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UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2011

SAMPLE COSTS TO ESTABLISH  
AN ORCHARD AND PRODUCE

# ALMONDS



SAN JOAQUIN VALLEY NORTH  
FLOOD IRRIGATION

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UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

**SAMPLE COSTS TO ESTABLISH an ORCHARD  
and PRODUCE ALMONDS**

San Joaquin Valley North - 2011

Flood Irrigation

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**INTRODUCTION**

Sample costs to establish an almond orchard and produce almonds under flood irrigation in the Northern San Joaquin Valley are presented in this study. This study is intended as a guide only, and can be used in making production decisions, determining potential returns, preparing budgets and evaluating 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) 752-3589 or your local UC Cooperative Extension office.

Sample Cost of Production Studies for many commodities can be downloaded at <http://coststudies.ucdavis.edu>, requested through the Department of Agricultural and Resource Economics, UC Davis, (530) 752-3589 or obtained from the local county UC Cooperative Extension offices. Many archived studies are also available on the website.

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## ASSUMPTIONS

The assumptions refer to Tables 1 to 8 and pertain to sample costs to establish an orchard and produce almonds under flood irrigation in the northern San Joaquin Valley. The cultural practices described represent production operations and materials considered typical for a well managed farm in the region. Costs, materials, and practices in this study will not apply to all farms. Timing of and types of cultural practices will vary among growers within the region and from season to season due to variables such as weather, soil, and insect and disease pressure. The study is intended as a guide only. **The use of trade names and cultural practices 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 or cultural practices.**

**Land.** The hypothetical farm consists of 100 contiguous acres farmed by the owner. Almonds are being established on 40 acres. A mature almond orchard covers 55 acres; roads, irrigation systems and farmstead occupy the remaining five acres.

### Establishment Cultural Practices and Material Inputs (Table 1)

**Trees.** No specific almond variety is planted in this study, but cultural practices are based on mid-season varieties. Almond orchards will include two or more varieties in which pollen shedding and bloom periods overlap to insure good pollination. Cultivars that might be planted in this region include: A) Early blooming — Sonora; B) Mid-blooming — Aldrich, Nonpareil, Carmel, Monterey, Price, and Fritz; C) Late blooming — Padre, Livingston, and Butte. Planting densities may range from 75 to 180 trees per acre. In this study, 124 trees per acre are planted on a 16-foot X 22-foot spacing (tree x row). The life of the orchard at the time of planting is estimated to be 25 years.

**Site Preparation.** This 40-acre orchard is established on land previously planted to an orchard. The land is assumed to be well drained and either a class I or II soil.

*Orchard Removal.* In this study the trees are pushed over and then chipped. The custom operator charges \$350 per acre, plus keeps and sells the wood. The grower then cleans up the orchard for land preparation. To reduce the incidence of diseases and nematodes, the ground should be fallowed for one year after removal.

*Land Preparation.* The ground is cross-ripped to a six-foot depth by a custom operator to break up hardpan and pull up remaining tree roots, disked twice, laser leveled and fumigated in the fall, then left unattended over the winter. A custom operator fumigates the tree row area (11 foot strip) with Telone II. Fumigation costs also include the grower disking and rolling in the tree row behind the custom fumigator. Prior to planting in January, using GPS, a custom operator makes berms and marks the planting sites. Fall operations that prepare the orchard for planting are done the year prior to planting, but costs are shown in the first year.

**Planting, Training, and Pruning.** Planting the orchard starts by making a berm and marking the tree sites. In January, the trees are planted, headed, trimmed, painted, and a tree wrap placed around the trunk. The tree wrap protects against above ground rodents, herbicide sprays, and sunburn. Contract labor companies who specialize in orchard planting do the planting operation. In the second year, two trees per acre are replanted. The replant sites are backhoed, fumigated, and replanted by a custom operator. Training, which includes suckering and light pruning for shaping is done during February or March of the first three years. In March of the first year, the trees are suckered. Tree tying is done late (November/December) in the second year or early

(January/February) in the third, fourth and fifth year. The tie (small rope) is made around the tree about one-third of the way from the top of the tree. In the fourth and following years, pruning is done in November or December removing limbs for equipment access and safety. Beginning in the third year, the prunings are stacked in the roll middles and shredded.

**Fertilization.** Beginning in the second year, leaf samples (1 per 20 acres) are taken in July for nutrient analysis. Fertilizers should be applied according to the analysis results. Fertilizer rates in this study are typical nutrient requirements, but do not take into account soil and water nitrogen. In the first year and second years, equally split applications of N are made one-third in the spring (March or April), one third in early summer (June) and one-third in late summer (August). The fertilizer (15-15-15) is broadcast by hand near the base of the tree. Beginning in the third year, N as CAN17 in the spring and UN32, thereafter, is sprayed along the tree row and irrigated in. One half or 50% is applied in April, 25% in June and 25% in August. Potassium sulfate (K), 0-0-50, is banded along the tree row in the fall. In years one and two, zinc is applied with the rust spray in late March and with the shothole/scab spray in the following years. In October of the second and subsequent years, Solubor (boron) is applied as a foliar spray. Beginning in the fourth year, hull samples for boron analysis (1 per 40 acres) are taken, immediately prior to or at harvest. Many orchards on the eastside of the northern San Joaquin Valley are boron deficient and additional boron may be required. Annual rates of actual N, K, and B used in this study are shown in Table A. For both the leaf and hull samples, the grower uses an ATV to collect the samples. For the 40 acres, the estimated time is one hour to collect the samples and one hour to prepare and ship the samples.

Table A. Establishment Years  
Applied Actual Nitrogen (N),  
Potash (K<sub>2</sub>O), Boron (B)

Year	N	K <sub>2</sub> O	B
	lb/acre		
1	20	00 (000)	0.0 (0)
2	40	40 (080)	0.4 (2)
3	80	80 (160)	0.4 (2)
4	120	120 (240)	0.4 (2)
5	160	160 (320)	0.4 (2)
6+	200	200 (400)	0.4 (2)

Parenthesis = actual amount of material applied (0-0-50) and (Solubor)

**Irrigation.** Water is applied to the orchard approximately every 18-21 days. In the first year, water is applied from April through September and in subsequent years March through October. Water for irrigation is supplied by the water district and delivered to the orchard through an underground pipe and alfalfa valve system. In this study, irrigation labor is assumed to be 0.30 hours per acre per irrigation and water cost \$30.00 per acre. Water costs for three of the four districts in the growing area charge by the acre and the fourth district charges by the acre foot. Table B shows the applied water for each year in this study. The price for water was calculated to equal \$30.00 per acre. Applied water values are substantially greater than the actual tree water requirement due to application inefficiency. Application efficiencies of 75% are used for all years and reflect the differences in evaporative loss due to canopy development. Effective rainfall has not been considered in this study because it is too variable; therefore it is assumed that the season begins with a full soil profile. A large percentage of the present acreage receives surface water from state or federal canal systems.

Table B. Applied Water per Year

Year	Acre-inch
1	13
2	25
3	38
4+	51

**Pollination.** Bee hives are placed in the orchard in February prior to bloom by a beekeeper. One hive per acre is set out in the third year and two hives per acre thereafter.

**Winter Sanitation.** Winter sanitation to remove the mummy nuts begins in December of the fourth year. The mummies are shaken from the trees, blown into the middles and shredded

**Pest Management.** The pesticides and rates mentioned in this cost study as well as other materials available are listed in *UC Integrated Pest Management Guidelines, Almonds*. Pesticides mentioned in the study are commonly used, but are not recommendations. Adjuvants or surfactants are recommended with many

pesticides but are not included as a cost in this study. Growers should monitor pesticide chemistry and modes of action to prevent pesticide resistance by using different materials.

*Weeds.* In the first year, Gramoxone and Prowl are applied to the tree row (strip spray) in February soon after planting. Also, the row middles are disked (and floated) three times during the year. Spot sprays are applied as needed. In this study, Gramoxone is applied as a spot spray in the tree row during June. In the second year, the row middles are mowed seven times, once per month from March through September and six times thereafter, March through August. Roundup is applied as a spot spray, once (April) during the growing season to the tree row in the second year, but is usually applied as needed. Prowl and Roundup are applied to the tree row during the dormant season (December). Beginning in the third year, the dormant strip spray (Matrix and Roundup) is applied to the tree row in the fall, or winter (November). A preharvest spray (Roundup and Goal) is applied to the orchard floor starting in the third year to clean up the row middles prior to harvest. Although no cost is shown, ammonium sulfate should be used with all herbicide sprays to increase efficacy.

*Insects.* In May of the first and following years, mites are controlled with an Agri-Mek application. Beginning in July of the third year, ant bait (Clinch) is sprinkled on the berms for ant control. Navel orange worms (NOW) are treated with Intrepid beginning in July (hull split spray) of the third year.

*Diseases.* Rust control is done in the first and second year with an application of Abound (zinc included with spray). In the third and following years, brown rot is treated in February (60 to 80% bloom) with Vanguard; shot hole, scab and rust are treated in March (petal fall or afterwards) with Pristine or Abound (zinc included with spray). Bravo is applied at petal fall for shothole, scab and anthracnose. Sprays are usually applied with a handgun sprayer during the first two years and with an air blast sprayer, thereafter. Materials are applied at reduced volumes (25, 50, 75%) during the first three years, because of the small tree size.

*Vertebrates.* Gophers can cause major losses to trees. Gophers are managed with the use of poison bait applied in the spring by a mechanical bait applicator. Ground squirrels are managed by late winter use of anti-coagulant bait in aboveground bait stations.

**Harvest.** Harvest starts in the third year using contract labor for hand harvest (poling). The nuts are moved to the centers by hand raking labor furnished by the grower. Mechanical harvesting and pickup by a custom operator begins in the fourth year. Typical annual yields for almonds are measured in meat (kernel) pounds per acre and are shown in Table C.

Year	Kernel Pounds
3	400
4	800
5	1,600
6+	2,000

### **Production Cultural Practices and Material Inputs** (Tables 2-8)

**Winter Sanitation.** Winter (December) sanitation destroys over wintering sites for navel orangeworm. The mummy nuts are shaken from the trees, dropped to the orchard floor, blown into the row middles and shredded with a flail mower. Winter sanitation operations except for the shredding are custom hired. Hand poling may be needed in low rainfall years.

**Pruning.** Maintenance hand pruning for safety and equipment access is done in November or December in this study, but can be done anytime from harvest through the dormant period. Prunings are stacked in the row middles and shredded by a custom operator. Tying and roping may continue to year 7 or 8 depending on previous training and variety.

**Tree Replacement.** One or more trees per acre may die each year and are replaced in late winter. Costs in this study are basic costs that will vary with each orchard and type of tree loss. Tree replacement is included in investment repairs under Cash Overhead.

**Irrigation.** The water is gravity fed into an underground pipeline and alfalfa valve system for delivery to the orchard. Fifty-one acre-inches of water are applied to the orchard based on 75% application efficiency. Applied water values are substantially greater than the actual tree water requirement due to application inefficiency. No assumption is made about effective rainfall. Irrigation operations include water and labor costs. Irrigation labor is 0.30 hours per acre per irrigation. District water for this study costs \$30 per acre. Three water districts in the growing area charge per acre with the maximum acre feet ranging from 2.5 to unlimited and the fourth district charges per acre foot. Additional water charges may apply to water used over the maximum rate allowed. Acre-inch costs were calculated based per acre costs divided by acre inches applied.

**Pollination.** Two hives (8+ frames/hive) per acre are contracted for pollination and set in the orchard by the beekeeper prior to bloom (February).

**Fertilization.** Nitrogen (N) at 200 pounds per acre per season is sprayed along the tree and irrigated in. CAN17 is applied in the spring and UN32 during the rest of the season. Fifty percent of the N is applied in April, 25% in June, and 25% in August. Neutral zinc at five pounds per acre is foliar applied with an insecticide or fungicide spray at pink bud in March. Potassium sulfate is banded in the fall (October) along the tree row at 400 pounds of material or 200 pounds of K<sub>2</sub>O per acre. Boron at 0.4 pounds per acre or two pounds of Solubor is foliar applied in October.

*Sampling.* Tree nutrient status is determined by leaf and hull analysis. Leaf samples at one per 20 acres are taken in July. A hull sample at one per 40 acres is taken from the windrow at harvest. The grower uses an ATV to collect the samples which is assumed to take one hour per 40 acres (0.025 hrs/acre) each time. In addition another hour is required to prepare and ship the samples to a commercial lab for analysis.

**Pest Management.** The pesticides and rates mentioned in this cost study are listed in *UC Integrated Pest Management Guidelines, Almonds*. For more information on other pesticides available, pest identification, monitoring, and management visit the UC IPM website at <http://www.ipm.ucdavis.edu/>. Cultural practices are discussed in the publications *Integrated Pest Management for Almonds* and *Almond Production Manual*. For information and pesticide use permits, contact the local county agricultural commissioner's office. Adjuvants or surfactants may be recommended for use with some pesticides, but are not included in this study. Pesticide costs vary by location and grower volume. Pesticide costs in this study are taken from a single dealer and shown as full retail.

*Pest Control Adviser (PCA).* Written recommendations are required for many pesticides and are made by licensed pest control advisers. In addition the PCA can monitor the field for agronomic problems including pests and nutrition. Growers may hire private PCAs or receive the service as part of a service agreement with an agricultural chemical and fertilizer company. No costs are shown for a PCA in this study.

*Weeds.* A dormant strip spray is applied in November or December using pre-emergent and contact herbicides (Roundup, Matrix) to control weeds in the tree rows. Row middles are mowed six times, once per month March through August. Rely is applied as a strip or spot spray in April/May or as needed. A preharvest spray (Roundup, Goal) is applied in August to prepare the orchard floor for harvest.

*Insect and Mite.* Mites are sprayed with Agri-Mek in May. Clinch is applied on the berms in July for ant control. At the beginning of hull split in July, Intrepid is applied to control navel orange worm (NOW). NOW is also managed by early harvest and winter sanitation. Check for San Jose scale; in some year's dormant oil applications may be necessary, also if twig borers are present additional sprays may be needed.

*Disease.* Brown rot is controlled at 60 to 80% bloom in February with Vangard. Shot hole, scab and rust treatments with Pristine or Abound, are made in March at petal fall or afterwards. Also at petal fall (April), brown rot, scab and anthracnose are controlled with an application of Bravo.

*Vertebrate Pest.* Gophers are managed with the use of poison bait applied in the spring using a mechanical applicator. Ground squirrels are managed by late winter fumigation and/or the use of anti-coagulant baits on above ground bait stations during the growing season when rodents accept grain.

**Harvest.** A custom operator mechanically harvests the almond crop. The grower furnishes labor for hand raking to move nuts missed by the sweeper into the windrows. Harvest begins in August with the early maturing varieties and continues into October for late maturing varieties. In this study, harvest is in September. An inertia trunk shaker is the most common shaker in almonds. The shaker head attaches to the tree trunk to shake the nuts from the tree. The nuts fall to the ground and in a separate operation are blown from around the tree and swept into windrows to dry. A pickup machine gathers the nuts from the windrow and loads them into a cart or bankout wagon. In this study the nuts are elevated or dumped into bottom dump trailers with extended sides for delivery to the huller.

*Yields and Returns.* Typical annual yields for almonds are measured in meat pounds per acre and are shown in Table C. An estimated price of a \$1.50 per pound of almonds is used in this study to determine potential profits/losses. Returns will vary during the year, depending upon the market. The yields and prices used in this cost study are estimated based on 2005 to 2009 USDA California grower returns.

**Assessment.** The Almond Board of California (ABC) assesses all almonds commercially grown in the state to pay for almond promotions and research. The mandatory assessment is paid by processors and is not reflected in grower costs.

**Pickup/ATV.** The study assumes business use mileage of 4,000 miles per year for the pickup. The ATV is used for spot spraying, baiting ants and gophers and is included in those costs. Additional ATV use for checking the orchard, diseases and irrigation system is shown as a line item. The business use is estimated and not taken from any specific data.

### **Labor, Equipment, and Interest**

**Labor.** Hourly wages for workers are \$12.00 for machine operators and \$8.00 per hour non-machine labor. Adding 33% for the employer's share of federal and state payroll taxes, workers compensation insurance, for nut crops (0045) and other possible benefits gives the labor rates shown of \$15.96 and \$10.64 per hour for machine labor and non-machine labor, respectively. 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, 2011 (California Department of Insurance). Labor for operations involving machinery are 20% higher than the operation time given in Table 2 to account for the extra labor involved in equipment set up, moving, maintenance, work breaks, and 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 takeoff (PTO) horsepower, and fuel type. Prices for on-farm delivery of diesel and gasoline are \$2.60 and \$3.10 per gallon, respectively. The cost includes a 2% local sales tax on diesel fuel and 8% sales tax on gasoline. 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 2 is determined by multiplying the total hourly operating cost in Table 7 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 2011.

**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 Costs**

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.

**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 0.767% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$581 for the entire farm.

**Office Expense.** Office and business expenses are estimated at \$75 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, shop and office utilities, and miscellaneous administrative charges. Office expenses are estimated and not taken from any collected data.

**Environmental/Regulatory Costs.** Various environmental fees are collected by the county and state. The fees will vary by county. For example there are fees assessed by the Air Resources Board (state agency) regulating air pollution, a Water Coalition Fee (local coalition), formerly called an Ag Waiver Fee for water discharges, and hazardous material storage fee (local coalition). The grower must also provide safety training, safety equipment, and maintain training records. For this study, a cost of \$10.00 per producing acre or \$950 for the farm is assumed.



**Sanitation Services.** Sanitation services provide one portable toilet and cost the farm \$640 annually. The cost includes one single toilet unit with washbasin, delivery and 4 months of weekly service.

**Managers Salary.** No salary is shown. The farm is owned and operated by the grower, therefore returns above cost are assumed to go to management (grower).

**Investment Repairs.** Annual maintenance is calculated as two percent of the purchase price, except for tree replacement in the orchard. The average tree replacement cost over the life of the orchard is assumed to be 0.50% of the establishment cost or \$1,010 (\$25.25 per acre) per year.

### **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  $((\text{Purchase Price} - \text{Salvage Value}) \times (\text{Capital Recovery Factor})) + (\text{Salvage Value} \times \text{Interest Rate})$ .

*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. The purchase price and salvage value for equipment and investments are shown in Table 6.

*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 5.75% is used to calculate capital recovery. The rate will vary depending upon size of loan and other lending agency conditions, but is a suggested rate by a farm lending agency in January 2011.

**Establishment Cost.** Costs to establish the orchard are used to determine capital recovery expenses, depreciation, and interest on investment for the production years. Establishment cost is the sum of the costs for land preparation, planting, trees, cash overhead and production expenses for growing the trees through the first year that almonds are harvested minus any returns from production. The Total Accumulated Net Cash Cost on Table 1, in the third year represents the establishment cost. For this study the cost is \$5,237 per acre or \$209,479 for the 40-acre orchard. The establishment cost is spread over the remaining 22 years of the 25 years the orchard is in production. 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.

**Irrigation System.** The system consists of underground pipeline and alfalfa valves. Water flows from the district canals by gravity feed. The cost is a general estimate provided by irrigation specialists for this type of system and is not an exact cost.

**Land.** Bare land values range from \$5,000 to \$25,000 per acre depending upon water source (well, district or surface water). Land with available surface water ranges from \$10,000 to \$25,000 per acre. Land in this study is valued at \$15,000 per acre or \$15,790 per producing acre. Land values with planted almonds range from \$12,000 to \$25,000.

**Building.** The metal building(s) are on a cement slab and total approximately 2,400 square feet. The buildings are used for shops and equipment storage. The buildings are located on the grower owned land.

**Shop/FieldTools.** This includes shop tools and equipment, hand tools, and miscellaneous field tools including pruning equipment. The cost is assumed and not based on any collected data.

**Fuel Tanks.** Two 500-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. Annual ownership costs for equipment and other investments are shown in Table 6. 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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For information concerning the above mentioned University of California publications contact UC DANR Communications Services (1-800-994-8849) or your local county Cooperative Extension office.

UC COOPERATIVE EXTENSION  
**Table 1. COSTS TO ESTABLISH AN ALMOND ORCHARD**  
 SAN JOAQUIN VALLEY - NORTH 2011

	Cost Per Acre					
	Year:	1st	2nd	3rd	4th	5th
Meat Pounds Per Acre:				400	800	1,600
<b>Planting Costs:</b>						
Orchard Removal: (custom)		350				
Orchard Removal; Field Cleanup		128				
Land Preparation:- Subsoil 2X 6' depth (custom)		400				
Land Preparation: Disc 2X (custom)		60				
Land Prep: Level		150				
Fumigate: Tree Row 11' width		320				
Land Preparation: Disc & Roll Tree Row		8				
Land Preparation: Put Up Berms & Mark Tree Sites (GPS)		30				
Plant, Top, Paint, Wrap Trees (Yr 2 included backhoe cost)		223	44			
Trees: 124 Per Acre (1% Replant In 2nd Year)		651	11			
<b>TOTAL PLANTING COSTS</b>		<b>2,320</b>	<b>55</b>			
<b>Cultural Costs:</b>						
Pollination: Hives				140	280	280
Disease: Brown Rot (Vanguard)				34	34	34
Disease: Shothole/Scab/Rust (Abound) Petal Fall. Fertilizer: (Zinc)				71	74	74
Disease: Rust (Abound). Fertilizer: (Zinc)		27	42			
Disease: Shothole/Scab/Anthracnose (Bravo)				44	44	44
Vertebrate: Gopher & Squirrel (Bait)		34	34	34	34	34
Fertilize: (15-15-15)		97	144			
Fertilize N (CAN 17, 1X. UN32, 2X) 3X				86	125	160
Weed: Disk 3X		23				
Weed: Mow (Yr 2, 7X. Yr 3+, 6X)			48	41	41	41
Irrigate: (water + labor)		59	62	62	62	62
Insect: Mites (AgriMek)		20	29	37	46	46
Fertilize: Leaf Samples for NPK (ATV, labor, analysis)			3	3	3	3
Insect: Worm (Intrepid) Hull Split				53	67	67
Insect: Ants (Clinch)				5	5	5
Weed: Orchard Floor (Roundup, Goal) Preharvest				34	34	34
Fertilize: Hull Analysis for Boron (ATV, labor, analysis)					1	1
Fertilize: Foliar, Boron (Solubor)			12	12	12	12
Fertilize: Potassium Sulfate				70	104	137
Weed: Spot Spray (Yr. 1, Gramoxone 1X. Yr. 2, Roundup 1X)		5	9			
Weed: Strip Spray post plant (Prowl, Gramoxone)		34				
Weed: Dormant Strip Spray (Yr 2, Prowl, Roundup) (Yr 3+ Roundup, Matrix)			33	105	105	105
Prune and/or Train and/or Sucker		54	53	43	138	138
Prune: Stack Prunings				11	16	16
Prune: Shred				29	29	29
Prune: Tie/Rope Trees				48	80	95
Winter Sanitation: Knock Mummies, (Blow, Rake, Shred)					166	166
Pickup Truck Use		100	100	100	100	100
ATV Truck Use		23	23	23	23	23
<b>TOTAL CULTURAL COSTS</b>		<b>476</b>	<b>592</b>	<b>1,085</b>	<b>1,625</b>	<b>1,706</b>
<b>Harvest Costs:</b>						
Pole Trees				29		
Shake Trees					98	98
Sweep Nuts					62	62
Hand Rake				29	3	3
Pick Up and Haul				77	78	81
Hull Nuts				20	40	80
<b>TOTAL HARVEST COSTS</b>				<b>155</b>	<b>281</b>	<b>324</b>
Interest On Operating Capital @ 5.75%		172	23	24	25	26
<b>TOTAL OPERATING COSTS/ACRE</b>		<b>2,969</b>	<b>669</b>	<b>1,264</b>	<b>1,930</b>	<b>2,056</b>

UC COOPERATIVE EXTENSION  
**Table 1. CONTINUED**  
 SAN JOAQUIN VALLEY - NORTH 2011

	Cost Per Acre					
	Year:	1st	2nd	3rd	4th	5th
Meat Pounds Per Acre:				400	800	1,600
Cash Overhead Costs:						
Office Expense		75	75	75	75	75
Liability Insurance		6	6	6	6	6
Sanitation Fees		7	7	7	7	7
Environmental Fee		10	10	10	10	10
Property Taxes		172	171	172	172	172
Property Insurance		11	10	11	11	11
Investment Repairs		32	32	32	32	32
<b>TOTAL CASH OVERHEAD COSTS</b>		312	311	313	313	313
<b>TOTAL CASH COSTS/ACRE</b>		3,280	980	1,576	2,243	2,369
<b>INCOME/ACRE FROM PRODUCTION</b>				600	1,200	2,400
<b>NET CASH COSTS/ACRE FOR THE YEAR</b>		3,280	980	976	1,043	
<b>PROFIT/ACRE ABOVE CASH COSTS</b>						31
<b>ACCUMULATED NET CASH COSTS/ACRE</b>		3,280	4,261	5,237	6,280	6,249
Non-Cash Overhead Costs:						
Capital Recovery Cost:						
Buildings 2400 sqft		66	66	66	66	66
Land		750	750	750	750	750
Fuel Tanks 2-500 gal		5	5	5	5	5
Shop/Field Tools/Equipment		15	15	15	15	15
Flood Irrigation System		57	57	57	57	57
Equipment		55	51	64	64	64
<b>TOTAL NON-CASH OVERHEAD COST/ACRE</b>		948	944	957	958	958
<b>TOTAL COST/ACRE FOR THE YEAR</b>		4,228	1,924	2,533	3,200	3,327
<b>INCOME/ACRE FROM PRODUCTION</b>				600	1,200	2,400
<b>TOTAL NET COST/ACRE FOR THE YEAR</b>		4,228	1,924	1,933	2,000	927
<b>NET PROFIT/ACRE ABOVE TOTAL COST</b>						
<b>TOTAL ACCUMULATED NET COST/ACRE</b>		4,228	6,153	8,086	10,086	11,013

UC COOPERATIVE EXTENSION  
**Table 2. COSTS PER ACRE TO PRODUCE ALMONDS**  
 SAN JOAQUIN VALLEY - NORTH 2011

Operation	Operation Time (Hrs/A)	Cash and Labor Costs per acre					Total Cost	Your Cost
		Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent			
<b>Cultural:</b>								
Pollination (2 hives)	0.00	0	0	0	280	280		
Disease: Brown Rot (Vanguard)	0.31	6	5	24	0	34		
Disease: Shothole/Scab/Rust (Abound). Fertilize: (Zn)	0.31	6	5	63	0	74		
Vertebrate: Gopher & Squirrel (Bait)	0.66	13	3	19	0	34		
Weed: Mow 6X	1.16	22	19	0	0	41		
Irrigate: (water & labor) 10X	3.00	32	0	30	0	62		
Fertilize: N @ 200 lb/acre (CAN17, 1X. UN32, 2X)	0.69	13	10	171	0	194		
Disease: Shothole/Scab/Anthracnose (Bravo).	0.31	6	5	33	0	44		
Weed: Strip Spray (Rely)	0.23	4	3	12	0	19		
Insect: Mites (AgriMek)	0.31	6	5	35	0	46		
Fertilize: Leaf Samples (collect & analysis) NPK	0.03	1	0	0	2	3		
Insect: NOW (Intrepid)	0.31	6	5	56	0	67		
Insect: Ants (Clinch)	0.08	2	0	13	0	15		
Weed: Preharvest Spray Orchard Floor (Roundup, Goal)	0.23	4	3	26	0	34		
Fertilize: Hull Samples (collect & analysis) B	0.03	1	0	0	1	1		
Fertilize: Foliar Spray (Solubor) B	0.31	6	5	1	0	12		
Fertilize: Potassium Sulfate	0.08	1	1	168	0	171		
Weed: Winter Strip (Roundup, Matrix)	0.23	4	3	98	0	105		
Prune:	13.00	138	0	0	0	138		
Prune: Stack Prunings	1.50	16	0	0	0	16		
Prune: Shred Prunings (brush)	0.00	0	0	0	29	29		
Winter Sanitation: Shake Mummies, Rake, Sweep, Shred)	0.09	4	1	0	160	166		
Pickup Truck Ranch Use	3.33	64	37	0	0	100		
ATV: General Use	1.00	19	4	0	0	23		
<b>TOTAL CULTURAL COSTS</b>	<b>27.20</b>	<b>375</b>	<b>114</b>	<b>748</b>	<b>471</b>	<b>1,709</b>		
<b>Harvest:</b>								
Shake	0.00	0	0	0	98	98		
Sweep	0.00	0	0	0	62	62		
Hand Rake Nuts	0.25	3	0	0	0	3		
Pickup and Haul Nuts	0.00	0	0	0	83	83		
Hull and Shell Nuts	0.00	0	0	0	100	100		
<b>TOTAL HARVEST COSTS</b>	<b>0.25</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>343</b>	<b>345</b>		
Interest on operating capital @ 5.75%						23		
<b>TOTAL OPERATING COSTS/ACRE</b>		<b>378</b>	<b>114</b>	<b>748</b>	<b>813</b>	<b>2,077</b>		
<b>CASH OVERHEAD:</b>								
Office Expense						75		
Liability Insurance						6		
Sanitation Fees						7		
Environmental Fee						10		
Property Taxes						199		
Property Insurance						31		
Investment Repairs						58		
<b>TOTAL CASH OVERHEAD COSTS</b>						<b>386</b>		
<b>TOTAL CASH COSTS/ACRE</b>						<b>2,463</b>		
<b>NON-CASH OVERHEAD (Capital Recovery)</b>								
		Per producing Acres		Annual Cost Capital Recovery				
Buildings		842		66		66		
Land		15,789		750		750		
Fuel Tanks 2-500g		69		5		5		
Shop & Field Tools		158		15		15		
Flood Irrigation System		1,015		57		57		
Orchard Establishment Costs		5,237		389		389		
Equipment		658		66		66		
<b>TOTAL NON-CASH OVERHEAD COSTS</b>		<b>23,768</b>		<b>1,348</b>		<b>1,348</b>		
<b>TOTAL COSTS/ACRE</b>						<b>3,811</b>		

UC COOPERATIVE EXTENSION  
**Table 3. COSTS AND RETURNS PER ACRE TO PRODUCE ALMONDS**  
 SAN JOAQUIN VALLEY - NORTH 2011

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
<b>GROSS RETURNS</b>					
Almonds	2,000.00	lb	1.50	3,000	
<b>OPERATING COSTS</b>					
<b>Insecticide:</b>					
Agri-Mek 0.15 EC	15.00	floz	2.35	35	
Intrepid 2F	18.00	floz	3.11	56	
Clinch	1.00	lb	12.74	13	
<b>Fungicide:</b>					
Vanguard WF	5.00	oz	4.71	24	
Abound	14.00	floz	3.71	52	
Bravo Weatherstik	4.00	pint	8.23	33	
<b>Rodenticide:</b>					
Gopher Bait	1.50	lb	7.87	12	
Squirrel Bait	1.50	lb	4.54	7	
<b>Herbicide:</b>					
Rely 200	1.20	pint	9.72	12	
Roundup Ultra Max	4.50	pint	4.75	21	
Goal 2 XL	1.25	pint	9.73	12	
Matrix SG	4.00	oz	22.69	91	
<b>Fertilizer:</b>					
Neutral Zinc	5.00	lb	2.20	11	
CAN 17	100.00	lb N	1.04	104	
UN-32	100.00	lb N	0.67	67	
Solubor (Boron)	2.00	lb	0.72	1	
Potassium Sulfate (0-0-50)	400.00	lb	0.42	168	
<b>Irrigation:</b>					
Water – District (\$30 per acre)	51.00	acin	0.59	30	
<b>Custom/Contract:</b>					
Hives (Pollination)	2.00	hives	140.00	280	
Leaf Analysis: NPK (2 samples/40 acres)	0.05	each	32.00	2	
Hull Analysis: B (1 sample/40 acres)	0.03	each	17.00	1	
Shake Trees	2.00	hour	98.00	196	
Sweep Nuts	2.00	hour	62.00	124	
Pickup Nuts	1.00	acre	75.00	75	
Haul Nuts	20.00	cwt	0.38	8	
Hull & Shell Nuts	2,000.00	lb	0.05	100	
Shred Brush	0.10	hour	285.00	29	
<b>Labor (machine)</b>	11.65	hrs	15.96	186	
<b>Labor (non-machine)</b>	18.06	hrs	10.64	192	
<b>Fuel - Gas</b>	10.12	gal	3.10	31	
<b>Fuel - Diesel</b>	16.09	gal	2.60	42	
Lube				11	
Machinery repair				30	
Interest on operating capital @ 5.75%				23	
<b>TOTAL OPERATING COSTS/ACRE</b>				<b>2,077</b>	
<b>NET RETURNS ABOVE OPERATING COSTS</b>				<b>923</b>	
<b>CASH OVERHEAD COSTS:</b>					
Office Expense				75	
Liability Insurance				6	
Sanitation Fees				7	
Environmental/Regulatory Fee				10	
Property Taxes				199	
Property Insurance				31	
Investment Repairs				58	
<b>TOTAL CASH OVERHEAD COSTS/ACRE</b>				<b>386</b>	
<b>TOTAL CASH COSTS/ACRE</b>				<b>2,463</b>	

## UC COOPERATIVE EXTENSION

**Table 3. continued**

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
NON-CASH OVERHEAD COSTS (Capital Recovery)					
Buildings				66	
Land				750	
Fuel Tanks 2-500g				5	
Shop & Field Tools				15	
Flood Irrigation System				57	
Orchard Establishment Costs				389	
Equipment				66	
TOTAL NON-CASH OVERHEAD COSTS/ACRE				1,348	
TOTAL COSTS/ACRE				3,811	
NET RETURNS ABOVE TOTAL COSTS				-811	



UC COOPERATIVE EXTENSION  
**Table 4. MONTHLY PER ACRE CASH COSTS - ALMONDS**  
 SAN JOAQUIN VALLEY - NORTH 2011

Beginning JAN 11	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Ending DEC 11	11	11	11	11	11	11	11	11	11	11	11	11	
<b>Cultural:</b>													
Pollination (2 hives)		280											280
Disease: Brown Rot (Vangard)		34											34
Disease: Shothole/Scab/Rust (Abound). Fertilize: (Zn)			74										74
Vertebrate: Gopher & Squirrel (Bait)			19					14					34
Weed: Mow 6X			7	7	7	7	7	7					41
Irrigate: (water & labor) 10X			4	6	10	8	13	9	7	6			62
Fertilize: N @ 200 lb/acre (CAN17, 1X. UN32, 2X)				112		41		41					194
Disease: Shothole/Scab/Anthracnose (Bravo).				44									44
Weed: Strip Spray (Rely)					19								19
Insect: Mites (AgriMek)					46								46
Fertilize: Leaf Samples (collect & analysis) NPK							3						3
Insect: NOW (Intrepid)							67						67
Insect: Ants (Clinch)							15						15
Weed: Preharvest Spray Orchard Floor (Roundup, Goal)								34					34
Fertilize: Hull Samples (collect & analysis) B									1				1
Fertilize: Foliar Spray (Solubor) B										12			12
Fertilize: Potassium Sulfate										171			171
Weed: Winter Strip (Roundup, Matrix)											105		105
Prune:											138		138
Prune: Stack Prunings											16		16
Prune: Shred Prunings (brush)											29		29
Winter Sanitation: Shake Mummies, Rake, Sweep, Shred)												166	166
Pickup Truck Ranch Use	8	8	8	8	8	8	8	8	8	8	8	8	100
ATV: General Use	2	2	2	2	2	2	2	2	2	2	2	2	23
<b>TOTAL CULTURAL COSTS</b>	<b>10</b>	<b>325</b>	<b>114</b>	<b>178</b>	<b>92</b>	<b>66</b>	<b>115</b>	<b>115</b>	<b>19</b>	<b>199</b>	<b>299</b>	<b>176</b>	<b>1,708</b>
<b>Harvest:</b>													
Shake									98				98
Sweep									62				62
Hand Rake Nuts									3				3
Pickup and Haul Nuts									83				83
Hull and Shell Nuts									100				100
<b>TOTAL HARVEST COSTS</b>									<b>345</b>				<b>345</b>
Interest on operating capital @ 5.75%	0	2	2	3	3	4	4	5	7	-3	-2	-1	24
<b>TOTAL OPERATING COSTS/ACRE</b>	<b>10</b>	<b>326</b>	<b>116</b>	<b>181</b>	<b>96</b>	<b>70</b>	<b>119</b>	<b>120</b>	<b>371</b>	<b>196</b>	<b>296</b>	<b>175</b>	<b>2,077</b>

UC COOPERATIVE EXTENSION  
**Table 4. CONTINUED**  
 SAN JOAQUIN VALLEY - NORTH 2011

Beginning JAN 11	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Ending DEC 11	11	11	11	11	11	11	11	11	11	11	11	11	
<b>CASH OVERHEAD:</b>													
Office Expense	6	6	6	6	6	6	6	6	6	6	6	6	75
Liability Insurance		6											6
Sanitation Fees	7												7
Environmental Fee				10									10
Property Taxes	99						99						199
Property Insurance	16						16						31
Investment Repairs	5	5	5	5	5	5	5	5	5	5	5	5	58
<b>TOTAL CASH OVERHEAD COSTS</b>	<b>133</b>	<b>17</b>	<b>11</b>	<b>21</b>	<b>11</b>	<b>11</b>	<b>126</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>386</b>
<b>TOTAL CASH COSTS/ACRE</b>	<b>143</b>	<b>344</b>	<b>127</b>	<b>202</b>	<b>107</b>	<b>81</b>	<b>245</b>	<b>131</b>	<b>382</b>	<b>207</b>	<b>307</b>	<b>186</b>	<b>2,463</b>

UC COOPERATIVE EXTENSION  
**Table 5. RANGING ANALYSIS**  
 SAN JOAQUIN VALLEY - NORTH 2011

COSTS PER ACRE AT VARYING YIELDS TO PRODUCE ALMONDS

	YIELD (lb/acre)						
	1,400	1,600	1,800	2,000	2,200	2,400	2,600
<b>OPERATING COSTS/ACRE:</b>							
Cultural Cost	1,709	1,709	1,709	1,709	1,709	1,709	1,709
Harvest Cost	312	323	334	345	356	367	378
Interest on operating capital @ 5.75%	23	23	23	23	24	24	24
TOTAL OPERATING COSTS/ACRE	2,044	2,055	2,066	2,077	2,089	2,100	2,111
TOTAL OPERATING COSTS/LB	1.46	1.28	1.15	1.04	0.95	0.87	0.81
<b>CASH Overhead Costs/ACRE</b>							
CASH Overhead Costs/ACRE	386	386	386	386	386	386	386
TOTAL CASH COSTS/ACRE	2,430	2,441	2,452	2,463	2,475	2,486	2,497
TOTAL CASH COSTS/LB	1.74	1.53	1.36	1.23	1.12	1.04	0.96
<b>NON-CASH Overhead Costs/ACRE</b>							
NON-CASH Overhead Costs/ACRE	1,348	1,348	1,348	1,348	1,348	1,348	1,348
TOTAL COSTS/ACRE	3,778	3,789	3,800	3,811	3,823	3,834	3,845
TOTAL COSTS/LB	2.70	2.37	2.11	1.91	1.74	1.60	1.48

NET RETURNS PER ACRE ABOVE OPERATING COSTS

PRICE \$/lb	YIELD (lb/acre)						
	1,400	1,600	1,800	2,000	2,200	2,400	2,600
0.90	-784	-615	-446	-277	-109	60	229
1.10	-504	-295	-86	123	331	540	749
1.30	-224	25	274	523	771	1,020	1,269
1.50	56	345	634	923	1,211	1,500	1,789
1.70	336	665	994	1,323	1,651	1,980	2,309
1.90	616	985	1,354	1,723	2,091	2,460	2,829
2.10	896	1,305	1,714	2,123	2,531	2,940	3,349

NET RETURNS PER ACRE ABOVE CASH COSTS

PRICE \$/lb	YIELD (lb/acre)						
	1,400	1,600	1,800	2,000	2,200	2,400	2,600
0.90	-1,170	-1,001	-832	-663	-495	-326	-157
1.10	-890	-681	-472	-263	-55	154	363
1.30	-610	-361	-112	137	385	634	883
1.50	-330	-41	248	537	825	1,114	1,403
1.70	-50	279	608	937	1,265	1,594	1,923
1.90	230	599	968	1,337	1,705	2,074	2,443
2.10	510	919	1,328	1,737	2,145	2,554	2,963

NET RETURNS PER ACRE ABOVE TOTAL COSTS

PRICE \$/lb	YIELD (lb/acre)						
	1,400	1,600	1,800	2,000	2,200	2,400	2,600
0.90	-2,518	-2,349	-2,180	-2,011	-1,843	-1,674	-1,505
1.10	-2,238	-2,029	-1,820	-1,611	-1,403	-1,194	-985
1.30	-1,958	-1,709	-1,460	-1,211	-963	-714	-465
1.50	-1,678	-1,389	-1,100	-811	-523	-234	55
1.70	-1,398	-1,069	-740	-411	-83	246	575
1.90	-1,118	-749	-380	-11	357	726	1,095
2.10	-838	-429	-20	389	797	1,206	1,615

UC COOPERATIVE EXTENSION  
**Table 6. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS**  
 SAN JOAQUIN VALLEY - NORTH 2011

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
						Insur- ance	Taxes	
11	66 HP 2WD Tractor	37,773	20	4,847	2,817	165	213	3,195
11	ATV 4WD	6,500	7	2,466	808	35	45	888
11	Mower/Chopper - 8'	9,600	10	1,698	1,092	44	56	1,192
11	Orch. Sprayer 500 G	21,000	15	2,016	1,894	89	115	2,098
11	Pickup 1/2 ton	28,000	7	10,621	3,481	150	193	3,824
11	Spin/Spreader-Pull	14,000	20	730	1,077	57	74	1,208
11	Weed Sprayer 100 G	5,500	10	973	625	25	32	683
<b>TOTAL</b>		<b>122,373</b>		<b>23,351</b>	<b>11,793</b>	<b>565</b>	<b>729</b>	<b>13,087</b>
<b>60% of New Cost*</b>		<b>73,424</b>		<b>14,011</b>	<b>7,076</b>	<b>339</b>	<b>437</b>	<b>7,852</b>

\*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	
<b>INVESTMENT</b>								
Orchard Establishment	209,479	22		15,553	812	1,047	1,047	18,460
Buildings, 2400 sqft	80,000	20		6,284	310	400	1,600	8,594
Flood Irrigation System (95 acres)	96,425	40		5,428	374	482	964	7,248
Fuel Tanks 2-500g	6,514	20	651	491	28	36	130	685
Land	1,500,000	22	1,500,000	71,250	0	15,000	0	86,250
Shop & Field Tools/Equipment	15,000	15		1,421	58	75	300	1,854
<b>TOTAL INVESTMENT</b>	<b>1,907,418</b>		<b>1,500,651</b>	<b>100,428</b>	<b>1,581</b>	<b>17,040</b>	<b>4,041</b>	<b>123,091</b>

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Environmental/Regulatory Fee	95	acre	10	950
Liability Insurance	100	acre	5.81	581
Office Expense	95	acre	75.00	7,125
Sanitation Fees	95	acre	6.74	640

UC COOPERATIVE EXTENSION  
**Table 7. HOURLY EQUIPMENT COSTS**  
 SAN JOAQUIN VALLEY - NORTH 2011

Yr	Description	Actual Hours Used	COSTS PER HOUR							Total Costs/Hr
			Capital Recovery	Cash Overhead		Operating			Total Oper.	
				Insur- ance	Taxes	Repairs	Fuel & Lube			
11	66 HP 2WD Tractor	600	2.82	0.17	0.21	1.61	9.54	11.15	14.35	
11	ATV 4WD	285	1.70	0.07	0.09	0.48	3.56	4.04	5.90	
11	Mower/Chopper - 8'	200	3.28	0.13	0.17	4.05	0.00	4.05	7.63	
11	Orch. Sprayer 500 G	130	8.75	0.41	0.53	3.46	0.00	3.46	13.15	
11	Pickup 1/2 ton	285	7.32	0.31	0.41	2.07	8.91	10.98	19.02	
11	Spin/Spreader-Pull	60	10.76	0.56	0.74	5.24	0.00	5.24	17.30	
11	Weed Sprayer 100 G	150	2.51	0.10	0.13	1.48	0.00	1.48	4.22	

UC COOPERATIVE EXTENSION  
**Table 8. OPERATIONS WITH EQUIPMENT & MATERIALS**  
 SAN JOAQUIN VALLEY NORTH - 2011

Operation	Operation Month	Equipment		Non-Mach		Broadcast Rate/acre	Unit
		Tractor	Implement	Labor hrs/acre	Material		
Cultural:							
Pollination	February	Custom			Hives	2.00	each
Disease: Brown Rot	February	66HP 2WD	Orchard Sprayer		Vanguard	5.00	oz
Disease: Shothole & Scab. Fertilizer: Foliar	March	66HP 2WD	Orchard Sprayer		Abound	14.00	floz
					Neutral Zinc	5.00	lb
Disease: Shothole, Scab, Anthracnose	April	66HP 2WD	Orchard Sprayer		Bravo	4.00	pint
Vertebrate: Gopher & Squirrel	March	ATV			Gopher Bait	1.50	lb
	August	ATV			Squirrel Bait	1.50	lb
Fertilize: N	April				CAN17	100.00	lb N
	June				UN32	50.00	lb N
	August				UN32	50.00	lb N
Weed: Mow	March	66HP 2WD	Mower/Chopper				
	April	66HP 2WD	Mower/Chopper				
	May	66HP 2WD	Mower/Chopper				
	June	66HP 2WD	Mower/Chopper				
	July	66HP 2WD	Mower/Chopper				
	August	66HP 2WD	Mower/Chopper				
Irrigate: water & labor	March			0.30	Water	1.00	acin
	April			0.30	Water	4.00	acin
	May			0.60	Water	6.00	acin
	June			0.30	Water	8.50	acin
	July			0.60	Water	12.00	acin
	August			0.30	Water	9.00	acin
	September			0.30	Water	6.50	acin
	October			0.30	Water	4.00	acin
Insect: Mites	May	66HP 2WD	Orchard Sprayer		Agri-Mek	15.00	floz
Fertilize: Leaf Samples	July	ATV		0.03	Analysis	0.05	each
Insect: Worms	July	66HP 2WD	Orchard Sprayer		Intrepid	18.00	floz
Insect: Ants	July	ATV			Clinch	1.00	lb
Weed: Strip Spray	May	66HP 2WD	Weed Sprayer		Rely	1.20	pint
Weed: Spray Orchard Floor (Preharvest)	August	66HP 2WD	Weed Sprayer		Roundup	3.00	pint
					Goal	1.25	pint
Harvest: Shake Trees	September	Custom			Shake	1.00	hour
Harvest: Sweep Nuts	September	Custom			Sweep	1.00	hour
Harvest: Hand Rake Nuts	September			0.30			
Harvest: Pickup & Haul Nuts	September	Custom			Pickup Haul	20.00	cwt
Hull & Shell Nuts	September	Custom			Hull & Shell	2,000.00	lb
Fertilizer: Hull Samples	September	ATV		0.03	Analysis	0.03	each
Fertilize: Foliar Spray (Boron)	October	66HP 2WD	Orchard Sprayer		Solubor	2.00	lb
Fertilize: Potassium sulfate	October	66HP 2WD	Spreader		0-0-50	400.00	lb
Weed: Winter Strip	November	66HP 2WD	Weed Sprayer		Roundup	1.50	pint
					Matrix	4.00	oz
Prune: Hand	November			13.00			
Prune: Stack Prunings	November			1.50			
Prune: Shred Prunings	November	Custom			Shred	0.10	hour
Winter Sanitation: (shake, sweep, mow)	December	66HP 2WD	Mower/Chopper				
		Custom			Shake	1.00	hour
		Custom		0.30	Sweep	1.00	hour