study. The trees are planted on a 18' X 18' spacing or 134 trees per acre. The life of the orchard at the time of planting in this study is estimated to be 25 years.

Irrigation System. The orchard is irrigated using a flood irrigation system. Water is delivered to the orchard from the district ditch and distributed through to the orchard by way of underground mainlines and valves. The life of the irrigation system is estimated at 20 years. The irrigation system is installed before the orchard is planted. The irrigation system is considered an improvement to the property and is shown in the capital recovery sections of Tables 1-3 and the Investments portion of Table 5.

Labor. Hourly wages for workers are \$7.98, and \$5.75 per hour for skilled, and field workers respectively. Adding 34% for Workers Compensation, Social Security, Medicare insurance, and other possible benefits gives the labor rates shown of \$10.69 per hour for skilled labor, and \$7.71 per hour for field labor. 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 repair. Wages for management are not included as a cash cost. Returns above total costs is considered a return to management and risk.

Orchard Establishment Cultural Practices and Material Inputs

Site Preparation. This orchard is established on ground that has been previously planted to other tree crops. The land is assumed to be well drained and either a class I or II soil. Growers should have nematode sampling done before deciding whether to fumigate or not.

The site is subsoiled and disced twice to break up any hardpan and pulverize large clods. It is recommended that layered soils be modified by backhoeing tree sites or slip plowing the entire field. Laser leveling by a contract leveling company removes high and low spots to allow for efficient irrigation. Tree holes are dug by a contract backhoe service, though this is not the standard practice in some regions. After the holes are dug a fumigation company is contracted to treat for soil-borne disease and pests. The fumigation is made only down the strip where the trees will be planted. Subsequently, berms are constructed in the tree rows to maintain irrigations between the rows. All operations that prepare the orchard for planting are normally done the year prior to planting, but costs are shown in the first year.

Planting, Training, and Pruning. Planting the orchard starts by surveying and marking tree sites. Trees are planted on berms, painted, and covered with a milk carton. The milk cartons are placed around trees for protection against above ground rodents and painting protects against sunburn. Pruning, training, and suckering begin the first year and labor time required for pruning increases in the subsequent years.

Thinning. Cling peaches usually set excessive fruit which need to be thinned to increase peach size. Timing and method of thinning are critical to producing a good crop. Peach variety and weather play a large role in determining the proper time to thin. Normally, the earlier thinning is done after fruit set, the greater the fruit size increase. In this study, thinning is done in May and June. Thinning can be done mechanically, chemically, or by hand. Hand thinning is still the most common and preferred method for thinning and is the practice used in this study. More thinning is required on the early maturing varieties.

Roping and Wiring Trees. With vigorous shoot growth and heavy fruit loads peach trees are susceptible to limb damage. Growers manage this problem by pruning, thinning and supporting branches using rope and wire. The rope or wire is wrapped around the perimeter of the tree to reduce limb breakage from a heavy fruit load. Nylon rope is typically used to wrap young trees in the third year. The rope is replaced with wire in the sixth year and left permanently around the tree.

Irrigation. Water for irrigation is supplied by a water district. The price per acre or acre-foot varies by district in this region. In this study district water costs \$10.84 per acre-foot. Growers pumping well water for irrigation may have higher cost per acre-foot depending on the amount of water pumped, energy source and various well characteristics.

Furrows are pulled along the tree rows allowing for efficient irrigation during the first year. Mature trees require 42 acre-inches of water during the growing season and post-harvest. Post-harvest irrigations are essential, especially for early harvested varieties, through mid September. Water costs can be significantly affected by rainfall. Pumping costs for spring frost protection may also be a consideration.

Fertilization. Nitrogen fertilizer is applied for tree growth. Nitrogen (i.e.; ammonium nitrate) is spread along the tree rows beginning the first year. Split applications of N are made in spring and late summer. Annual rates of applied N used in this study are shown in Table A.

Table A. Applied nitrogen during establishment years

Year	Lbs Of N/Acre	Lbs Of N/Tree
1	15	0.14
2	30	0.28
3	45	0.41
4	60	0.55
5	70	0.64
6+	80	0.73

Orchard Floor Management. Weeds in the row middles are controlled with four annual cultivations, one dormant strip spray applied in fall, and two contact herbicide spot sprays for persistent weeds. Since the strip spray is applied only to a narrow portion along the tree rows it is effectively used on 25% of the total acreage. The strip spray is applied at half rate in the first year and at the full rate thereafter. The two spot sprays clean up weeds missed by the dormant strip spray in the tree rows.

Insect, Mite, and Disease Management. Cling peach pest and disease management occurs at different times during the year. This study refers to months for certain pest management practices, but their actual timing is determined by tree growth or pest development. Some of the typical growth stages mentioned are bloom, petal fall, and leaf fall.

Because of their smaller size, less material per acre is required to effectively treat trees during the establishment years. The first two year's sprays are applied by a sprayer handgun instead of an airblast sprayer. Control treatments are applied using an airblast sprayer beginning the third year.

Pest and disease control begins in the second year with a dormant spray applied by a sprayer handgun at 25% of the full rate. A full rate is applied in succeeding years. The dormant spray includes oil, an insecticide, and a fungicide to control peach twig borer (PTB), scales, early season mites, shot hole, and peach leaf curl. Oriental fruit moth (OFM) control starts in the third year with three insecticide sprays in May, June, and July.

Treatment for several diseases of cling peaches including brown rot, rust, and powdery mildew begin the third year. Two bloom sprays are meant to control brown rot and are often aircraft applied in the Sacramento Valley. Pesticides are normally applied by a tractor and sprayer in the San Joaquin Valley. In the Sacramento Valley, powdery mildew is treated at petal fall and two or more sulfur applications are made to control rust April through June depending on rainfall. Rust can be a problem in the Southern San Joaquin Valley in cool, wet springs. Control of shot hole begins at leaf drop in November.

Establishment Cost. The establishment cost is the sum of cash costs for land preparation, planting, trees, production expenses, and cash overhead for growing cling peach trees through the first year fruit is harvested minus any returns from production. The *Total Accumulated Net Cash Cost* in the third year shown in Table 1, represents the establishment cost per acre. For this study, the cost is \$3,096 per acre or \$123,840 for the 40 acres planted to cling peaches. Establishment cost is amortized over the remaining 22 years that the orchard is assumed to be in production. Establishment cost is used to determine the annual capital recovery expense for production years.

Production Cultural Practices and Material Inputs

Pruning. In this study, pruning is done before heavy rainfall with hand crews between October and early December except in the Southern San Joaquin Valley where pruning will continue through early January. In the Sacramento Valley, prunings are stacked in the row middles and bucked (pushed) out of the orchard by a tractor with a brush rake into a pile and burned or otherwise disposed of. shredded. Brush bucking and shredding are done during the winter months. In the San Joaquin Valley, prunings are normally shredded in the orchard.

Fertilization. Tree nitrogen status is determined by leaf analysis; sampling is done in July. Half of the 40 pounds of nitrogen per acre is applied by early spring after leaves have emerged to aid shoot development. The remaining 40 pounds of N is added in late summer. In this study, ammonium sulfate is used as the nitrogen source.

Thinning and Propping. Thinning is done by hand in May and June. Limbs are propped to prevent limb breakage through the growing season as fruit size increases. Props are removed at the end of harvest in August.

Orchard Floor Management. There are many different and acceptable ways of managing orchard floors. For this study, the tree berms are treated differently from the orchard middles. One dormant strip spray combination of pre- and post-emergent herbicides on the berms are applied after the first significant winter rain. Two in-season post emergent spot sprays where needed control perennial weeds. Row middles are disced four times to control resident vegetation during spring and summer.

Insect and Mite Management. In this study, insect and mite management begins with a dormant spray for control of PTB, scale, and certain mite eggs. The dormant spray of horticultural oil, insecticide, and fungicide is made before bud swell during December and January. The three treatments used in this study for OFM and PTB occur between May and July. All of the insect control sprays are made with a tractor and orchard sprayer.

Alternative Insect Management Practices. Insect pest control can be achieved by a variety of conventional and alternative management techniques. Effective alternatives to organophosphate and pyrethroid sprays are available for controlling PTB, OFM, and leafrollers. The following two tables show alternatives to the conventional dormant and in-season sprays.

Growers practicing alternative insect management should add their pest management costs to the Cultural sections on Tables 2 and 4. Materials used for the alternative practices should be added to Table 3.

Dormant/Bloom Control. In place of the dormant insecticide, overwintered PTB can be controlled by two *Bacillus thuringiensis* (Bt) sprays applied during bloom, usually with fungicide sprays. Leafrollers can be controlled using in-season Bt sprays. Costs for conventional dormant and alternative pest practices, less labor and equipment costs, are shown in table B. Copper and oil are included with either the conventional dormant and alternative treatments.

Table B. Conventional dormant and alternative Bt treatment programs

Program	Dormant insecticide	Bt treatment @ bloom
	----- Rates and Costs/Ac -----	
Material rates & costs/acre	1 application of Diazinon @ 3-4 lbs or Asana @ 10 oz	2 Bt sprays @ 1lb
Program Costs	\$14.00-24.72	\$20.00

Source: Janine Hasey's unpublished research trials in Sutter/Yuba Counties.

In-Season Control. For in-season control of OFM and PTB, mating disruption (also called pheromone confusion) can be very effective. In a complete program, OFM and PTB pheromone dispensers are placed in each tree (rate depends on product) at biofix (first moth). This occurs in late February or early March for OFM and sometime in April for PTB. Most products last 90 days, so pheromone dispensers are applied again in June. PTB dispensers are usually applied with the OFM dispensers to save on application costs. There is also a dual OFM/PTB dispenser that is often used during the June application. In this complete mating disruption program, pheromones are used for season long control through late August/early September. Costs for alternative and conventional in-season pest practices less labor and equipment costs are shown in table C.

Because of the greater expense of a complete in-season mating disruption program compared to a conventional insecticide program, some growers use a partial mating disruption program as shown in Table C. Here, growers use OFM dispensers at first biofix in the early spring and usually PTB dispensers in April, followed by 1 or 2 summer insecticide and miticide sprays depending on when varieties are harvested.

The least expensive pheromone dispenser application methods include using poles from the ground or a tractor with a platform, trailer or wagon that workers can stand on to apply dispensers in the top one-third of the tree canopy.

Table C. In-season conventional and alternative insect pest control programs

Program	Conventional program	Mating Disruption		
		Complete program	Partial program	Partial program
----- Rates and Costs/Ac -----				
Material Rates & Costs	1 application of Penncap M @ 6 pts 1 application of Ambush @ 16 oz plus Vendex @ 1 lb	4 pheromone applications	2 pheromone applications plus 1 insecticide and 1 miticide application	2 pheromone applications plus 2 insecticide and 1 miticide application
Program Costs	\$80	\$197	\$139	\$159

Source: Janine Hasey's unpublished research trials in Sutter/Yuba Counties.

The material costs of the complete mating disruption program shown in Table C are about \$117 per acre more than a conventional spray program. Cost of the materials for the partial programs range by \$59-79 per acre more than the conventional in-season spray program and \$38-58 per acre less than the complete mating disruption program. Future developments of an alternative OFM pheromone application methods may reduce the costs of disruption programs.

Disease Management. Control of bloom, foliar, and fruit diseases become more critical in mature orchards. Peach leaf curl, brown rot, shot hole, and rust are the main diseases, but other diseases may require treatment. In this study, peach leaf curl is treated with a fungicide included in the dormant spray. Two brown rot treatments are made at bloom in February and March.

In the Sacramento Valley, sulfur is sprayed at petal fall for powdery mildew control. Rust is managed through the growing season using two or more sulfur sprays. Shot hole is treated at leaf fall in November to prevent damage in the subsequent growing season. Under heavy disease pressure in the San Joaquin Valley, a shot hole fungicide is added to the late October zinc spray. Depending on weather, a preharvest fungicide spray is applied in the Sacramento Valley during July or August, but is not normally sprayed in the San Joaquin Valley. All of the fungicides are applied using an orchard sprayer except for the two bloom sprays which are applied by aircraft.

Pesticide Recommendations. Not all treatments mentioned in this report will be needed every year. For specific pesticides choices and rates consult the publication UC IPM Pest Management Guidelines, Peaches & Nectarines. Written recommendations made by licensed pest control advisors are required for many pesticides. For information and pesticide use permits, contact the local county Agricultural Commissioner's office.

Equipment Cash Costs. Equipment costs are fall into three categories; capital recovery, cash overhead, and operating costs. The cash overhead and capital recovery costs will be discussed in later sections. The operating costs consist of fuel, lubrication, and repairs.

Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by the ASAE. Fuel and lubrication costs are also determined by ASAE equations based on maximum PTO hp, and type of fuel used. The fuel 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 cultural practice by the number of hours per acre for that operation. Tractor time is 10% higher than implement time (Operation Time) for a given operation to account for fueling, moving equipment, and setup time. Prices for on-farm delivery of diesel and gasoline are \$0.78 and \$1.22 per gallon, respectively.

Harvest. Harvest starts in the third year after the orchard is planted. Yield maturity is reached between the fifth and seventh year. In this cost study the grower contracts to have the cling peach crop harvested. Peaches are hand picked, field sorted, placed into bins left throughout the orchard and moved out of the orchard to the roadside where the bins are loaded on to trucks and hauled to the processor. All costs for contracted harvest operations are on a per acre basis. Peaches are mechanically harvested with a shaker and a catching frame.

Growers who own harvesting equipment should add their equipment to the equipment and investment inventories on Table 5 and custom harvest charges should be replaced in Harvest costs in Tables 1 and 2, with grower performed harvest and hauling costs.

Assessment. The Cling Peach Advisory Board (CPAB) assesses all cling peaches commercially grown in the state to pay for cling peach promotion and research. The mandatory assessment is \$1.90 per ton.

The California Canning Peach Association is a grower organization which negotiates contract prices with processors and supports cling peach research. Membership is voluntary and the assessment rate is 1% of growers' gross returns.

Yields and Returns. Cling peaches begin bearing an economic crop in the third year after planting. Yields fluctuate by grower and region annually. Nine counties produce all of the reported cling peaches grown in California and the United States. Yields over the previous five years are shown by county in Table D.

Table D. Cling Peach annual yields by county, 1993-1997

County	1993	1994	1995	1996	1997
	----- tons/acre -----				
Butte	16.0	16.8	11.4	16.5	16.8
Fresno	16.0	18.0	17.0	17.6	14.0
Kings	20.0	18.7	18.9	26.4	18.0
Merced	17.8	17.4	15.5	19.4	18.7
San Joaquin	17.8	18.8	17.3	15.8	20.0
Stanislaus	18.0	18.3	17.6	17.2	19.0
Sutter	18.5	19.9	14.0	15.9	15.3
Tulare	16.5	21.0	26.5	18.7	22.0
Yuba	17.3	18.7	13.4	16.8	16.6

Source: CDFA, State Crop Reports, 1993 - 1997.

Prices paid to growers for cling peaches are negotiated by the California Canning Peach Association with processors. The differences between aggregate county prices results from prices for different grades and the county tonnage in separate grades. The annual average prices received by growers by county are shown in Table E.

Table E. Cling Peach annual prices received by county, 1993-1997

County	1993	1994	1995	1996	1997
	-----\$/ton-----				
Butte	220	185	209	202	218
Fresno	224	182	205	201	218
Kings	217	189	209	203	212
Merced	220	172	189	198	217
San Joaquin	236	203	203	232	211
Stanislaus	224	184	213	214	223
Sutter	214	183	209	200	224
Tulare	224	193	213	223	208
Yuba	218	180	180	194	215

Source: CDFA, State Crop Reports, 1993 - 1997.

Typical annual yields used in this study for cling peaches are measured in tons per acre as shown in Table F. Yields are from the third year of orchard establishment to maturity. An estimated price of a \$210 per ton is used in this study to determine potential profits/losses. The yields and prices used in this cost study are estimates considering current situations. Table 7 shows income, costs, and net returns at varying yields and prices.

Table F. Annual yield per acre

Year	Tons
3	5.0
4	10.0
5	15.0
6	18.0
7+	22.0

Risk. The risks associated with producing and marketing cling peaches 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 cling peach production. A market channel should be determined before cling peaches are planted and brought into production. Though, not used in this study, crop insurance is a risk management tool available to growers.

Overhead and Capital Recovery Costs

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, and investment repairs. Cash overhead costs are included in Tables 1-5.

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. Salvage value for investments will vary.

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 10.46% per year. A nominal interest rate is the going market cost of borrowed funds. The interest cost of operations after the first harvest are discounted back to the first harvest month using a negative interest charge.

Insurance Insurance for farm investments vary depending on the assets included and the amount of coverage. Property insurance provides coverage for property loss and is charged at 0.713% of the average value of the assets over their useful life. Property insurance costs \$79 per acre. Liability insurance covers accidents on the farm and costs \$455 for the entire farm.

Office Expense Office and business expenses are estimated at \$40 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, road maintenance, etc.

Sanitation Services Sanitation services provide portable toilets for the orchard and cost the farm \$311 annually. This cost includes delivery and servicing of toilets.

Capital Recovery. Capital recovery cost is calculated for equipment and other farm investments. Although farm equipment used on cling peach orchards might be purchased new or used, this 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. Annual ownership costs (Equipment and Investments) are shown in Tables 1-3, and 5. They represent the capital recovery cost for investments on an annual per acre basis.

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). Put another way, it is equivalent to the annual payment on a loan for the investment with the downpayment 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 calculation for annual capital recovery costs is as follows.

$$\frac{\text{Purchase Price} - \text{Salvage Value}}{\text{Capital Recovery Factor}} + \frac{\text{Salvage Value} \times \text{Interest Rate}}$$

Salvage Value. Salvage value is an estimate of the remaining market value of an investment at the end of its useful life. It is calculated differently for different investments. For farm machinery (e.g., tractors and implements) the remaining value is a percentage of the new cost of the investment. Salvage value is calculated as

$$\text{New Price} \times \% \text{Remaining Value}$$

Salvage value for other investments including irrigation systems, buildings, and miscellaneous equipment is zero. The salvage value for land is equal to the purchase price because land does not depreciate from use. The purchase price and salvage value for certain equipment and investments are shown in Table 4.

Capital Recovery Factor. Capital recovery factor is the amortization factor or annual payment whose present value at compound interest is 1. It is the function of the interest rate and years of life of the equipment.

Interest Rate. The interest rate of 7.81% 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. In other words, the next best alternative use for these resources is in another agricultural enterprise.

Acknowledgment. Appreciation is expressed to those growers and other cooperators who provided information for this study.

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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.

Table 1.

U.C. COOPERATIVE EXTENSION
 COSTS PER ACRE TO ESTABLISH A CLING PEACH ORCHARD
 SACRAMENTO & SAN JOAQUIN VALLEYS - 1998

Labor Rate: \$10.69/hr. machine labor

Interest Rate: 10.46%

\$7.71/hr. non-machine labor

Year	Cost Per Acre					
	1st	2nd	3rd	4th	5th	6th
Yield: Tons Per Acre			5.0	10.0	15.0	18.0
Planting Costs:						
Land Preparation - Subsoil - Contract	120					
Land Preparation - Disc 2X	14					
Land Preparation - Level - Contract	100					
Land Preparation - Backhoe Tree Holes	295					
Land Preparation - Fumigate - Contract	600					
Land Preparation - Put Up Berm	3					
Trees: 134 Per Acre	563					
Survey, Mark, & Plant	100					
Paint Trunk & Milk Carton	24					
TOTAL PLANTING COSTS	1,819					
Cultural Costs:						
Pest Control - Dormant Spray		36	69	69	69	69
Pest Control - Bloom Spray 2X			108	108	108	108
Prune, Train, and Sucker Trees	6	12	22	35	83	126
Brush Disposal	9	9	9	9	9	9
Rope/Wire Trees			40			40
Weed Control - Berm Strip Spray	30					
Fertilizer - Nitrogen	13	14	15	16	17	18
Pull Furrows	4					
Irrigate 8X	31	31	39	47	52	58
Disease Control - Mildew Spray					21	
Disease Control - Rust Spray			62	62	62	62
Weed Control - Disc Middles 4X	27	27	27	27	27	27
Weed Control - Spot Spray 2X	16	16	16	16	16	16
Pest Control - OFM & PTB 3X			101	101	101	101
Thin Fruit			138	270	408	742
Weed Control - Dormant Strip Spay	36	36	36	36	36	36
Disease Control - Shothole Spray			11	11	11	11
Pickup Truck Use	37	37	37	37	37	37
ATV Use	30	30	30	30	30	30
TOTAL CULTURAL COSTS	239	248	760	874	1,087	1,490
Harvest Costs:						
Bin Distribution			12	13	15	20
Hand Pick and Field Sort			207	405	612	738
Hauling			2	5	17	17
TOTAL HARVEST COSTS			221	423	644	775

U.C. COOPERATIVE EXTENSION

Table 1. Continued

Year	Cost Per Acre					
	1st	2nd	3rd	4th	5th	6th
Yield: Tons Per Acre			5.0	10.0	15.0	18.0
Assessment Costs:						
Cling Peach Advisory Board			10	19	28	34
TOTAL ASSESSMENT COSTS			10	19	28	34
Interest On Operating Capital @ 10.46%	95	14	21	35	40	54
TOTAL OPERATING COSTS/ACRE	2,153	262	1,012	1,351	1,799	2,353
Cash Overhead Costs:						
Office Expense	40	40	40	40	40	40
Liability Insurance	5	5	5	5	5	5
Sanitation Fees	3	3	3	3	3	3
Property Taxes	87	82	87	87	87	87
Property Insurance	62	58	62	62	62	62
Investment Repairs	21	21	21	21	21	21
TOTAL CASH OVERHEAD COSTS	218	209	218	218	218	218
TOTAL CASH COSTS/ACRE	2,371	471	1,230	1,569	2,017	2,571
INCOME/ACRE FROM PRODUCTION			977	1,953	2,930	3,515
NET CASH COSTS/ACRE FOR THE YEAR	2,371	471	254			
PROFIT/ACRE ABOVE CASH COSTS				384	913	944
ACCUMULATED NET CASH COSTS/ACRE	2,371	2,842	3,096	2,712	1,799	855
Capital Recovery Cost:						
Shop Building	41	41	41	41	41	41
Land @ \$7,000/Acre	575	575	575	575	575	575
Fuel Tank & Pump	7	7	7	7	7	7
Shop Tools	13	13	13	13	13	13
Flood Irrigation System	42	42	42	42	42	42
Pruning Equipment	2	2	2	2	2	2
Equipment	128	56	163	163	163	163
TOTAL NON-CASH OVERHEAD COST/ACRE	808	736	843	843	843	843
TOTAL COST/ACRE FOR THE YEAR	3,179	1,207	2,073	2,412	2,860	3,414
INCOME/ACRE FROM PRODUCTION			977	1,953	2,930	3,515
TOTAL NET COST/ACRE FOR THE YEAR	3,179	1,207	1,097	459		
NET PROFIT/ACRE ABOVE TOTAL COST					70	101
TOTAL ACCUMULATED NET COST/ACRE	3,179	4,386	5,483	5,942	5,872	5,771

Table 2.

U.C. COOPERATIVE EXTENSION
 COSTS PER ACRE TO PRODUCE CLING PEACHES
 SACRAMENTO AND SAN JOAQUIN VALLEYS - 1998

Labor Rate: \$10.69/hr. machine labor
 \$7.71/hr. non-machine labor

Interest Rate: 10.46%
 Yield per Acre: 22.0 Ton

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per Acre					Total Cost	Your Cost
		Labor Cost	Fuel,Lube & Repairs	Material Cost	Custom/ Rent			
Cultural:								
Prune, Train, & Sucker	38.10	294	0	0	0	294		
Shred Prunings	0.40	5	2	0	0	8		
Pest Control - Dormant Spray	0.00	0	0	61	8	69		
Wire Repairs	1.00	13	2	0	0	15		
Pest Control - Bloom Spray 2X	0.00	0	0	92	16	108		
Fertilize N - 80 Lbs N/Acre	0.67	9	3	6	0	18		
Weed Control - Cultivate 4X	0.97	12	7	0	0	20		
Irrigate 8X	2.56	20	0	38	0	58		
Disease Control - Rust 3X	0.57	7	4	51	0	62		
Weed Control - Spot Spray 2X	0.60	8	3	5	0	16		
Pest Control - In-season 3X	1.00	13	7	82	0	101		
Thin Fruit	0.00	0	0	0	600	600		
Prop Limbs	1.40	39	3	0	0	42		
Remove Limb Props	0.60	18	1	0	0	20		
Weed Control - Dormant Strip	0.30	4	2	30	0	36		
Disease Control - Shothole/Zinc	0.19	2	1	7	0	11		
Pickup Truck Use	2.14	27	10	0	0	37		
ATV Use	2.14	27	3	0	0	30		
TOTAL CULTURAL COSTS	52.64	499	49	372	624	1544		
Harvest:								
Bin Distribution	1.00	21	3	0	0	23		
Hand Pick & Field Sort Fruit	0.00	0	0	0	900	900		
Haul Fruit	0.00	0	0	0	23	23		
TOTAL HARVEST COSTS	1.00	21	3	0	922	946		
Assessment:								
Cling Peach Advisory Board	0.00	0	0	42	0	42		
TOTAL ASSESSMENT COSTS	0.00	0	0	42	0	42		
Interest on operating capital @ 10.46%						45		
TOTAL OPERATING COSTS/ACRE		519	52	414	1547	2577		

U.C. COOPERATIVE EXTENSION

Table 2. Continued

Operation	Operation	Cash and Labor Costs per Acre					Total Cost	Your Cost
	Time (Hrs/A)	Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/Rent			
CASH OVERHEAD:								
Office Expense						40		
Liability Insurance						5		
Sanitation Fees						3		
Property Taxes						100		
Property Insurance						71		
Investment Repairs						21		
TOTAL CASH OVERHEAD COSTS						241		
TOTAL CASH COSTS/ACRE						2818		
CAPITAL RECOVERY:								
Investment	Per producing Acre	-- Annual Cost --		Capital Recovery - 7.81% Interest				
Buildings	413	41		41				
Land	7368	575		575				
Fuel Tanks & Pumps	69	7		7				
Shop Tools	119	13		13				
Flood Irrigation System	516	42		42				
Pruning Equipment	14	2		2				
Cling Peach orchard Establishment	3096	299		299				
Equipment	885	112		112				
TOTAL NON-CASH OVERHEAD COSTS		12481		1092		1092		
TOTAL COSTS/ACRE						3910		

U.C. COOPERATIVE EXTENSION

Table 3. Continued

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
Assessment:					
Cling Peach Advisory Brd	22.00	Ton	1.90	42	
Labor (machine)	15.57	hrs	10.69	166	
Labor (non-machine)	45.76	hrs	7.71	353	
Fuel - Gas	6.76	gal	1.22	8	
Fuel - Diesel	24.34	gal	0.78	19	
Lube				4	
Machinery repair				20	
Interest on operating capital @ 10.46%				45	

TOTAL OPERATING COSTS/ACRE				2577	
NET RETURNS ABOVE OPERATING COSTS				2043	
CASH OVERHEAD COSTS:					
Office Expense				40	
Liability Insurance				5	
Sanitation Fees				3	
Property Taxes				100	
Property Insurance				71	
Investment Repairs				21	

TOTAL CASH OVERHEAD COSTS/ACRE				241	
TOTAL CASH COSTS/ACRE				2818	
CAPITAL RECOVERY: - 7.81% Interest					
Buildings				41	
Land				575	
Fuel Tanks & Pumps				7	
Shop Tools				13	
Flood Irrigation System				42	
Pruning Equipment				2	
Cling Peach Orchard Establishment				299	
Equipment				112	

TOTAL NON-CASH OVERHEAD COSTS/ACRE				1092	
TOTAL COSTS/ACRE				3910	
NET RETURNS ABOVE TOTAL COSTS				710	

Table 4.

U.C. COOPERATIVE EXTENSION
MONTHLY CASH COSTS PER ACRE TO PRODUCE CLING PEACHES
SACRAMENTO AND SAN JOAQUIN VALLEYS - 1998

Beginning DEC 97	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	TOTAL
Ending NOV 98	97	98	98	98	98	98	98	98	98	98	98	98	
Cultural:													
Prune, Train, & Sucker	98		98	98									294
Shred Prunings	3		3	3									8
Pest Control													
- Dormant Spray		69											69
Wire Repairs			15										15
Pest Control - Bloom Spray			54	54									108
Fertilize N - 80 Lbs N/Acre				9				9					18
Weed Control - Cultivate					5	10	5						20
Irrigate 8X					7	14	14	14	7				58
Disease Control - Rust 3X					21	21	21						62
Weed Control - Spot Spray					8		8						16
Pest Control													
- In-season Spray						53	31	17					101
Thin Fruit						300	300						600
Prop Limbs							14	14	14				42
Remove Limb Props									20				20
Weed Control													
- Dormant Strip Spray											18	18	36
Disease Control													
- Shothole/Zinc												11	11
Pickup Truck Use	3	3	3	3	3	3	3	3	3	3	3	3	37
ATV Use	3	3	3	3	3	3	3	3	3	3	3	3	30
TOTAL CULTURAL COSTS	106	75	175	169	46	403	399	60	47	6	23	34	1544
Harvest:													
Bin Distribution								12	12				23
Hand Pick & Field Sort Fruit								450	450				900
Haul Fruit								11	11				23
TOTAL HARVEST COSTS								473	473				946
Assessment:													
Cling Peach Advisory Board									42				42
TOTAL ASSESSMENT COSTS									42				42
Interest on oper. Capital*	1	2	3	5	5	8	12	17	-5	-1	-1	-0	45
TOTAL OPERATING COSTS/ACRE	107	77	178	174	51	412	411	550	556	5	23	34	2577

U.C. COOPERATIVE EXTENSION

Table 4. Continued

Beginning	DEC 97	JAN 98	FEB 98	MAR 98	APR 98	MAY 98	JUN 98	JUL 98	AUG 98	SEP 98	OCT 98	NOV 98	TOTAL
Ending	NOV 98	97	98	98	98	98	98	98	98	98	98	98	
OVERHEAD:													
Office Expense	3	3	3	3	3	3	3	3	3	3	3	3	40
Liability Insurance			5										5
Sanitation Fees		3											3
Property Taxes		50						50					100
Property Insurance		36						36					71
Investment Repairs	2	2	2	2	2	2	2	2	2	2	2	2	21
TOTAL CASH OVERHEAD COSTS	5	94	10	5	5	5	5	91	5	5	5	5	241
TOTAL CASH COSTS/ACRE	112	171	188	179	56	417	416	641	561	10	28	39	2818

* Postharvest operation costs are discounted back to the time of the first harvest

U.C. COOPERATIVE EXTENSION

Table 5.

WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
SACRAMENTO AND SAN JOAQUIN VALLEYS - 1998

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Insur- ance	Taxes	Total
98	35 HP 4WD Tractor	22737	15	4426	2460	97	136	2693
98	66 HP 2WD Tractor	24882	15	4844	2692	106	149	2947
98	ATV 4WD	4219	7	1600	625	21	29	675
98	Bin Trailer	979	15	94	110	4	5	119
98	Bin Trailer	979	15	94	110	4	5	119
98	Bin Trailer	979	15	94	110	4	5	119
98	Bin Trailer	979	15	94	110	4	5	119
98	Disc - Offset 10'	10083	10	1783	1366	42	59	1467
98	Mower - Flail 10'	8380	10	1482	1135	35	49	1219
98	Orchard Sprayer - 500 Gal	19741	10	3491	2674	83	116	2873
98	Pickup - 1/2 Ton	16500	7	1650	2963	65	91	3118
98	Spinner Spreader - 3PT	1565	20	82	155	6	8	169
98	Weed Sprayer - 100 Gal	3424	10	342	482	13	19	514
TOTAL		115447		20076	14990	483	678	16150
60% of New Cost *		69268		12046	8994	290	407	9690

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

U.C. COOPERATIVE EXTENSION

Table 5. Continued

Description	Price	Yrs Life	Salvage Value	Capital Recovery	----- Cash Costs -----			Total
					Insur- ance	Taxes	Repairs	
INVESTMENT								
Buildings	39253	20		3942	140	196	785	5063
Cling Peach Orchard Establishment	123840	22		11958	441	619	0	13019
Flood Irrigation System	49042	40		4029	175	245	980	5429
Fuel Tanks & Pumps	6546	20		657	23	33	131	844
Land	700000	25	700000	54670	4991	7000	0	66661
Pruning Equipment	1325	10	133	187	5	7	25	224
Shop Tools	11330	15	1133	1266	44	62	113	1486
TOTAL INVESTMENT	931336		701266	76709	5820	8163	2034	92726

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	100.00	Acre	4.55	455
Office Expense	95.00	Acre	40.00	3800
Sanitation Fees	95.00	Acre	3.27	311

U.C. COOPERATIVE EXTENSION
 HOURLY EQUIPMENT COSTS
 SACRAMENTO AND SAN JOAQUIN VALLEYS - 1998

Table 6.

Yr Description	Actual Hours Used	----- COSTS PER HOUR -----						Total Oper.	Total Costs/Hr.
		Capital Recovery	- Cash Overhead - Insur- ance	Taxes	Repairs	Operating Fuel & Lube			
98 35 HP 4WD Tractor	296.0	4.99	0.20	0.28	0.40	1.54	1.94	7.40	
98 66 HP 2WD Tractor	406.9	3.97	0.16	0.22	1.03	2.91	3.94	8.28	
98 ATV 4WD	284.5	1.32	0.04	0.06	0.31	0.94	1.25	2.67	
98 Bin Trailer	60.0	1.10	0.04	0.05	0.14	0.00	0.14	1.33	
98 Bin Trailer	60.0	1.10	0.04	0.05	0.14	0.00	0.14	1.33	
98 Bin Trailer	60.0	1.10	0.04	0.05	0.14	0.00	0.14	1.33	
98 Bin Trailer	60.0	1.10	0.04	0.05	0.14	0.00	0.14	1.33	
98 Disc - Offset 10'	73.9	11.09	0.34	0.48	3.26	0.00	3.26	15.18	
98 Mower - Flail 10'	30.0	22.71	0.70	0.99	1.79	0.00	1.79	26.18	
98 Orchard Sprayer - 500 Gal	110.5	14.51	0.45	0.63	2.42	0.00	2.42	18.01	
98 Pickup - 1/2 Ton	284.5	6.25	0.14	0.19	1.20	3.51	4.71	11.29	
98 Spinner Spreader - 3PT	46.7	2.00	0.08	0.11	0.56	0.00	0.56	2.74	
98 Weed Sprayer - 100 Gal	66.0	4.38	0.12	0.17	0.91	0.00	0.91	5.58	

Table 7.

U.C. COOPERATIVE EXTENSION
RANGING ANALYSIS
SACRAMENTO AND SAN JOAQUIN VALLEYS - 1998

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE CLING PEACHES

	YIELD (TON/ACRE)						
	16	18	20	22	24	26	28
OPERATING COSTS/ACRE:							
Cultural Cost	1544	1544	1544	1544	1544	1544	1544
Harvest & Assessment Cost	718	808	898	988	1077	1167	1257
Interest on operating capital	46	46	46	45	45	45	45
TOTAL OPERATING COSTS/ACRE	2308	2397	2487	2577	2667	2756	2846
TOTAL OPERATING COSTS/TON	144	133	124	117	111	106	102
CASH OVERHEAD COSTS/ACRE	241	241	241	241	241	241	241
TOTAL CASH COSTS/ACRE	2549	2638	2728	2818	2908	2997	3087
TOTAL CASH COSTS/TON	159	147	136	128	121	115	110
NON-CASH OVERHEAD COSTS/ACRE	1091	1092	1092	1092	1093	1093	1093
TOTAL COSTS/ACRE	3640	3730	3820	3910	4000	4091	4181
TOTAL COSTS/TON	227	207	191	178	167	157	149

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR CLING PEACHES

PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
	16	18	20	22	24	26	28
150.00	92	303	513	723	933	1144	1354
170.00	412	663	913	1163	1413	1664	1914
190.00	732	1023	1313	1603	1893	2184	2474
210.00	1052	1383	1713	2043	2373	2704	3034
230.00	1372	1743	2113	2483	2853	3224	3594
250.00	1692	2103	2513	2923	3333	3744	4154
270.00	2012	2463	2913	3363	3813	4264	4714

U.C. COOPERATIVE EXTENSION

Table 7. Continued

NET RETURNS PER ACRE ABOVE CASH COSTS FOR CLING PEACHES

PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
	16	18	20	22	24	26	28
150.00	-149	62	272	482	692	903	1113
170.00	171	422	672	922	1172	1423	1673
190.00	491	782	1072	1362	1652	1943	2233
210.00	811	1142	1472	1802	2132	2463	2793
230.00	1131	1502	1872	2242	2612	2983	3353
250.00	1451	1862	2272	2682	3092	3503	3913
270.00	1771	2222	2672	3122	3572	4023	4473

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR CLING PEACHES

PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
	16	18	20	22	24	26	28
150.00	-1240	-1030	-820	-610	-400	-191	19
170.00	-920	-670	-420	-170	80	329	579
190.00	-600	-310	-20	270	560	849	1139
210.00	-280	50	380	710	1040	1369	1699
230.00	40	410	780	1150	1520	1889	2259
250.00	360	770	1180	1590	2000	2409	2819
270.00	680	1130	1580	2030	2480	2929	3379

Table 8.

U.C. COOPERATIVE EXTENSION
 COSTS AND RETURNS / BREAKEVEN ANALYSIS
 SACRAMENTO AND SAN JOAQUIN VALLEYS - 1998

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)
Cling Peaches	4620	2577	2043	2818	1802	3910	710

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)
Cling Peaches	184800	103078	81722	112715	72085	156414	28386

BREAKEVEN PRICES PER YIELD UNIT

CROP	Base Yield (Units/Acre)	Yield Units	Breakeven Price To Cover		
			Operating Costs	Cash Costs	Total Costs
Cling Peaches	22.0	Ton	117.13	128.09	177.74

BREAKEVEN YIELDS PER ACRE

CROP	Yield Units	Base Price (\$/Unit)	Breakeven Yield To Cover		
			Operating Costs	Cash Costs	Total Costs
Cling Peaches	Ton	210.00	12.3	13.4	18.6