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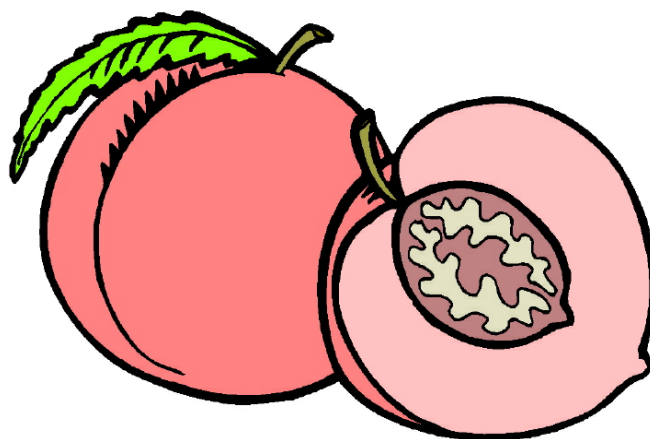
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UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2004

SAMPLE COSTS TO PRODUCE

# Cling Peaches



**SACRAMENTO and SAN JOAQUIN  
VALLEYS**

**Extra-Early Harvested Varieties**

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## SAMPLE COST TO PRODUCE CLING PEACHES

Sacramento and San Joaquin Valleys – 2004

Extra-early Harvested Varieties

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### INTRODUCTION

Sample costs to establish an extra-early harvested variety cling peach orchard and produce cling peaches in the Sacramento and San Joaquin Valleys 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 2 and 3 is provided to enter your costs.

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.

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 5 and pertain to sample costs to produce extra-early harvested varieties of cling peaches in the Sacramento and San Joaquin Valleys. **Practices described may not be University of California recommendations, but represent production practices and materials considered typical of a well-managed orchard in the region.** The costs, materials, and practices shown in this study will not apply to all situations. Establishment and production cultural practices vary by grower and the differences can be significant. **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 hypothetical farm consists of 100 contiguous acres. Production costs are based on the 40 acres planted to an extra-early harvested variety cling peach. The remaining acreage is in other mature tree crops. The grower owns and farms the orchard. Land is valued at \$7,000 per acre.

## PRODUCTION CULTURAL PRACTICES AND MATERIAL INPUTS

**Pruning.** In this study, pruning is done before heavy rainfall with hand crews in December except in the Southern San Joaquin Valley where pruning will continue through early February. 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 shredded in the orchard. Brush bucking and shredding are done during the winter months. In the San Joaquin Valley, prunings are normally shredded in the orchard.

**Fertilization.** Tree nutrient status is determined by leaf analysis; sampling is done in July. One quarter of the 100 pounds of nitrogen per acre is applied in March after leaves have emerged to aid shoot development and another 25% is applied in May. The remaining 50 pounds of N is added in July or August after harvest. In this study, urea is used as the nitrogen source.

Some peach orchards may have a potassium deficiency. In those instances, trees may need to have potassium fertilizer applied. Normally, if potassium is added, it is soil applied every two years at a rate of 500 pounds per acre. Application of potassium depends on fertility needs of the trees and will vary by orchard.

**Thinning and Propping.** Thinning is done by hand in May. Limbs are propped to prevent limb breakage through the growing season as fruit size increases even though the fruit is thinned. Props are removed at harvest in July. Props are simply boards of varying lengths.

**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 mowed five times to control resident vegetation during spring and summer.

**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 \$13.80 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. The annual water requirements assumed in this study is 42 acre-inches of water in 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.

**Insect and Mite 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 partial bloom, bloom, petal fall, and leaf fall.

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 basic copper is made before bud swell during January and February. The two in-season treatments used in this study for OFM and PTB occur in May and June. All of the insect control sprays are made with a tractor and orchard sprayer.

**Disease Management.** Control of bloom, foliar, and fruit diseases become more critical in bearing orchards. Peach leaf curl, brown rot, powdery mildew, shot hole, and rust are the main peach diseases, but other diseases may require treatment. In this study, peach leaf curl is treated with copper in the dormant spray and shot hole is treated with copper or a fungicide at leaf fall to prevent damage in the subsequent growing season.

Two brown rot treatments are made at bloom in February and March. Sulfur is sprayed at petal fall for powdery mildew and again in April and May for powdery mildew and rust.

Depending on weather, a preharvest fungicide spray is applied during July or August if rain is predicted prior to harvest to prevent ripe fruit rot. All of the fungicides are applied using an orchard sprayer except when the orchard is inaccessible to ground sprays.

**Reduced-Risk Insect Management Practices.** Insect pest control can be achieved by a variety of conventional and reduced-risk or alternative management techniques. Effective alternatives to organophosphate and pyrethroid sprays are available for controlling San Jose scale, PTB, OFM, and leafrollers. The following two tables show some alternatives to the conventional dormant and in-season sprays. For some insects, other reduced-risk materials may be available in addition to those listed.

Growers practicing reduced-risk insect management should add their pest management costs to the Cultural sections on Tables 1 and 2. Materials used for the reduced-risk practices should be added to Table 3.

*Dormant/Bloom Control.* In place of the dormant insecticide, overwintered PTB can be controlled either by two *Bacillus thuringiensis* (Bt) sprays at bloom or one Success (spinosad) spray at bloom. The first Bt spray is applied when 20-40% of the PTB have emerged from their hibernacula. This coincides with a bloom fungicide spray, saving on application costs. The second spray is applied at 80-100% hibernacula emergence which at times coincides with a second fungicide spray. The Success spray is applied at 30 to 70% hibernacula emergence. Treatment costs shown in Table C assume no extra application cost is necessary for the second application of Bt. Material rates and costs for reduced-risk bloom and conventional dormant pest practices not including any labor or equipment costs are shown in Table C.

Costs for conventional dormant and reduced-risk practices, less labor and equipment costs, are shown in Table C. Copper and oil are included in either the conventional dormant or reduced-risk treatments.

Table C. Conventional dormant and reduced-risk Bt treatment programs

Program	Dormant insecticide	Bloom spray/PTB emergence
	----- Material Rates and Costs/Ac -----	
Material rates & costs/acre	1 application of Diazinon @ 3-4 lbs or Asana @ 8 oz or Lorsban	2 Bt sprays @ 1 lb or 1qt or 1 Success spray @ 4 oz
Program Costs	\$7.00 – 24.72	\$20.00 – 22.00

Source: 2002 Stone Fruit Pest Management Alliance Annual Report, Sutter County.

*In-Season Control.* For in-season control of OFM and PTB, mating disruption (also called pheromone confusion) can be very effective in low to moderate populations. 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 or May 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 PTB application timing. In this complete mating disruption program, pheromones are used for season long control through late August/early September.

Because of the greater expense of a complete in-season mating disruption program compared to a conventional insecticide program, many growers integrate mating disruption with a program shown in Table D. This approach reduces the overall insecticides applied and helps with resistance management. With the complete program, there is season long mating disruption whereas with other programs, this is rarely achieved. There are many possible combinations of pheromone mating disruption or pheromone mating disruption plus spray programs. These include but are not limited to:

- 1) OFM dispensers at first biofix, in-season sprays as needed.
- 2) OFM-Flowable at first biofix and 30 days later, OFM dispenser or the Stonefruit (SF) dispenser (OFM + PTB) by May 1.
- 3) One 120+ day OFM dispenser, in-season sprays as needed for OFM or PTB.
- 4) Targeting OFM spray timing and including OFM flowable with May, June and July spray (if needed).
- 5) Targeting PTB spray timing and including OFM flowable with May spray, only OFM flowable in June, an insecticide for July spray.

Either Bt or Spinosad can be used as effective reduced-risk materials as a substitute to mating disruption for in-season PTB control.

Most pheromone dispensers are applied to the top one-third of tree canopy using poles from the ground. OFM flowable is applied using a tractor and orchard sprayer.

The material costs of the complete mating disruption program shown in Table D range from \$31 to \$65 per acre or more than a conventional spray program with a miticide. Cost of the materials for the integrated programs cost less if there is no miticide added than the conventional in-season spray program and \$71-114 per acre less than the complete mating disruption program.

**Pesticide Recommendations.** Not all treatments mentioned in this report will be needed every year.

Table D. In-season conventional and reduced-risk insect pest control programs and costs/acre.

Program	Conventional program	Mating Disruption		
		Complete program	Integrated program #1	Integrated program #4 or #5
		----- Rates and Costs/Ac -----		
Material	2 applications of	2 OFM pheromone	1 OFM pheromone	2 flowable pheromone
Rates & Costs	Asana @ 10 oz	dispenser	dispenser application	applications
	plus	applications	plus	plus
	1 application of	plus	1 Asana @10 oz	2 Asana @ 10 oz
	Imidan @ 4 lb,	1-2 PTB dispenser	plus	plus
	1 application of	applications	1 Acaramite application @	1 Acaramite application @
	Acramite @ 1 lb	plus	1 lb	1 lb
Program Costs		1 miticide application		
	\$121 – 130	\$189 – 232	\$49 (\$119 with miticide)	\$48 (\$118 with miticide)

Source: 2002 Stone Fruit Pest Management Alliance Annual Report, Sutter County.

Other materials other than those discussed in this report are available for labeled use on this crop. For specific pesticides choices and rates consult the publication UC IPM Pest Management Guidelines, Peaches & Nectarines or can be accessed online at <http://www.ipm.ucdavis.edu/PMG/crops-agriculture.html>. 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.

**Harvest.** In this cost study the grower contracts to have the cling peach crop harvested in July. 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.

**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 \$2.90 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 the majority of the reported cling peaches grown in California and the United States. Yields for the previous five years are shown by county in Table E.

Table E. Annual cling peach yields by county, 1998-2002

County	1998	1999	2000	2001	2002
Butte	33,170	28,504	32,474	33,210	33,130
Fresno	29,500	38,600	22,500	23,200	24,800
Kings	20,919	20,638	20,304	19,752	15,176
Madera	NA <sup>§</sup>	18,200	21,278	9,654	16,909
Merced	61,536	59,817	75,908	65,826	69,352
San Joaquin	31,400	44,600	45,700	40,600	43,500
Stanislaus	140,000	125,500	135,600	119,000	117,100
Sutter	153,156	173,863	183,512	151,141	158,844
Tulare	28,300	27,200	24,200	18,700	11,500
Yuba	79,208	79,208	100,130	83,761	88,740

Source: CDFA, State Crop Reports, 1998 - 2002.

<sup>§</sup> NA = Not Available

In this study, yield at maturity is 17 tons per acre. An estimated price of \$245 per ton is used in this study to determine potential profits/losses. The yields and prices used in this cost study are estimates for current situations. Table 7 shows income, costs, and net returns at varying yields and prices.

**Risk.** The risks associated with producing and marketing extra-early 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.

**Pickup/ATV.** The grower uses the pickup for business and personal use. It is assumed that 5,000 miles are for business use. The ATV is used for inspecting and monitoring the orchard. It is also used for irrigating and checking the system, but is not included as an irrigation cost.

**Labor.** Labor rates of \$14.10 per hour for machine operators and \$11.28 for general labor includes payroll overhead of 41%. The basic hourly wages are \$10.00 for machine operators and \$8.00 for general labor. The overhead includes the employers' share of federal and California state payroll taxes, workers' compensation insurance for fruit orchards (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 1 and 4 to account for the extra labor involved in equipment set up, moving, maintenance, work breaks, and field repair.

**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. To prevent a negative calculation in this study, interest is calculated based on an August harvest. The monthly interest is then distributed in Table 4 beginning in September after the August harvest, which corresponds to the month following the August harvest date.

### **Cash Overhead Costs** (Tables 1-7)

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.

**Equipment Cash Costs.** Equipment costs 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 \$1.45 and \$1.88 per gallon, respectively.

**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 \$42 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 \$432 annually. The cost includes a double toilet, delivery and 2 months of weekly service.

**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

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

*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.

*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. In other words, the next best alternative use for these resources is in another agricultural enterprise.

**Land.** Cling peach orchards range in value from \$7,000 to \$13,500, whereas tree crops (almonds, walnuts, etc.) range from \$4,500 to \$15,500. Because that the orchard is established on land previously planted to tree crops, the land in this study is valued at \$7,000 per acre.

**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 40 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.

**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 of the cost and returns study, “*Sample Costs to Establish a Cling Peach Orchard and Produce Cling Peaches, Sacramento and San Joaquin Valley, Late Harvested Varieties*”, represents the establishment cost per acre. For this study, the cost is \$4,298 per acre or \$171,920 for the 40 acres planted to cling peaches. Establishment cost is amortized over the remaining 17 years that the orchard is assumed to be in production. Establishment cost is used to determine the annual capital recovery expense and interest on investment for production years. Establishment costs in this study are based on typical basic operations, but can vary considerably, depending upon terrain, soil type, local regulations, and other factors. For example, development on marginal soils will require additional land preparation and soil amendments. Management/Development companies will have additional labor costs.

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

**Shop Tools, Pruning Equipment, and Ladders.** This includes an assortment of shop tools, various pruning equipment, and 14 foot orchard ladders. The ladders are used for pruning and harvesting.

**Fuel Tanks.** Two 250-gallon fuel tanks using gravity feed are on metal stands. The tanks are setup in a cement containment pad that meets federal, state, and county regulations.

**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.

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

## REFERENCES

- American Society of Agricultural Engineers. 1992. *American Society of Agricultural Engineers Standards Yearbook*. St. Joseph, MI.
- Boehlje, Michael D., and Vernon R. Eidman. 1984. *Farm Management*. John Wiley and Sons. New York, NY
- California Chapter of the American Society of Farm Managers and Rural Appraisers. 2002. *Trends in Agricultural Land & Lease Values*. California Chapter of The American Society of Farm Managers and Rural Appraisers. Woodbridge, CA. <http://www.calasfmra.com/landvalues/2002/index.html>. Internet accessed January, 2004.
- California Department of Food and Agriculture. 1997. 1997 Agricultural Commissioners' Data. <http://www.nass.usda.gov/ca/bul/agcom/indexcac.htm>. Internet accessed April, 2004.
- California Department of Food and Agriculture. 1998. 1998 Agricultural Commissioners' Data. <http://www.nass.usda.gov/ca/bul/agcom/indexcac.htm>. Internet accessed April, 2004.
- California Department of Food and Agriculture. 1999. 1999 Agricultural Commissioners' Data. <http://www.nass.usda.gov/ca/bul/agcom/indexcac.htm>. Internet accessed April, 2004.
- California Department of Food and Agriculture. 2000. 2000 Agricultural Commissioners' Data. <http://www.nass.usda.gov/ca/bul/agcom/indexcac.htm>. Internet accessed April, 2004.
- California Department of Food and Agriculture. 2001. 2001 Agricultural Commissioners' Data. <http://www.nass.usda.gov/ca/bul/agcom/indexcac.htm>. Internet accessed April, 2004.
- Integrated Pest Management Education and Publications. 2004. UC IPM Pest Management Guidelines: Nectarines and Peaches. In M. L. Flint (ed.) *UC IPM Pest Management Guidelines*. University of California. Division of Agriculture and Natural Resources. Oakland, CA. Publication 3339. <http://www.ipm.ucdavis.edu/IPMPROJECT/pestmgmt.html#PMG>. Internet accessed January, 2004.
- LaRue, James H., R. Scott Johnson. (eds.) 1989. Peaches, Plums, and Nectarines, Growing and Handling for Fresh Market. University of California. Division of Agriculture and Natural Resources. Oakland, CA. Publication 3331.
- Norton, Maxwell, Janine Hasey, Roger Duncan, Heidi Sanders, Bill Olson, Karen M. Klonsky, and Pete Livingston. 2003. *Sample Costs to Establish a Cling Peach Orchard and Produce Cling Peaches, Sacramento and San Joaquin Valley, Late Harvested Varieties*. University of California, Cooperative Extension. Department of Agricultural and Resource Economics. Davis, CA.

Table 1.

U.C. COOPERATIVE EXTENSION  
 SAMPLE COSTS PER ACRE TO PRODUCE CLING PEACHES  
 SACRAMENTO AND SAN JOAQUIN VALLEYS – 2004  
 EXTRA-EARLY VARIETIES

Labor Rate: \$14.80/hr. machine labor  
 \$11.83/hr. non-machine labor

Interest Rate: 6.89%  
 Yield per Acre: 17 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:								
Dormant Prune	46.98	556	0	0	0	556		
Pest Control - Dormant Spray	0.50	9	7	52	0	68		
Brush Disposal	0.40	7	6	0	0	14		
Tree Wire Repairs	1.50	18	0	5	0	23		
Pest Control - 20% Bloom Spray	0.50	9	7	5	0	22		
Weed Control - Mow Middles 5X	2.00	36	32	0	0	68		
Pest Control - Full Bloom Spra	0.50	9	7	29	0	45		
Pest Control - Rust/Mildew 3X	1.50	27	22	29	0	78		
Fertilize N - 100 Lbs N/Acre	0.67	12	7	19	0	37		
Irrigate 7X	2.24	26	0	42	0	69		
Weed Control - Spot Spray 2X	0.67	12	7	4	0	23		
Insect Control - In-Season 2X	1.00	18	15	26	0	59		
Thin/Remove Fruit	51.81	613	0	0	0	613		
Summer Pruning	12.00	142	0	0	0	142		
Prop Limbs	0.25	28	2	0	0	30		
Leaf Analysis	0.00	0	0	0	2	2		
Pickup Truck Use	2.85	51	22	0	0	73		
ATV Use	2.85	51	7	0	0	57		
<b>TOTAL CULTURAL COSTS</b>	<b>128.21</b>	<b>1,622</b>	<b>141</b>	<b>212</b>	<b>2</b>	<b>1,977</b>		
Harvest:								
Bin Field Distribution	1.00	18	9	0	0	26		
Hand Pick and Field Sort Fruit	0.00	0	0	0	994	994		
Haul Fruit	0.00	0	0	0	100	100		
CPAB Assessment Fee	0.00	0	0	49	0	49		
<b>TOTAL HARVEST COSTS</b>	<b>1.00</b>	<b>18</b>	<b>9</b>	<b>49</b>	<b>1,094</b>	<b>1,170</b>		
Postharvest:								
Fertilize N - 50 Lbs N/Acre 1X	0.33	6	3	19	0	28		
Irrigate 1X	0.32	4	0	6	0	10		
Weed Control - Dormant Strip Spray	0.33	6	3	26	0	35		
<b>TOTAL POSTHARVEST COSTS</b>	<b>0.99</b>	<b>16</b>	<b>7</b>	<b>51</b>	<b>0</b>	<b>73</b>		
Interest on operating capital @ 6.89%						57		
<b>TOTAL OPERATING COSTS/ACRE</b>		<b>1,655</b>	<b>157</b>	<b>312</b>	<b>1,096</b>	<b>3,278</b>		
CASH OVERHEAD:								
Office Expense						43		
Liability Insurance						5		
Sanitation Fees						4		
Property Taxes						85		
Property Insurance						57		
Investment Repairs						25		
<b>TOTAL CASH OVERHEAD COSTS</b>						<b>219</b>		
<b>TOTAL CASH COSTS/ACRE</b>						<b>3,497</b>		
NON-CASH OVERHEAD:								
Investment		Per producing Acre		-- Annual Cost -- Capital Recovery				
Buildings: 1,800 SqFt		418		37		37		
Flood Irrigation System		552		37		37		
Fuel Tanks: 2 - 250 Gallon		37		3		3		
Land		7,000		436		436		
Pruning Equipment		15		2		2		
Shop Tools		131		13		13		
Orchard Establishment Cost		4,298		417		417		
Equipment		1,413		165		165		
<b>TOTAL NON-CASH OVERHEAD COSTS</b>		<b>13,866</b>		<b>1,111</b>		<b>1,111</b>		
<b>TOTAL COSTS/ACRE</b>						<b>4,608</b>		

Table 2.

UC COOPERATIVE EXTENSION  
 COSTS AND RETURNS PER ACRE TO PRODUCE CLING PEACHES  
 SACRAMENTO AND SAN JOAQUIN VALLEYS - 2004  
 EXTRA-EARLY VARIETIES

Labor Rate: \$14.80/hr. machine labor  
 \$11.83/hr. non-machine labor

Interest Rate: 6.89%

	Quantity/Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
<b>GROSS RETURNS</b>					
Extra-early Cling Peaches	17.0	Ton	245	<u>4,165</u>	
<b>TOTAL GROSS RETURNS FOR CLING PEACHES</b>				<u>4,165</u>	
<b>OPERATING COSTS</b>					
Insecticide:					
Supreme Oil	6.00	Gal	3	17	
Asana XL	27.20	FlOz	1	29	
Checkmate OFM (F)	2.60	FlOz	1	2	
Fungicide:					
Kocide 101	10.00	Lb	3	29	
Rovral 4FL	1.50	FlOz	2	2	
Elite WP	6.00	Oz	5	27	
Sulfur - Wettable	36.00	Lb	0	9	
Tree Aids:					
Tree Wire	1.00	Acre	5	5	
Fertilizer:					
Zinc Sulfate 36%	5.00	Lb	0	2	
Urea 46-0-0	100.00	Lb N	0	38	
Herbicide:					
Rally 40W	5.00	Oz	5	25	
Roundup Pro	1.60	Pint	6	10	
Surflan 4 AS	1.50	Pint	13	20	
Irrigation:					
Water - District	42.00	AcIn	1	48	
Custom:					
Leaf Analysis	1.00	Acre	2	2	
Harvest - Hand	17.00	Ton	59	994	
Haul Fruit	20.00	Ton	5	100	
Assessment:					
CPAB Assessment Fee	17.00	Ton	3	49	
Labor (machine)	18.42	Hrs	15	273	
Labor (non-machine)	116.85	Hrs	12	1,382	
Fuel - Gas	7.59	Gal	2	14	
Fuel - Diesel	33.96	Gal	1	49	
Lube				10	
Machinery repair				84	
Interest on operating capital @ 6.89%				<u>57</u>	
<b>TOTAL OPERATING COSTS/ACRE</b>				<u>3,278</u>	
<b>NET RETURNS ABOVE OPERATING COSTS</b>				<u>887</u>	
<b>CASH OVERHEAD COSTS:</b>					
Office Expense				43	
Liability Insurance				5	
Sanitation Fees				4	
Property Taxes				85	
Property Insurance				57	
Investment Repairs				<u>25</u>	
<b>TOTAL CASH OVERHEAD COSTS/ACRE</b>				<u>219</u>	
<b>TOTAL CASH COSTS/ACRE</b>				<u>3,497</u>	

U.C. COOPERATIVE EXTENSION  
Table 2. continued

NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY):	
Buildings: 1,800 SqFt	37
Flood Irrigation System	37
Fuel Tanks: 2 - 250 Gallon	3
Land	436
Pruning Equipment	2
Shop Tools	13
Orchard Establishment Cost	417
Equipment	<u>165</u>
TOTAL NON-CASH OVERHEAD COSTS/ACRE	1,111
TOTAL COSTS/ACRE	<u>4,608</u>
NET RETURNS ABOVE TOTAL COSTS	<u>-443</u>

Table 3.

UC COOPERATIVE EXTENSION  
MONTHLY CASH COSTS - CLING PEACHES  
SACRAMENTO AND SAN JOAQUIN VALLEYS – 2004  
EXTRA-EARLY VARIETIES

Beginning DEC 03	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	TOTAL
Ending NOV 04	03	04	04	04	04	04	04	04	04	04	04	04	
Cultural:													
Dormant Prune	185	185	185										556
Pest Control - Dormant Spray		68											68
Brush Disposal			14										14
Tree Wire Repairs			23										23
Pest Control - 20% Bloom Spray			22										22
Weed Control - Mow Middles 5X			14	14	27	14							68
Pest Control - Full Bloom Spray				45									45
Pest Control - Rust/Mildew Sprays 3X				41	19	19							78
Fertilize N - 25 Lbs N/Acre 2X				19		19							37
Irrigate 7X					10	20	20	20					69
Weed Control - Spot Spray 2X				11		11							23
Insect Control - In-Season Spray 2X						30	29						59
Thin/Remove Fruit						613							613
Summer Pruning						142							142
Prop Limbs							30						30
Leaf Analysis								2					2
Pickup Truck Use	7	7	7	7	7	7	7	7	7	7	7	7	73
ATV Use	5	5	5	5	5	5	5	5	5	5	5	5	57
<b>TOTAL CULTURAL COSTS</b>	<b>197</b>	<b>265</b>	<b>268</b>	<b>142</b>	<b>68</b>	<b>880</b>	<b>79</b>	<b>14</b>	<b>12</b>	<b>12</b>	<b>12</b>		<b>1,977</b>
Harvest:													
Bin Field Distribution								26					26
Hand Pick and Field Sort								994					994
Haul Fruit								100					100
CPAB Assessment Fee								49					49
<b>TOTAL HARVEST COSTS</b>								<b>1,170</b>					<b>1,170</b>
Postharvest:													
Fertilize N - 50 Lbs N/Acre 1X								28					28
Irrigate 1X									10				10
Weed Control - Dormant Strip Spray											35		35
<b>TOTAL POSTHARVEST COSTS</b>								<b>28</b>	<b>10</b>		<b>35</b>		<b>73</b>
Interest on operating capital <sup>§</sup>	1	3	4	5	6	11	11	18	0	0	0		57
<b>TOTAL OPERATING COSTS/ACRE</b>	<b>198</b>	<b>268</b>	<b>273</b>	<b>156</b>	<b>74</b>	<b>891</b>	<b>90</b>	<b>1,230</b>	<b>22</b>	<b>11</b>	<b>47</b>		<b>3,278</b>
OVERHEAD:													
Office Expense	4	4	4	4	4	4	4	4	4	4	4	4	43
Liability Insurance		5											5
Sanitation Fees	0	0	0	0	0	0	0	0	0	0	0	0	4
Property Taxes		42						42					85
Property Insurance		29						29					57
Investment Repairs	2	2	2	2	2	2	2	2	2	2	2	2	25
<b>TOTAL CASH OVERHEAD COSTS</b>	<b>6</b>	<b>83</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>77</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>2</b>	<b>219</b>
<b>TOTAL CASH COSTS/ACRE</b>	<b>205</b>	<b>351</b>	<b>279</b>	<b>163</b>	<b>80</b>	<b>897</b>	<b>96</b>	<b>1,307</b>	<b>28</b>	<b>18</b>	<b>53</b>	<b>2</b>	<b>3,497</b>

<sup>§</sup> See operating capital under Assumptions

Table 4.

UC COOPERATIVE EXTENSION  
WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS  
SACRAMENTO AND SAN JOAQUIN VALLEYS - 2004  
EXTRA-EARLY VARIETIES

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	- Cash Overhead -		Total
						Insur- ance	Taxes	
04	55 HP 2WD Tractor	32,914	15	6,408	3,170	133	197	3,499
04	66 HP 2WD Tractor	37,230	15	7,248	3,585	150	222	3,958
04	ATV 4WD	7,579	7	2,875	1,029	35	52	1,116
04	Bin Trailer	1,122	15	108	113	4	6	123
04	Bin Trailer	1,122	15	108	113	4	6	123
04	Bin Trailer	1,122	15	108	113	4	6	123
04	Bin Trailer	1,122	15	108	113	4	6	123
04	Mower - Flail 10'	10,477	10	1,853	1,300	42	62	1,403
04	Orchard Sprayer - 500 Gal	20,136	10	3,561	2,498	80	118	2,697
04	Pickup Truck - 3/4 Ton	27,887	7	10,579	3,785	130	192	4,107
04	Spin/Spreader - 3 Point	1,565	20	82	137	6	8	151
04	Utility Trailer	1,836	20	96	161	7	10	177
04	Weed Sprayer - 100 Gal	3,424	10	342	445	13	19	476
TOTAL		147,536		33,476	16,560	612	905	18,076

<sup>s</sup> 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								
Buildings: 1,800 SqFt	41,820	20		3,714	141	209	983	5,048
Orchard Establishment Cost	171,920	17		16,681	0	0	0	16,681
Flood Irrigation System	55,229	40	5,523	3,744	205	304	1,105	5,358
Fuel Tanks: 2 - 250 Gal	3,723	20	372	321	14	20	73	428
Land	700,000	25	700,000	43,610	4,732	7,000	0	55,342
Pruning Equipment	1,522	10	152	198	6	8	31	243
Shop Tools	13,136	15	1,314	1,317	49	72	263	1,702
TOTAL INVESTMENT	987,350		707,361	69,585	5,147	7,614	2,455	84,801

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/		Price/ Unit	Total Cost
	Farm	Unit		
Liability Insurance	100	Acre	5.16	516
Office Expense	100	Acre	43.00	4,300
Sanitation Fees	100	Acre	4.36	436



Table 5.

UC COOPERATIVE EXTENSION  
HOURLY EQUIPMENT COSTS  
SACRAMENTO AND SAN JOAQUIN VALLEYS - 2004  
EXTRA-EARLY VARIETIES

		----- COSTS PER HOUR -----							
Y r	Description	Actual	- Cash Overhead -			----- Operating -----			Total
		Hours	Capital	Insur-	Taxes	Repairs	Fuel &	Total	
		Used	Recovery	ance			Lube	Oper.	Costs/Hr.
04	55 HP 2WD Tractor	800.0	3.96	0.17	0.25	2.35	4.50	6.85	11.22
04	66 HP 2WD Tractor	799.6	4.48	0.19	0.28	2.66	5.40	8.06	13.01
04	ATV 4WD	285.0	3.61	0.12	0.18	0.93	1.44	2.37	6.29
04	Bin Trailer	166.0	0.68	0.03	0.04	0.26	0.00	0.26	1.00
04	Bin Trailer	166.0	0.68	0.03	0.04	0.26	0.00	0.26	1.00
04	Bin Trailer	166.0	0.68	0.03	0.04	0.26	0.00	0.26	1.00
04	Bin Trailer	166.0	0.68	0.03	0.04	0.26	0.00	0.26	1.00
04	Mower - Flail 10'	200.0	6.50	0.21	0.31	7.22	0.00	7.22	14.24
04	Orchard Sprayer - 500 Gal	200.0	12.49	0.40	0.59	5.68	0.00	5.68	19.17
04	Pickup Truck - 3/4 Ton	285.0	13.28	0.46	0.67	3.41	4.32	7.73	22.14
04	Spin/Spreader - 3 Point	60.0	2.28	0.09	0.14	0.96	0.00	0.96	3.47
04	Utility Trailer	150.0	1.07	0.04	0.06	0.45	0.00	0.45	1.63
04	Weed Sprayer - 100 Gal	150.0	2.96	0.08	0.13	1.52	0.00	1.52	4.69

Table 6.

UC COOPERATIVE EXTENSION  
RANGING ANALYSIS  
SACRAMENTO AND SAN JOAQUIN VALLEYS – 2004  
EXTRA-EARLY VARIETIES

	COSTS PER ACRE AT VARYING YIELDS TO PRODUCE EXTRA-EARLY CLING PEACHES						
	YIELD (TON/ACRE)						
	11.0	13.0	15.0	17.0	19.0	21.0	23.0
<b>OPERATING COSTS/ACRE:</b>							
Cultural Cost	73	73	73	73	73	73	73
Harvest Cost	1,977	1,977	1,977	1,977	1,977	1,977	1,977
Postharvest Cost	757	895	1,033	1,170	1,308	1,446	1,583
Interest on operating capital	56	57	57	58	59	60	61
<b>TOTAL OPERATING COSTS/ACRE</b>	<b>2,863</b>	<b>3,001</b>	<b>3,140</b>	<b>3,278</b>	<b>3,417</b>	<b>3,555</b>	<b>3,694</b>
<b>TOTAL OPERATING COSTS/TON</b>	<b>260</b>	<b>231</b>	<b>209</b>	<b>193</b>	<b>180</b>	<b>169</b>	<b>161</b>
<b>CASH OVERHEAD COSTS/ACRE</b>	<b>219</b>	<b>219</b>	<b>219</b>	<b>219</b>	<b>219</b>	<b>219</b>	<b>219</b>
<b>TOTAL CASH COSTS/ACRE</b>	<b>3,082</b>	<b>3,221</b>	<b>3,359</b>	<b>3,498</b>	<b>3,636</b>	<b>3,775</b>	<b>3,913</b>
<b>TOTAL CASH COSTS/TON</b>	<b>280</b>	<b>248</b>	<b>224</b>	<b>206</b>	<b>191</b>	<b>180</b>	<b>170</b>
<b>NON-CASH OVERHEAD COSTS/ACRE</b>	<b>1,110</b>	<b>1,110</b>	<b>1,111</b>	<b>1,111</b>	<b>1,112</b>	<b>1,112</b>	<b>1,113</b>
<b>TOTAL COSTS/ACRE</b>	<b>4,192</b>	<b>4,331</b>	<b>4,470</b>	<b>4,609</b>	<b>4,748</b>	<b>4,887</b>	<b>5,026</b>
<b>TOTAL COSTS/TON</b>	<b>381</b>	<b>333</b>	<b>298</b>	<b>271</b>	<b>250</b>	<b>233</b>	<b>218</b>

**NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR EXTRA-EARLY CLING PEACHES**

PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
	11.0	13.0	15.0	17.0	19.0	21.0	23.0
<b>Cling Peaches</b>							
230	-332	-11	311	632	954	1,276	1,597
235	-277	54	386	717	1,049	1,381	1,712
240	-222	119	461	802	1,144	1,486	1,827
245	-167	184	536	887	1,239	1,591	1,942
250	-112	249	611	972	1,334	1,696	2,057
255	-57	314	686	1,057	1,429	1,801	2,172
260	-2	379	761	1,142	1,524	1,906	2,287

**NET RETURN PER ACRE ABOVE CASH COST FOR EXTRA-EARLY CLING PEACHES**

PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
	11.0	13.0	15.0	17.0	19.0	21.0	23.0
<b>Cling Peaches</b>							
230	-551	-230	92	413	735	1,056	1,378
235	-496	-165	167	498	830	1,161	1,493
240	-441	-100	242	583	925	1,266	1,608
245	-386	-35	317	668	1,020	1,371	1,723
250	-331	30	392	753	1,115	1,476	1,838
255	-276	95	467	838	1,210	1,581	1,953
260	-221	160	542	923	1,305	1,686	2,068

**NET RETURNS PER ACRE ABOVE TOTAL COST FOR EXTRA-EARLY CLING PEACHES**

PRICE (DOLLARS/TON)	YIELD (TON/ACRE)						
	11.0	13.0	15.0	17.0	19.0	21.0	23.0
<b>Cling Peaches</b>							
230	-1,661	-1,340	-1,019	-698	-377	-56	265
235	-1,606	-1,275	-944	-613	-282	49	380
240	-1,551	-1,210	-869	-528	-187	154	495
245	-1,496	-1,145	-794	-443	-92	259	610
250	-1,441	-1,080	-719	-358	3	364	725
255	-1,386	-1,015	-644	-273	98	469	840
260	-1,331	-950	-569	-188	193	574	955

Table 7.

UC COOPERATIVE EXTENSION  
 COSTS AND RETURNS/BREAKEVEN ANALYSIS  
 SACRAMENTO AND SAN JOAQUIN VALLEYS - 2004  
 EXTRA-EARLY VARIETIES

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	4,165	3,278	887	3,497	668	4,608	-443

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	166,600	131,102	35,498	139,871	26,729	184,327	-17,727

BREAKEVEN PRICES PER YIELD UNIT					
CROP	Base Yield (Units/Acre)	Yield Units	----- Breakeven Price To Cover -----		
			Operating Costs	Cash Costs	Total Costs
Cling Peaches	17.0	Ton	192.80	205.69	271.07

BREAKEVEN YIELDS PER ACRE					
CROP	Yield Units	Base Price (\$/Unit)	----- Breakeven Yield To Cover -----		
			Operating Costs	Cash Costs	Total Costs
Cling Peaches	Ton	245.00	13.4	14.3	18.8

Table 8.

UC COOPERATIVE EXTENSION  
DETAIL BY OPERATION  
SACRAMENTO AND SAN JOAQUIN VALLEYS - 2004  
EXTRA-EARLY VARIETIES

Operation	Operation Month	Tractor/ Power Unit	Implement	Material	Broadcast Rate/acre	Material Unit
Cultural:						
Dormant Prune	December	Labor				
	January	Labor				
	February	Labor				
Pest Control - Dormant Spray	January	66 HP 2WD Tractor	Orchard Sprayer	Supreme Oil	5.00	Gal
				Kocide 101	10.00	Lb
				Asana XL	8.00	Fl Oz
Brush Disposal	February	66 HP 2WD Tractor	Flail Mower			
Tree Wire Maintenance	February	Labor		Wire		
Disease Control - 20% Bloom Spray	February	66 HP 2WD Tractor	Orchard Sprayer	Rovral 4FL	1.50	Pint
				Supreme Oil	1.00	Gal
Weed Control - Mow Middles 5X	February	66 HP 2WD Tractor	Flail Mower			
	March	66 HP 2WD Tractor	Flail Mower			
	April	66 HP 2WD Tractor	Flail Mower			
	April	66 HP 2WD Tractor	Flail Mower			
	May	66 HP 2WD Tractor	Flail Mower			
Irrigation 7X	April			Water	5.25	AcIn
	May			Water	10.50	AcIn
	June			Water	10.50	AcIn
	July			Water	10.50	AcIn
- Postharvest 1X	August			Water	5.25	AcIn
Disease Control - Full Bloom Spray	March	66 HP 2WD Tractor	Orchard Sprayer	Elite WP	6.00	Oz
				Zinc Sulfate	5.00	Lb
Fertilize N - 25 Lbs/Acre 2X	March	66 HP 2WD Tractor	Spinner Spreader	46-0-0	25.00	Lbs N
	May	66 HP 2WD Tractor	Spinner Spreader	46-0-0	25.00	Lbs N
- Postharvest - 50 Lbs/Acre 1X	July	66 HP 2WD Tractor	Spinner Spreader	46-0-0	50.00	Lbs N
Weed Control - Spot Spray 2X	March	66 HP 2WD Tractor	Weed Sprayer	Roundup	0.30	Pint
	May	66 HP 2WD Tractor	Weed Sprayer	Roundup	0.30	Pint
Disease Control - Rust/Mildew 3X	March	66 HP 2WD Tractor	Orchard Sprayer	Rally 40W	5.00	Oz
	April	66 HP 2WD Tractor	Orchard Sprayer	Wettable Sulfur	10.00	Lb
	May	66 HP 2WD Tractor	Orchard Sprayer	Wettable Sulfur	10.00	Lb
Disease Control - In-Season Spray 2X	May	66 HP 2WD Tractor	Orchard Sprayer	Asana XL	9.60	Fl Oz
				Checkmate	1.30	Fl Oz
				Wettable Sulfur	10.00	Lb
	June	66 HP 2WD Tractor	Orchard Sprayer	Asana XL	9.60	Fl Oz
				Checkmate	1.30	Fl Oz
				Acaramite	0.75	Lb
Thin/Remove Fruit	May	Labor				
Summer Pruning	May	Labor				
Prop Limbs	June	Labor				
Bin Distribution	July	66 HP 2WD Tractor	Bin Trailer #1			
		55 HP 2WD Tractor	Bin Trailer #2			
			Bin Trailer #3			
			Bin Trailer #4			
Hand Pick & Field Sort Fruit	July			Contract		
Haul Fruit	July			Custom		
Weed Control - Dormant Strip Spray	October	66 HP 2WD Tractor	Weed Sprayer	Roundup	1.00	Pint
				Surflan 4	1.50	Pint
Pickup Truck Use	Annual	Pickup 1/2 ton				
ATV	Annual	ATV				
Prune	December	Labor				