UNIVERSITY OF CALFORNIA COOPERATIVE EXTENSION

# 2012

# SAMPLE COSTS TO PRODUCE

# ORGANIC PEARS

***Golden Russet Bosc***

## SACRAMENTO VALLEY

**Sacramento County**


Prepared by:

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## INTRODUCTION

Sample costs to produce organic pears in the Sacramento Valley – Sacramento County are presented in this study. The 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 these same practices will not apply to every situation. The sample costs for labor, materials, equipment and custom services are based on current figures. A blank column, "*Your Costs*", in Tables 1 and 2 is provided for entering your costs.

For an explanation of calculations used for the study refer to the Assumptions or call the Department of Agricultural and Resource Economics, University of California-Davis, (530) 752-3589 or the UC Cooperative Extension Farm Advisor in the county of interest**.**

Sample Cost of Production Studies for many commodities, including organic production, can be downloaded at http://coststudies.ucdavis.edu, requested through the Department of Agricultural and Resource Economics, UC Davis, (530) 752-6887 or obtained from the local county UC Cooperative Extension offices. Some archived studies are also available on the website.

## Assumptions

The following assumptions give background information relevant to the values shown in Tables 1 to 7 and pertain to sample costs for producing pears in the Sacramento Valley – Sacramento County. The cultural practices in this study represent typical organic production practices for this crop and area. The practices and inputs used in this cost study serve as a guide only. All costs and practices may not be applicable to your situation or used during every production year. Cultural practices vary by grower and region and variations can be significant. **Trade names and practices used in this report do not constitute an endorsement or recommendation by the University of California nor is any criticism implied by omission of other similar products or practices.**

**Farm**. The hypothetical farm located on the valley floor in the Sacramento River Delta - Sacramento County is owned and operated by the owner. The 400 contiguous acre farm consists of 100 acres of pears, 290 acres of orchard and/or vine crops, and 10 acres for shop, equipment yard and roads. There are 25 acres of organic pears. The organic orchard was converted from a conventional orchard that was established on land previously planted to a pear orchard. It is on a loam soil, typical of the region.

**Trees.** The pear cultivar planted in this study is Golden Russet Bosc on Winter Nellis rootstock, a favorable combination in Sacramento County. Unlike Bartlett, Bosc is a single-purpose pear, utilized for only fresh market and not processing. The trees are planted on 10 X 18-foot spacing, 242 trees per acre. Pear trees have a long production life if they are well maintained. Pear orchards may have some trees over 100 years old still producing a commercial crop. The life of the orchard at the time of planting in this study is estimated to be 100 years.

## Production Operating Costs

**Replanting.** An average of one tree per acre is replanted each year.

**Pruning**. A contract labor crew hand prunes during the winter months (December). Crews consist of 20 laborers and one foreman per crew. Prunings are chopped in February during the first mowing.

**Irrigation.** Growers in the area have riparian rights; however, the growers are members of the North Delta Water Agency, which costs $1.80 per acre. The main irrigation costs are pumping costs plus irrigation labor. The cost is based on using two 25 - 30 hp motors to pump 30 acre-inches from the river. Price per acre-foot of water will vary by grower in this region depending on power source, power cost, and other irrigation factors. In this study, the power cost is based on grower input costs of $160 per acre for a mature orchard and at 30 acre-inches calculates to $5.33 per acre-inch. No assumption is made about effective rainfall or runoff.

**Fertilization**. Tree nitrogen status is determined during the season by visual observation (shoot vigor and leaf color) and by leaf analysis taken in July. Nitrogen is applied in June and October. In this study, feather meal is applied at the rate of 500 pounds in the spring and 150 pounds in the fall (a total of about 80 pounds of actual N per acre). Muriate of potash is applied at 333 pounds per acre in September/October (200 pounds of potassium per acre). The grower, using a tractor and rented fertilizer spreader, makes all fertilizer applications.

**Pest Management.** The pesticides and rates mentioned in this cost study are listed in *UC Integrated Pest Management Guidelines, Pears.* **Pesticides mentioned in the study are not recommendations, but those commonly used in the region.** For information on other pesticides available, pest identification, monitoring, and management visit the UC IPM website at http://coststudies.ucdavis.edu. For information and pesticide use permits, contact the local county agricultural commissioner's office.

*Pest Control Adviser (PCA).* Written recommendations are required for many pesticides and are made by licensed pest control advisers. In addition, the PCA may monitor the field for agronomic problems including pests and nutrition. Growers can hire private PCAs or receive the service as part of a service agreement with an agricultural chemical and fertilizer company. In this study, the PCA is from an agricultural-chemical company, and a fee is charged for monitoring the pheromone traps.

*Weeds*. A Weed Badger® cultivator is used to control both weed and voles. The implement shallowly tills a swath approx. 2 ft. wide on either side of the tree row, articulating around trees and sprinklers with a hydraulically-operated arm. Weeds immediately adjacent to the sprinklers and trees are removed by hand weeding in March and May. The row middles are mowed in December, at which time the prunings are shredded. They are mowed again in April, May, June, and July.

*Insects and Mites.* Arthropod pests treated in this study are codling moth, pear psylla, and mites. All pest management operations are done by the growers with their own equipment.

Codling moth is considered the primary pear pest and its control can affect subsequent control of other pests. In this study pheromones for mating disruption and traps are hung in the orchard in April. The traps are monitored by a PCA Entrust insecticide is applied one time in June to control pear slug, and used at the proper timing it can also control codling moth.

Pear psylla is an economically significant insect pear pest. Psylla are controlled with horticultural oil applied at various times during the year. Treatments made in this study include a dormant spray in January, June, August, and October. High psylla populations can weaken a tree, and honeydew excreted by psylla can cause russetting on fruit and sooty mold on leaves.

Mites are controlled with the oil sprays used to control pear psylla. They are also controlled with the micronized sulfur spray in November that is also applied to control pear scab (see below). Mites can cause damage in pears even at low levels (two per leaf).

*Disease*. Ten treatments for fire blight are made at 3 to 4 day intervals or 2 applications weekly using Mycoshield from mid-March through April. Each application is made to alternate rows so that each week both sides of the tree have been sprayed. Pesticides used to control fire blight and other pests are sometimes tank-mixed with other materials. During years of heavy disease pressure, fire blight may require 15 or more Mycoshield applications. However, Bosc pears are less susceptible to blight than Bartlett. In addition to using Mycoshield, blight infections are cut out by hand in the spring. The cost of blight cutting is dependent on the amount of blight removed. Fire blight symptoms usually appear first in blossoms and shoot tips and if left untreated, the infection can move into spurs and branches. Severe infection may not only cause loss of fruit, but may kill entire branches or trees.

Pear scab, in this study, is controlled with six fungicide treatments made in the spring prior to infection. The scab sprays are applied in March and April. These sprays are made with micronized sulfur, Microthiol, which is often tank mixed with the blight sprays. It is also controlled with the fall clean-up spray of micronized sulfur and lime sulfur. Pear scab is caused by a fungus that first attacks young fruit, appearing as dark velvety spots and often causing the young pears to drop. If fruit does not drop, scabbing and deformities occur and cause reductions in quality. Pear scab can be a serious disease during cool, wet springs.

*Vertebrate (Rodents) Pests*. The major vertebrate pests in pear orchards for this region are voles. They are managed using a Weed Badger, as noted in the Weeds section.

**Thinning.** In this study, the fruit are hand-thinned every other year at a cost of $500 per acre. Bosc pears tend to have alternate bearing, and fruit thinning is required only in the years in which fruit set is heavy. The average cost of $250 per acre appears in the study.

**Miscellaneous Labor.** To keep a steady labor force, when there are lulls in the crop operation, growers often must keep the laborer working at odd jobs, such as hoeing around shop area, equipment yard and so forth.

**Harvest**. The crop is harvested with contract labor. Picking, sorting, and packing costs are paid by the grower. The harvest season for Golden Russet Bosc is mainly August. The orchard is harvested twice. The first pick is selective and usually collects a third of the fruit. The second pick gathers the remaining pears about 10 days to two weeks later. Harvest crews use ladders and picking bags to hand-pick fruit that is placed into half-ton field bins on bin trailers. The grower uses four contract crews at 10 men each. Each man picks five 1,000-pound bins per 6.5 hour day. The contractor charges the grower $20 per bin plus 45% overhead. Each crew has one crew boss, two sorters and one tractor driver. The sorters and driver are hired by the grower and not the contractor. The tractor driver hauls the filled bins to the packing shed or staging area. The crew boss supervises the picking and moves the picking trailers around, when the tractor driver is hauling the fruit. The grower owns a forklift, rents a forklift and hires two forklift drivers. Two tractors and two bin trailers with four 1,000 pounds bins per trailer are assigned to each crew. The grower uses two of his tractors and rents six for one month. The grower owns the bin trailers and the bins are rented from the packinghouse at $1.50 per bin fill/use. The cost for ladders and picking bags is not included in the harvest costs but as a non-cash overhead investment with all costs charged to the pear orchard. The grower pays the custom hauling costs for fresh market fruit only; the processor pays for the fruit going to processing.

*Yields*. Typical annual yields for Golden Russet pears are measured in tons per acre. Yields fall into two categories: fresh market and off-grade (juice/restricted grade). Off-grade pears are used in juice, concentrate, fermented products, drying, and frozen goods.

An assumed yield of 20 tons per acre with 10 percent off grade is used to calculate cost per ton. A typical yield range is 15-21 tons of marketable fruit per acre. Yield maturity is reached in the tenth year.

*Returns*. Not all of the fruit is necessarily sold into the organic market. In this study it is assumed that two thirds of the fruit is sold as organic and one third is sold into the conventional market. Within the fresh markets there are several prices depending on the size of the fruit with larger fruit receiving a higher price than smaller fruit. In this study we use four organic prices and an average conventional price to reflect the variation in revenue from different size fruit. Estimated net return prices per ton are the price received from the packer less packing shed costs of $7.50 per box. The off-grade has no value. We assume that the fruit sold as organic is sold at four different prices depending on fruit size ranging from $20 per box (a net of $12.50 per box) to $14.00 per box (net $6.50 per box), depending on size. This is an average net price of $9.75 per box or $536 per ton (assuming 55 boxes per ton). The average conventional price is assumed to be $3.82 per box or $210 per ton. Returns will vary during the season and from year to year.

**Assessments**. Under a state marketing order, mandatory assessment fees are collected and administered by the California Pear Advisory Board (CPAB). This assessment is charged to growers to pay for pest management and registrations, pear marketing and advertising. Rates are set for pears bound for both fresh and processed markets. This report uses CPAB assessments for the categories tight fill carton (36 lb) and processed unrestricted and restricted grades as shown in Table A.

Table A. California Pear Advisory Board Assessments - Bosc Pears

| Category | $/Unit | Unit |
|---|---|---|
| Fresh market | | |
| Tight-fill carton | $0.320 | 36 lb |
| Standard box | $0.400 | 45 lb |
| Metric box | $0.356 | 40 lb |
| LA lug | $0.249 | 28 lb |

**Pickup/ATV.** The pickup is owned by the grower and used for personal and business use. It is assumed that 10,000 miles are for business miles applicable to this orchard. The ATV is used to inspect the orchard, to irrigate and monitor the irrigation system, and other assorted uses.

## Labor, Equipment and Interest

**Labor.** Labor rates of $16.63 per hour for machine operators and $12.33 for general labor includes payroll overhead of 45% based on grower input. This included the hourly wages plus overhead. 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 benefits including housing and utilities. Workers' compensation costs will vary among growers, but for this study the cost is based upon the average industry final rate as of January 1, 2010 (California Department of Insurance, unreferenced). Labor for operations involving machinery are 20% higher than the operation time given in Table 1 to account for the extra labor involved in equipment set up, moving, maintenance, work breaks, and field repair.

**Equipment Operating Costs.** Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by American Society of Agricultural Engineers (ASAE). Fuel and lubrication costs are also determined by ASAE equations based on maximum Power Take Off (PTO) horsepower, and fuel type. Prices for on-farm delivery of diesel and gasoline are $2.04 (excludes excise tax) and $2.67 per gallon, respectively. The cost includes a 2.5% local sales tax on diesel fuel and 7.5% sales tax on gasoline. The fuel prices are the 2011 average costs derived from the Energy Information Administration monthly data. Gasoline also

includes federal and state excise tax, which are refundable for on-farm use when filing your income tax. The fuel, lube, and repair cost per acre for each operation in Table 1 is determined by multiplying the total hourly operating cost in Table 6 for each piece of equipment used for the selected operation by the hours per acre. Tractor time is 10% higher than implement time for a given operation to account for setup, travel and down time.

**Interest On Operating Capital.** Interest on operating capital is based on cash operating costs and is calculated monthly until harvest at a nominal rate of 5.75% 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. The rate will vary depending upon various factors, but the rate in this study is considered a typical lending rate by a farm lending agency as of January 2012.

**Risk**. The risks associated with crop production 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 profitability and economic viability.

## 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.

**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 $895 for the entire farm.

**Crop Insurance.** Crop insurance is available and purchased by most growers. Grower reported costs range from $35 to $50 for 65% to 75% multiperil coverage that pays 65% to 75% of the grower's average production for that field, depending on percent coverage purchased.

**Management/Supervisor Wage.** Wages of $70,000 including 45% payroll overhead for the operator grower or farm manager are included as a cost in this study. The cost is allocated by acres to all crops. Returns above costs are also considered a return to management.

**Office Expense.** Office and business expenses are estimated at $200 per acre for the entire farm. These expenses include office supplies, telephones, bookkeeping, accounting, tax preparation, legal fees, shop and office utilities, safety training/records and training supplies, and miscellaneous administrative charges.

**Reclamation Fee.** The reclamation district manages the water drainage and charges $30 per acre.

**Sanitation Services.** Sanitation services provide portable toilets and washbasin for the pear orchard costs an average of $203 per month or $16.25 per acre. Two toilets are rented during pruning, three during harvest and one the rest of the season. The monthly service charge is an average of four to six California sanitation companies and locations. The cost includes delivery and 8 months of weekly service. Contract labor crews may furnish their own sanitation and included in their costs.

**Safety.** This includes safety training, record keeping, and safety equipment such as facemasks, goggles, and coveralls. An assumed cost is included in Office Expenses.

**Investment Repairs.** Annual maintenance on investments (buildings, irrigation system, etc.) listed under Non-Cash Overhead is calculated as 2% of the purchase price. A maintenance cost is not included for orchard establishment and land.

## Non-Cash Overhead

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 (Boelje and Eidman). The formula for the calculation of the annual capital recovery costs is ((Purchase Price – Salvage Value) x Capital Recovery Factor) + (Salvage Value x 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 (Boelje 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 4.75% is used to calculate capital recovery. The rate will vary depending upon loan size and other lending agency conditions. The rate is the suggested rate by a farm lending agency in January 2012.

**Irrigation System**. The cost is based on using two 25 to 30 hp motors to pump 30 acre-inches from the river with a lateral flow of 25 to 30 feet. Water is pumped to the orchard after running through a filtration station into an underground, permanent sprinkler system in the tree rows. Because an older orchard was removed at this location, pumps and wells already existed. The cost of the irrigation system is for refurbishing the pumps and motors, installing underground, permanent sprinklers and a new filtration system. The new irrigation system was installed after the orchard had been laid out, but prior to planting. The life of the irrigation system is estimated to be 25 years. The irrigation system is considered an improvement to the property.

**Drainage System.** Tile drains are installed underground in the field prior to planting.

**Fuel Tanks**. Two 500-gallon fuel tanks are placed on stands in cement containment meeting Federal, State, and local regulations. Fuel is delivered to the equipment by gravity feed.

**Tools**. Includes shop tools/equipment, hand tools and field tools such as pruning equipment.

**Ladders/Picking Bags.** Costs are for 50 picking bags and 50, ten-foot orchard ladders.

**Building.** The metal shop buildings comprise 2,400 square feet on a cement slab.

**Land.** Pear orchards range from $5,000 to $7,500 per acre whereas open land ranged from $4,500 to $10,000 per acre according to California Real Estate Appraisers "2012 Trends in Agricultural Land and Lease Values". Open land available for pear production in this study is valued at $6,000 per acre.

**Establishment Cost**. The cost to establish the orchard is used to determine the non-cash overhead expenses: depreciation and interest on investment for the production years. The establishment cost is the sum of cash costs for land preparation, planting, trees, production expenses, and cash overhead for growing pear trees through the first year fruit is harvested minus any returns from production. The Total Accumulated Net Cash Cost in the fifth year represents the establishment cost per acre. Establishment costs are estimated and not based on any specific data. For this study, this cost is $9,500 per acre or $950,000 for the 100-acre orchard. Establishment cost is depreciated beginning in the sixth year over the remaining 95 years of production.

**Equipment.** Farm equipment is purchased new or used, but the study shows the current purchase price for new equipment. The new purchase price is adjusted to 60% to indicate a mix of new and used equipment. Equipment costs are composed of three parts: non-cash overhead, cash overhead, and operating costs. Both of the overhead factors have been discussed in previous sections. The operating costs consist of repairs, fuel, and lubrication and are discussed under operating costs.

**Table Values.** Due to rounding, the totals may be slightly different from the sum of the components.

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**TABLE 1. COSTS PER ACRE TO PRODUCE ORGANIC PEARS**

| Operation | Operating Time (Hrs/A) | Cash and Labor Costs per Acre | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Labor Cost | Fuel | Lube &Repairs | Material Cost | Custom/ Rent | Total Cost | Your Cost |
| Cultural : | | | | | | | | |
| Pest:Mites, Psylla | 1.22 | 24 | 18 | 9 | 136 | 0 | 187 | |
| Pest: Scab and mite | 0.31 | 6 | 5 | 2 | 15 | 0 | 28 | |
| Pest: Pear Saw Fly | 0.31 | 6 | 5 | 2 | 42 | 0 | 55 | |
| Fertilize: Potash | 0.09 | 3 | 1 | 1 | 162 | 0 | 167 | |
| Fertilize: Feathermeal | 0.19 | 4 | 3 | 1 | 479 | 0 | 486 | |
| Weed control - Tree Row | 2.62 | 52 | 39 | 9 | 0 | 0 | 100 | |
| Prune | 0.00 | 0 | 0 | 0 | 0 | 986 | 986 | |
| Weed:Mow Middles | 1.51 | 30 | 22 | 13 | 0 | 0 | 65 | |
| Weed: Hand Weed | 5.00 | 62 | 0 | 0 | 0 | 0 | 62 | |
| Replant Trees (1/acre) | 0.26 | 3 | 0 | 0 | 7 | 0 | 10 | |
| Disease: Scab 6X | 2.14 | 43 | 32 | 16 | 93 | 0 | 184 | |
| Disease: Blight 10X | 3.06 | 61 | 45 | 23 | 361 | 0 | 491 | |
| Pest: Codling Moth | 1.40 | 17 | 0 | 0 | 145 | 0 | 163 | |
| Fruit Thinning (By Hand, Every Other Year) | 0.00 | 0 | 0 | 0 | 0 | 250 | 250 | |
| Disease: Blight Cutting | 0.00 | 0 | 0 | 0 | 0 | 100 | 100 | |
| Irrigate 9X | 5.50 | 68 | 0 | 0 | 160 | 0 | 228 | |
| Leaf Sampling 1/20 Acre | 0.01 | 0 | 0 | 0 | 3 | 0 | 3 | |
| Pickup Truck Use | 3.33 | 67 | 32 | 12 | 0 | 0 | 110 | |
| ATV Use | 0.57 | 11 | 1 | 1 | 0 | 0 | 13 | |
| Miscellaneous Labor | 1.00 | 9 | 0 | 0 | 0 | 0 | 9 | |
| TOTAL CULTURAL COSTS | 28.52 | 467 | 203 | 89 | 1,603 | 1,336 | 3,697 | |
| Harvest : | | | | | | | | |
| Pick Fruit | 1.25 | 48 | 12 | 4 | 0 | 1,420 | 1,484 | |
| Haul Fruit | 0.00 | 0 | 0 | 0 | 0 | 312 | 312 | |
| Assessments | 0.00 | 0 | 0 | 0 | 317 | 0 | 317 | |
| TOTAL HARVEST COSTS | 1.25 | 48 | 12 | 4 | 317 | 1,732 | 2,113 | |
| Interest on Operating Capital at 5.75% | | | | | | | 95 | |
| TOTAL OPERATING COSTS/ACRE | 30 | 515 | 215 | 93 | 1,919 | 3,068 | 5,999 | |

**TABLE 1. CONTINUED**

| | Operation Time Operation | (Hrs/A) | Cash and Labor Costs per Acre<br>Labor Cost | Fuel | Lube &Repairs | Material Cost | Custom/ Rent | Total Cost | Your Cost |
|---|---|---|---|---|---|---|---|---|---|
| CASH OVERHEAD: | | | | | | | | | |
| Crop Insurance | | | | | | | | 40 | |
| Liability Insuranc | | | | | | | | 3 | |
| Manager SV | | | | | | | | 179 | |
| Office Expense | | | | | | | | 200 | |
| Reclamation Fee | | | | | | | | 30 | |
| Sanitation Fees | | | | | | | | 16 | |
| Property Taxes | | | | | | | | 97 | |
| Property Insurance | | | | | | | | 77 | |
| Investment Repairs | | | | | | | | 57 | |
| TOTAL CASH OVERHEAD COSTS/ACRE | | | | | | | | 700 | |
| TOTAL CASH COSTS/ACRE | | | | | | | | 6,699 | |
| NON-CASH OVERHEAD: | | | Per Producing Acre | | Annual Cost Capital Recovery | | | | |
| Building 40X60 | | | 205 | | 13 | | | 13 | |
| Establishment SV | | | 9,500 | | 457 | | | 457 | |
| Fuel Tanks 2-500 g | | | 9 | | 1 | | | 1 | |
| Ladders-50 10' | | | 100 | | 13 | | | 13 | |
| Land - Pears SV | | | 3,077 | | 146 | | | 146 | |
| Picking Bags 50 | | | 12 | | 3 | | | 3 | |
| Shop Tools | | | 31 | | 3 | | | 3 | |
| Spray Mixing Stati | | | 19 | | 2 | | | 2 | |
| Sprinkler Pears SV | | | 2,000 | | 138 | | | 138 | |
| Tile Drainage400ac | | | 1,026 | | 71 | | | 71 | |
| Equipment | | | 757 | | 88 | | | 88 | |
| TOTAL NON-CASH OVERHEAD COSTS | | | 16,735 | | 934 | | | 934 | |
| TOTAL COSTS/ACRE | | | | | | | | 7,633 | |

**TABLE 2. COSTS AND RETURNS PER ACRE TO PRODUCE ORGANIC PEARS**

| | Quantity/ Acre | Unit | Price or Cost/Unit | Value or Cost/Acre | Your Cost |
|---|---|---|---|---|---|
| GROSS RETURNS | | | | | |
| Organic – price 1 | 3 | Tons | 687.50 | 2,063 | |
| Organic – price 2 | 3 | Tons | 577.50 | 1,733 | |
| Organic – price 3 | 3 | Tons | 522.50 | 1,568 | |
| Organic – price 4 | 3 | Tons | 357.50 | 1,073 | |
| Conventional | 6 | Tons | 210.00 | 1,260 | |
| TOTAL GROSS RETURNS | 18 | Tons | | 7,740 | |
| OPERATING COSTS | | | | | |
| **Disease control:** | | | | **606** | |
| Oil | 20.00 | gallon | 6.78 | 136 | |
| Liquid lime sulfur | 8.00 | gallon | 1.00 | 8 | |
| Micronized sulfur | 26.00 | pound | 0.37 | 10 | |
| Microthiol | 48.00 | pound | 1.90 | 91 | |
| Mycoshield | 10.00 | pound | 36.15 | 361 | |
| **Pest control:** | | | | **187** | |
| Entrust | 1.00 | ounce | 41.63 | 42 | |
| Pheromone - codling moth | 200.00 | ties | 0.73 | 145 | |
| **Water:** | | | | **21** | |
| Pumped water | 4.00 | Acre Inch | 5.33 | 21 | |
| **Fertilizer:** | | | | **643** | |
| Potash | 323.00 | pound | 0.50 | 162 | |
| Feathermeal pellets | 0.33 | ton | 1450.00 | 479 | |
| LeafAnalysis1/20ac | 0.05 | Each | 50.00 | 3 | |
| **Assessment:** | | | | **317** | |
| CPAB Fresh Box | 990.00 | Box | 0.32 | 317 | |
| **Custom:** | | | | **2,924** | |
| Prune | 269.00 | Tree | 3.25 | 874 | |
| Prune: Foreman | 0.70 | day | 110.00 | 77 | |
| Prune: Foreman Overhead | 0.70 | day | 49.50 | 35 | |
| Fruit Thinning | 1.00 | acre | 250.00 | 250 | |
| Cut out blight by hand | 1.00 | acre | 100.00 | 100 | |
| Harvest - Hand | 44.00 | Bin | 20.00 | 880 | |
| Harvest contractor overhead | 44.00 | bin | 9.00 | 396 | |
| Haul-Custom/Ton | 26.00 | ton | 12.00 | 312 | |
| **Tree:** | | | | **6** | |
| Tree - Pear 3/4" | 1.00 | Each | 6.40 | 6 | |
| **Tree Aids:** | | | | **1** | |
| Tree Guards | 1.00 | Each | 0.75 | 1 | |
| **Irrigation:** | | | | **139** | |
| Water - Pumped | 26.00 | acre inches | 5.33 | 139 | |
| **Rent:** | | | | **144** | |
| Bin Rental | 44.00 | bin | 1.50 | 66 | |
| Forklift Rental | 1.00 | acre | 20.80 | 21 | |
| Tractor Rental (6) | 1.00 | acre | 57.00 | 57 | |
| **Labor** | | | | **540** | |
| Equipment Operator Labor | 21.42 | hrs | 16.63 | 356 | |
| Non-Machine Labor | 9.65 | hrs | 12.33 | 116 | |
| Irrigation Labor ($/hr) | 5.50 | hrs | 12.33 | 68 | |
| **Machinery** | | | | **317** | |
| Fuel-Gas | 9.00 | gal | 4.00 | 33 | |
| Fuel-Diesel | 55.14 | gal | 3.43 | 189 | |
| Lube | | | | 33 | |
| Machinery Repair | | | | 61 | |
| Interest on Operating Capital @ 5.75% | | | | 95 | |
| TOTAL OPERATING COSTS/ACRE | | | | 6,033 | |
| NET RETURNS ABOVE OPERATING COSTS | | | | 1,707 | |

**TABLE 2. CONTINUED**

| | Quantity/ Acre | Unit | Price or Cost/Unit | Value or Cost/Acre | Your Cost |
|---|---|---|---|---|---|
| CASH OVERHEAD COSTS | | | | | |
| Crop Insurance | | | | 40 | |
| Liability Insurance | | | | 3 | |
| Manager SV | | | | 179 | |
| Office Expense | | | | 200 | |
| Reclamation Fee | | | | 30 | |
| Sanitation Fees | | | | 16 | |
| Property Taxes | | | | 97 | |
| Property Insurance | | | | 77 | |
| Investment Repairs | | | | 57 | |
| TOTAL CASH OVERHEAD COSTS/ACRE | | | | 700 | |
| TOTAL CASH COSTS/ACRE | | | | 6,733 | |
| NON-CASH OVERHEAD COSTS (Capital Recovery) | | | | | |
| Building 40X60 | | | | 13 | |
| Establishment SV | | | | 457 | |
| Fuel Tanks 2-500 g | | | | 1 | |
| Ladders-50 10' | | | | 13 | |
| Land - Pears SV | | | | 146 | |
| Picking Bags 50 | | | | 3 | |
| Shop Tools | | | | 3 | |
| Spray Mixing Station | | | | 2 | |
| Sprinkler Pears SV | | | | 138 | |
| Tile Drainage400ac | | | | 71 | |
| Equipment | | | | 88 | |
| TOTAL NON-CASH OVERHEAD COSTS | | | | 934 | |
| TOTAL COST/ACRE | | | | 7,667 | |
| NET RETURNS ABOVE TOTAL COST | | | | 73 | |

**TABLE 3. MONTHLY COSTS PER ACRE TO PRODUCE ORGANIC PEARS**

| | OCT 11 | NOV 11 | DEC 11 | JAN 12 | FEB 12 | MAR 12 | APR 12 | MAY 12 | JUN 12 | JUL 12 | AUG 12 | SEP 12 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cultural : | | | | | | | | | | | | | |
| Pest:Mites, Psylla | 40 | | | 94 | | | | | 26 | | 26 | | 187 |
| Pest: Scab and mite | | 28 | | | | | | | | | | | 28 |
| Pest: Pear Saw Fly | | | | | | | | | 55 | | | | 55 |
| Fertilize: Potash | | | | | | | | | | | | 167 | 167 |
| Fertilize: Feathermeal | 120 | | | | | | | | 366 | | | | 486 |
| Weed control - Tree Row | 31 | | | | | 31 | 31 | | | 8 | | | 100 |
| Prune | | | 986 | | | | | | | | | | 986 |
| Weed:Mow Middles | | | 17 | | | 15 | 8 | 8 | 8 | 8 | | | 65 |
| Weed: Hand Weed | | | | | | 31 | | 31 | | | | | 62 |
| Replant Trees (1/acre) | | | | | | 10 | | | | | | | 10 |
| Disease: Scab 6X | | | | | | 84 | 84 | 15 | | | | | 184 |
| Disease: Blight 10X | | | | | | 196 | 147 | 147 | | | | | 491 |
| Pest: Codling Moth | | | | | | | 163 | | | | | | 163 |
| Fruit Thinning (By Hand, Every Other Year) | | | | | | | | 250 | | | | | 250 |
| Disease: Blight Cutting | | | | | | | 100 | | | | | | 100 |
| Irrigate 9X | | | | | | | 30 | 30 | 61 | 61 | 30 | 15 | 228 |
| Leaf Sampling 1/20 Acre | | | | | | | | | | 3 | | | 3 |
| Pickup Truck Use | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 110 |
| ATV Use | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 13 |
| Miscellaneous Labor | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 9 |
| TOTAL CULTURAL COSTS | 202 | 39 | 1,014 | 105 | 11 | 379 | 574 | 493 | 528 | 91 | 68 | 193 | 3,697 |
| Harvest : | | | | | | | | | | | | | |
| Pick Fruit | | | | | | | | | | 1,484 | | | 1,484 |
| Haul Fruit | | | | | | | | | | 312 | | | 312 |
| Assessments | | | | | | | | | | 317 | | | 317 |
| TOTAL HARVEST COSTS | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2,113 | 0 | 0 | 2,113 |
| Interest on Operating Capital @5.75% | 1 | 1 | 6 | 7 | 7 | 8 | 11 | 14 | 16 | 27 | -1 | -1 | 95 |
| TOTAL OPERATING COSTS/ACRE | 203 | 41 | 1,020 | 112 | 18 | 387 | 586 | 506 | 544 | 2,230 | 67 | 192 | 5,904 |
| CASH OVERHEAD | | | | | | | | | | | | | |
| Crop Insurance | | | | | | | | | | | | | 40 |
| Liability Insurance | | | | | | | | | | | | | 3 |
| Manager SV | | | | | | | | | | | | | 179 |
| Office Expense | | | | | | | | | | | | | 200 |
| Reclamation Fee | | | | | | | | | | | | | 30 |
| Sanitation Fees | | | | | | | | | | | | | 16 |
| Property Taxes | | | | | 48 | | | | | 48 | | | 97 |
| Property Insurance | | | | | 77 | | | | | | | | 77 |
| Investment Repairs | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 57 |
| TOTAL CASH OVERHEAD COSTS | 5 | 5 | 5 | 5 | 131 | 5 | 5 | 5 | 5 | 53 | 5 | 5 | 700 |
| TOTAL CASH COSTS/ACRE | 207 | 45 | 1,025 | 117 | 148 | 392 | 590 | 511 | 548 | 2,283 | 71 | 197 | 6,604 |

UC COOPERATIVE EXTENSION

**TABLE 4. RANGING ANALYSIS - ORGANIC PEARS**

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE ORGANIC PEARS

| | YIELD(TONS) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 13.50 | 15.00 | 16.50 | 18.00 | 19.50 | 21.00 | 22.50 |
| OPERATING COSTS/ACRE: | | | | | | | |
| Cultural | 3,697 | 3,697 | 3,697 | 3,697 | 3,697 | 3,697 | 3,697 |
| Harvest | 1,929 | 1,990 | 2,051 | 2,113 | 2,174 | 2,235 | 2,297 |
| Interest on Operating Capital @ 5.75% | 94 | 94 | 94 | 95 | 95 | 95 | 96 |
| TOTAL OPERATING COSTS/ACRE | 5,719 | 5,781 | 5,843 | 5,904 | 5,966 | 6,027 | 6,089 |
| TOTAL OPERATING COSTS/TONS | 423.66 | 385.40 | 354.10 | 328.01 | 305.94 | 287.02 | 270.62 |
| CASH OVERHEAD COSTS/ACRE | 700 | 700 | 700 | 700 | 700 | 700 | 700 |
| TOTAL CASH COSTS/ACRE | 6,419 | 6,481 | 6,542 | 6,604 | 6,666 | 6,727 | 6,789 |
| TOTAL CASH COSTS/TONS | 475.50 | 432.06 | 396.51 | 366.89 | 341.83 | 320.34 | 301.73 |
| NON-CASH OVERHEAD COSTS/ACRE | 934 | 934 | 934 | 934 | 934 | 934 | 934 |
| TOTAL COSTS/ACRE | 7,353 | 7,415 | 7,476 | 7,538 | 7,600 | 7,661 | 7,723 |
| TOTAL COSTS/TONS | 545.00 | 494.00 | 453.00 | 419.00 | 390.00 | 365.00 | 343.00 |

Net Return Per Acre Above Operating Costs For Organic Pears

| PRICE ($/tons) | | YIELD (tons/acre) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Organic | | 9.00 | 10.00 | 11.00 | 12.00 | 13.00 | 14.00 | 15.00 |
| | Conventional | 4.50 | 5.00 | 5.50 | 6.00 | 6.50 | 7.00 | 7.50 |
| 390.00 | 180.00 | -1,399 | -981 | -563 | -144 | 274 | 693 | 1,111 |
| 440.00 | 190.00 | -904 | -431 | 42 | 516 | 989 | 1,463 | 1,936 |
| 490.00 | 200.00 | -409 | 119 | 647 | 1,176 | 1,704 | 2,233 | 2,761 |
| 540.00 | 210.00 | 86 | 669 | 1,252 | 1,836 | 2,419 | 3,003 | 3,586 |
| 590.00 | 220.00 | 581 | 1,219 | 1,857 | 2,496 | 3,134 | 3,773 | 4,411 |
| 640.00 | 230.00 | 1,076 | 1,769 | 2,462 | 3,156 | 3,849 | 4,543 | 5,236 |
| 690.00 | 240.00 | 1,571 | 2,319 | 3,067 | 3,816 | 4,564 | 5,313 | 6,061 |

Net Return Per Acre Above Cash Costs For Organic Pears

| PRICE ($/tons) | | YIELD (tons/acre) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Organic | | 9.00 | 10.00 | 11.00 | 12.00 | 13.00 | 14.00 | 15.00 |
| | Conventional | 4.50 | 5.00 | 5.50 | 6.00 | 6.50 | 7.00 | 7.50 |
| 390.00 | 180.00 | -2,099 | -1,681 | -1,262 | -844 | -426 | -7 | 411 |
| 440.00 | 190.00 | -1,604 | -1,131 | -657 | -184 | 289 | 763 | 1,236 |
| 490.00 | 200.00 | -1,109 | -581 | -52 | 476 | 1,004 | 1,533 | 2,061 |
| 540.00 | 210.00 | -614 | -31 | 553 | 1,136 | 1,719 | 2,303 | 2,886 |
| 590.00 | 220.00 | -119 | 519 | 1,158 | 1,796 | 2,434 | 3,073 | 3,711 |
| 640.00 | 230.00 | 376 | 1,069 | 1,763 | 2,456 | 3,149 | 3,843 | 4,536 |
| 690.00 | 240.00 | 871 | 1,619 | 2,368 | 3,116 | 3,864 | 4,613 | 5,361 |

**TABLE 4. RANGING ANALYSIS CONTINUED**

Net Return Per Acre Above Total Costs For Organic Pears

| PRICE ($/tons) | | YIELD (tons/acre) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Organic | | 9.00 | 10.00 | 11.00 | 12.00 | 13.00 | 14.00 | 15.00 |
| | Conventional | 4.50 | 5.00 | 5.50 | 6.00 | 6.50 | 7.00 | 7.50 |
| 390.00 | 180.00 | -3,033 | -2,615 | -2,196 | -1,778 | -1,360 | -941 | -523 |
| 440.00 | 190.00 | -2,538 | -2,065 | -1,591 | -1,118 | -645 | -171 | 302 |
| 490.00 | 200.00 | -2,043 | -1,515 | -986 | -458 | 70 | 599 | 1,127 |
| 540.00 | 210.00 | -1,548 | -965 | -381 | 202 | 785 | 1,369 | 1,952 |
| 590.00 | 220.00 | -1,053 | -415 | 224 | 862 | 1,500 | 2,139 | 2,777 |
| 640.00 | 230.00 | -558 | 135 | 829 | 1,522 | 2,215 | 2,909 | 3,602 |
| 690.00 | 240.00 | -63 | 685 | 1,434 | 2,182 | 2,930 | 3,679 | 4,427 |

**TABLE 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS**

ANNUAL EQUIPMENT COSTS

| Yr | Description | Price | Yrs Life | Salvage Value | Capital Recovery | Cash Overhead Insur-ance | Taxes | Total |
|---|---|---|---|---|---|---|---|---|
| 12 | 25 HP MFWD Tractor | 13,990 | 15 | 2,724 | 1,197 | 67 | 84 | 1,347 |
| 12 | 80 HP 4WD Tractor1 | 55,307 | 12 | 13,827 | 5,271 | 278 | 346 | 5,894 |
| 12 | 80 HP 4WD Tractor2 | 55,307 | 12 | 13,827 | 5,271 | 278 | 346 | 5,894 |
| 12 | ATV 4WD | 7,430 | 7 | 2,818 | 924 | 41 | 51 | 1,016 |
| 12 | Bin Trailer 1 | 1,970 | 15 | 189 | 178 | 9 | 11 | 197 |
| 12 | Bin Trailer 2 | 1,970 | 15 | 189 | 178 | 9 | 11 | 197 |
| 12 | Bin Trailer 3 | 1,970 | 15 | 189 | 178 | 9 | 11 | 197 |
| 12 | Bin Trailer 4 | 1,970 | 15 | 189 | 178 | 9 | 11 | 197 |
| 12 | Bin Trailer 5 | 1,970 | 15 | 189 | 178 | 9 | 11 | 197 |
| 12 | Bin Trailer 6 | 1,970 | 15 | 189 | 178 | 9 | 11 | 197 |
| 12 | Bin Trailer 7 | 1,970 | 15 | 189 | 178 | 9 | 11 | 197 |
| 12 | Bin Trailer 8 | 1,970 | 15 | 189 | 178 | 9 | 11 | 197 |
| 12 | Forklift-Field Lift | 19,500 | 20 | 2,502 | 1,454 | 88 | 110 | 1,652 |
| 12 | Mower - Rotary 9' | 10,000 | 10 | 1,768 | 1,137 | 47 | 59 | 1,243 |
| 12 | Orchard.Sprayer 500G1 | 22,800 | 8 | 5,148 | 2,948 | 112 | 140 | 3,200 |
| 12 | Pickup Truck 1/2 T | 28,000 | 4 | 13,640 | 4,674 | 167 | 208 | 5,049 |
| 12 | Spreader Fertilize | 10,725 | 10 | 1,897 | 1,220 | 51 | 63 | 1,333 |
| 12 | Weed Badger | 10,000 | 6 | 2,883 | 1,528 | 52 | 64 | 1,644 |
| 12 | Orchard.Sprayer 500G2 | 22,800 | 8 | 5,148 | 2,948 | 112 | 140 | 3,200 |
| | TOTAL | 271,619 | - | 67,696 | 29,993 | 1,362 | 1,697 | 33,052 |
| | 60% of New Cost* | 162,971 | - | 40,618 | 17,996 | 817 | 1,018 | 19,831 |

*Used to reflect a mix of new and used equipment

ANNUAL INVESTMENT COSTS

| Description | Price | Yrs Life | Salvage Value | Capital Recovery | Cash Overhead Insur-ance | Taxes | Repairs | Total |
|---|---|---|---|---|---|---|---|---|
| INVESTMENT | | | | | | | | |
| Building 40X60 | 80,000 | 30 | 0 | 5,057 | 321 | 400 | 1,600 | 7,378 |
| Establishment SV | 950,000 | 95 | 0 | 45,681 | 3,814 | 4,750 | 0 | 54,245 |
| Fuel Tanks 2-500 g | 3,500 | 25 | 709 | 227 | 17 | 21 | 70 | 335 |
| Ladders-50 10' | 10,000 | 10 | 0 | 1,279 | 40 | 50 | 200 | 1,570 |
| Land - Pears SV | 1,200,000 | 95 | 1,200,000 | 57,000 | 9,636 | 12,000 | 0 | 78,636 |
| Picking Bags 50 | 1,200 | 5 | 0 | 275 | 5 | 6 | 24 | 310 |
| Shop Tools | 12,000 | 15 | 1,133 | 1,083 | 53 | 66 | 240 | 1,442 |
| Spray Mixing Station | 7,223 | 15 | 722 | 650 | 32 | 40 | 144 | 866 |
| Sprinkler Pears SV | 200,000 | 25 | 0 | 13,837 | 803 | 1,000 | 3,973 | 19,613 |
| Tile Drainage400ac | 400,000 | 25 | 0 | 27,674 | 1,606 | 2,000 | 4,000 | 35,280 |
| TOTAL INVESTMENT | 2,863,923 | - | 1,202,564 | 152,763 | 16,327 | 20,332 | 10,251 | 199,674 |

ANNUAL BUSINESS OVERHEAD COSTS

| Description | Units/ Farm | Unit | Price/ Unit | Total Cost |
|---|---|---|---|---|
| Crop Insurance | 100.00 | Acre | 40.00 | 4,000 |
| Liability Insurance | 390.00 | Acre | 2.58 | 1,006 |
| Manager SV | 390.00 | Acre | 179.48 | 69,997 |
| Office Expense | 390.00 | Acre | 200.00 | 78,000 |
| Reclamation Fee | 400.00 | Acre | 30.00 | 12,000 |
| Sanitation Fees | 100.00 | Acre | 16.25 | 1,625 |

**TABLE 6. HOURLY EQUIPMENT COSTS**

| Yr | Description | Organic Pears Hours Used | Total Hours Used | Capital Recovery | Cash Overhead Insur-ance | Cash Overhead Taxes | Operating Lube& Repairs | Operating Fuel | Operating Total Oper. | Total Costs/Hr. |
|---|---|---|---|---|---|---|---|---|---|---|
| 12 | 25 HP MFWD Tractor | 69 | 824 | 0.87 | 0.00 | 0.06 | 1.09 | 4.21 | 5.30 | 6.29 |
| 12 | 80 HP 4WD Tractor1 | 1047 | 1722 | 1.84 | 0.00 | 0.12 | 2.74 | 13.48 | 16.21 | 18.27 |
| 12 | 80 HP 4WD Tractor2 | 281 | 1059 | 2.99 | 0.00 | 0.20 | 3.19 | 13.48 | 16.66 | 20.00 |
| 12 | ATV 4WD | 57 | 285 | 1.94 | 0.00 | 0.11 | 0.93 | 2.55 | 3.48 | 5.62 |
| 12 | Bin Trailer 1 | 63 | 166 | 0.64 | 0.00 | 0.04 | 0.28 | 0.00 | 0.28 | 1.00 |
| 12 | Bin Trailer 2 | 63 | 166 | 0.64 | 0.00 | 0.04 | 0.28 | 0.00 | 0.28 | 1.00 |
| 12 | Bin Trailer 3 | 63 | 166 | 0.64 | 0.00 | 0.04 | 0.28 | 0.00 | 0.28 | 1.00 |
| 12 | Bin Trailer 4 | 63 | 166 | 0.64 | 0.00 | 0.04 | 0.28 | 0.00 | 0.28 | 1.00 |
| 12 | Bin Trailer 5 | 63 | 166 | 0.64 | 0.00 | 0.04 | 0.28 | 0.00 | 0.28 | 1.00 |
| 12 | Bin Trailer 6 | 63 | 166 | 0.64 | 0.00 | 0.04 | 0.28 | 0.00 | 0.28 | 1.00 |
| 12 | Bin Trailer 7 | 63 | 166 | 0.64 | 0.00 | 0.04 | 0.28 | 0.00 | 0.28 | 1.00 |
| 12 | Bin Trailer 8 | 63 | 166 | 0.64 | 0.00 | 0.04 | 0.28 | 0.00 | 0.28 | 1.00 |
| 12 | Forklift-FieldLift | 69 | 150 | 5.83 | 0.00 | 0.44 | 0.72 | 3.43 | 4.15 | 10.77 |
| 12 | Mower - Rotary 9' | 151 | 276 | 2.47 | 0.00 | 0.13 | 3.53 | 0.00 | 3.53 | 6.23 |
| 12 | Orchard Sprayer 500G1 | 673 | 690 | 2.56 | 0.00 | 0.12 | 1.44 | 0.00 | 1.44 | 4.22 |
| 12 | Pickup Truck 1/2 T | 333 | 500 | 5.61 | 0.00 | 0.25 | 3.53 | 9.55 | 13.08 | 19.13 |
| 12 | Spreader Fertilize | 28 | 120 | 6.10 | 0.00 | 0.32 | 4.15 | 0.00 | 4.15 | 10.82 |
| 12 | Weed Badger | 288 | 333 | 2.75 | 0.00 | 0.12 | 0.26 | 1.72 | 1.97 | 4.93 |
| 12 | Orchard.Sprayer 500G2 | 31 | 250 | 7.08 | 0.00 | 0.34 | 3.97 | 0.00 | 3.97 | 11.65 |

## TABLE 7. OPERATIONS WITH EQUIPMENT & MATERIALS

| Operation | Operation Month | Tractor | Implement | Labor Type/ Material | Rate/ acre | Unit |
|---|---|---|---|---|---|---|
| Pest:Mites, Psylla | Oct | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Oil | 4.00 | gallon |
| | Jan | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Oil | 12.00 | gallon |
| | June | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Oil | 2.00 | gallon |
| | Aug | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Oil | 2.00 | gallon |
| Pest: Scab and mite | Nov | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Liquid lime sulfur | 8.00 | gallon |
| | | | | Micronized sulfur | 20.00 | pound |
| Pest: Pear Saw Fly | June | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Entrust | 1.00 | ounce |
| Fertilize: Potash | Sept | 80 HP 4WD Tractor1 | Spreader Fertilize | Non-Machine Labor | 0 | hour |
| | | | | Potash | 323.00 | pound |
| Fertilize: Feathermeal | Oct | 80 HP 4WD Tractor1 | Spreader Fertilize | Equipment Operator Labor | 0 | hour |
| | | | | Feathermeal pellets | 0.08 | ton |
| | June | 80 HP 4WD Tractor1 | Spreader Fertilize | Equipment Operator Labor | 0 | hour |
| | | | | Feathermeal pellets | 0.25 | ton |
| Weed control - Tree Row | Oct | 80 HP 4WD Tractor1 | Weed Badger | Equipment Operator Labor | 1 | hour |
| | Mar | 80 HP 4WD Tractor2 | Weed Badger | Equipment Operator Labor | 1 | hour |
| | Apr | 80 HP 4WD Tractor2 | Weed Badger | Equipment Operator Labor | 1 | hour |
| | July | 80 HP 4WD Tractor2 | Weed Badger | Equipment Operator Labor | 0 | hour |
| Prune | Dec | | | Prune | 269.00 | Tree |
| | | | | Prune: Foreman | 0.70 | day |
| | | | | Prune: Foreman Overhead | 0.70 | day |
| Weed:Mow Middles | Dec | 80 HP 4WD Tractor1 | Mower - Rotary 9' | Equipment Operator Labor | 0 | hour |
| | Mar | 80 HP 4WD Tractor2 | Mower - Rotary 9' | Equipment Operator Labor | 0 | hour |
| | Apr | 80 HP 4WD Tractor1 | Mower - Rotary 9' | Equipment Operator Labor | 0 | hour |
| | May | 80 HP 4WD Tractor2 | Mower - Rotary 9' | Equipment Operator Labor | 0 | hour |
| | June | 80 HP 4WD Tractor1 | Mower - Rotary 9' | Equipment Operator Labor | 0 | hour |
| | July | 80 HP 4WD Tractor2 | Mower - Rotary 9' | Equipment Operator Labor | 0 | hour |
| Weed: Hand Weed | Mar | | | Non-Machine Labor | 3 | hours |
| | May | | | Non-Machine Labor | 3 | hours |
| Replant Trees (1/acre) | Mar | | | Non-Machine Labor | 0 | hour |
| | | | | Tree - Pear 3/4" | 1.00 | Each |
| | | | | Tree Guards | 1.00 | Each |
| Disease: Scab 6X | Mar | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Microthiol | 8.00 | pound |
| | Mar | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Microthiol | 8.00 | pound |
| | Mar | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Microthiol | 8.00 | pound |
| | Apr | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Microthiol | 8.00 | pound |
| | Apr | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Microthiol | 8.00 | pound |
| | Apr | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Microthiol | 8.00 | pound |
| | May | 80 HP 4WD Tractor1 | Orchard Sprayer 500G2 | Equipment Operator Labor | 0 | hour |
| | | | | Micronized sulfur | 6.00 | pound |
| Disease: Blight 10X | Mar | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Mycoshield | 1.00 | pound |
| | Mar | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Mycoshield | 1.00 | pound |
| | Mar | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Mycoshield | 1.00 | pound |
| | Mar | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Mycoshield | 1.00 | pound |
| | Apr | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Mycoshield | 1.00 | pound |
| | Apr | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Mycoshield | 1.00 | pound |
| | Apr | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Mycoshield | 1.00 | pound |
| | May | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Mycoshield | 1.00 | pound |
| | May | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Mycoshield | 1.00 | pound |
| | May | 80 HP 4WD Tractor1 | Orchard Sprayer 500G1 | Equipment Operator Labor | 0 | hour |
| | | | | Mycoshield | 1.00 | pound |

**TABLE 7. CONTINUED**

| Operation | Month | Tractor | Implement | Labor Type/ Material | Rate/ acre | Unit |
|---|---|---|---|---|---|---|
| Pest: Codling Moth | Apr | | | Non-Machine Labor | 1 | hours |
| | | | | Pheromone - codling moth | 200.00 | ties |
| Hand Thin (Every Other Year) | May | | | Hand Thin | 1.00 | acre |
| Disease: Blight Cutting | Apr | | | Cut out blight by hand | 1.00 | acre |
| Irrigate 9X | Apr | | | Irrigation Labor ($/hr) | 1 | hour |
| | | | | Pumped water | 4.00 | acre inch |
| | May | | | Irrigation Labor ($/hr) | 1 | hour |
| | | | | Water - Pumped | 4.00 | acre inches |
| | June | | | Irrigation Labor ($/hr) | 1 | hours |
| | | | | Water - Pumped | 8.00 | acre inches |
| | July | | | Irrigation Labor ($/hr) | 1 | hours |
| | | | | Water - Pumped | 8.00 | acre inches |
| | Aug | | | Irrigation Labor ($/hr) | 1 | hour |
| | | | | Water - Pumped | 4.00 | acre inches |
| | Sept | | | Irrigation Labor ($/hr) | 0 | hour |
| | | | | Water - Pumped | 2.00 | acre inches |
| Leaf Sampling 1/20 Acre | July | | | Non-Machine Labor | 0 | hour |
| | | | | LeafAnalysis1/20ac | 0.05 | Each |
| Pickup Truck Use | July | | Pickup Truck 1/2 T | Equipment Operator Labor | 4 | hours |
| ATV Use | July | | ATV 4WD | Equipment Operator Labor | 1 | hour |
| Miscellaneous Labor | July | | | Non-Machine Labor | 1 | hour |
| Pick Fruit | July | 80 HP 4WD Tractor1 | Bin Trailer 1 | Equipment Operator Labor | 1 | hour |
| | | | | Bin Rental | 44.00 | bin |
| | | | Bin Trailer 2 | | | |
| | July | Forklift-FieldLift | | Non-Machine Labor | 1 | hour |
| | | | | Forklift Rental | 1.00 | acre |
| | July | | Bin Trailer 3 | Non-Machine Labor | 1 | hours |
| | | | | Tractor Rental (6) | 1.00 | acre |
| | | | Bin Trailer 4 | | | |
| | | | Bin Trailer 5 | | | |
| | | | Bin Trailer 6 | | | |
| | | | Bin Trailer 7 | | | |
| | July | | Bin Trailer 8 | Equipment Operator Labor | 1 | hour |
| | July | | Bin Trailer 8 | Equipment Operator Labor | 0 | hour |
| | | | | Harvest - Hand | 44.00 | Bin |
| | | | | Harvest contractor overhead | 44.00 | bin |
| Haul Fruit | July | | | Haul-Custom/Ton | 26.00 | ton |
| Assessments | July | | | | | |