
1997

U.C. COOPERATIVE EXTENSION

SAMPLE COSTS

TO ESTABLISH AN ALMOND ORCHARD AND PRODUCE

~ALMONDS~



SOUTHERN SAN JOAQUIN VALLEY

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INTRODUCTION

Detailed costs of establishing an almond orchard and production of almonds under surface irrigated conditions in the Southern San Joaquin Valley are presented in this study. The hypothetical farm used in this report is 105 acres, 100 of which are planted to almonds.

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

Tables included:

| | |
|----------|---|
| Table 1. | Costs Per Acre to Establish An Almond Orchard |
| Table 2. | Costs and Returns Per Acre to Produce Almonds |
| Table 3. | Costs Per Acre to Produce Almonds |
| Table 4. | Monthly Cash Costs Per Acre to Produce Almonds |
| Table 5. | Whole Farm Annual Equipment, Investment and Business Overhead |
| Table 6. | Hourly Equipment Costs |
| Table 7. | Ranging Analysis |
| Table 8. | Cost and Returns/Breakeven Analysis |

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

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ASSUMPTIONS

The following is a description of some general assumptions pertaining to sample costs of establishing an almond orchard and producing almonds in the Southern San Joaquin Valley. Practices described are not recommendations by the University of California, but represent production procedures and materials considered typical of a well managed orchard for the San Joaquin Valley. Some costs, practices, and materials may not be applicable to your situation nor used during every year. Additional ones not indicated may be needed. Establishment and cultural practices vary by grower and region; variations can be significant. These costs are on an annual, per acre basis. **The use of trade names in this report does not constitute an endorsement or recommendation by the University of California nor is any criticism implied by omission of other similar products.**

Land. The farm consists of 105 acres of land. Of that, 100 acres are planted into almonds and five acres are occupied by roads, irrigation systems and farmstead. The orchard is farmed by the owner. Additional management costs ranging from \$60 to \$100 per acre may occur if additional practices are contracted. The orchard is in land previously planted to other field and row crops. Land is valued at \$5,000 per acre. Because only 100 of the 105 acres is planted with almonds the land cost is \$5,263 per producing acre.

Trees. No specific varieties of almond trees are assumed in this study. Orchards will include at least two varieties (and preferably three) in which pollen shedding and bloom periods overlap. At least two varieties are included within each orchard to insure good pollination. A few of the cultivars representing the majority of almond acreage in California that might be planted in this region include: A) Early blooming Sonora and Price; B) Mid blooming Nonpareil, Carmel, Monterey, and Fritz; and C) Later blooming Mission, Padre, and Butte. The trees are planted at 90 trees per acre. The life of the orchard at the time of planting in this study is estimated to be 25 years. The annual report by the Almond Board of California contains the current acreage trends by varieties.

Irrigation System. A total of 42 acre-inches of water is applied during the growing season and post-harvest. Post-harvest irrigations are essential, especially for early harvested varieties, through mid October. Water is delivered to the orchard from the district ditch through and underground pipe and alfalfa valve system. The life of the irrigation system is estimated at 25 years. The irrigation system is installed before the orchard is planted.

The irrigation system is considered an improvement to the property and is shown in the non-cash overhead sections of Tables 1-3 and the Investments portion of Table 5.

The orchard is irrigated using a flood irrigation system with permanent berms (raised rows) on which the trees are planted. Berms are not ridged up or knocked down during the remaining life of the orchard. Irrigating the orchard during the first few establishment years can be accomplished by running water down furrows made on each side of the tree rows. This type of application could reduce the amount of water applied during the early years, but is not assumed in this study. No assumption is made about effective rainfall.

Orchard Establishment Cultural Practices and Material Inputs

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

Site Preparation. Land is prepared beginning with slip plowing to break up layered soil for improved root and water penetration. Ripping is performed where chemical hardpans exist. The ground is disced twice after slip plowing and borders are put up. The bordered orchard site is flooded with eight acre-inches of water and disced two more times after the ground has dried out. Following the second discing, berms are constructed in the tree rows to manage irrigations between the rows. The field is laser leveled to allow for uniform irrigation. Slip plowing and leveling are performed by contract or custom operators. A treatment of soil-residual herbicide is applied to the tree rows and incorporated with a disc after leveling. All 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 surveying and marking tree sites with a small stake. Holes are dug and 1/2 inch diameter trees are planted, staked, and wrapped. Before the trees are planted they are treated to control crown gall. Tree guards are placed around trees for protection against above ground rodents and sunburn. In the second year, 1% of the orchard or 1 tree per acre will have to be replanted. Pruning and training is started in the second year and labor time increases in the following years

Fertilization. Nitrogen fertilizer is applied in increasing amounts and is split between spring and summer. A granular formulation is spread by hand around the young trees. Beginning the fourth year, nitrogen is applied in the water during irrigation. Annual rate of N used in this study are shown in Table A.

| Year | Pounds Of N/Acre | Pounds Of N/Tree |
|------|------------------|------------------|
| 1 | 20 | .2 |
| 2 | 40 | .4 |
| 3 | 80 | .9 |
| 4 | 120 | 1.1 |
| 5 | 160 | 1.6 |
| 6 | 180 | 1.9 |
| 7+ | 200 | 2.2 |

Irrigation. Water for irrigation is supplied by a water district. The price per acre or acre-foot varies by district in this region. In this study a water cost of \$30 per acre-foot is used. No assumption is made about effective rainfall. Frost damage can occur, but not on a regular basis. If protection is needed the ground is irrigated. The amount of water applied to the orchard varies in the establishment years and is shown in Table B.

Table B. Applied irrigation water

| Year | AcIn/Year |
|-------|-----------|
| 1 - 2 | 20 |
| 3 | 28 |
| 4 - 5 | 36 |
| 6 + | 42 |

Orchard Floor Management. Weeds are controlled in the first 2 years by 4 annual cultivations in the row centers, one dormant strip spray applied in either fall, winter, or spring, and one foliar-applied herbicide for spot spraying persistent weeds. Since the strip spray is applied only to a narrow portion along the tree rows it is effectively used on 25% of the total acreage. A spring spot spray cleans up weeds missed by the dormant strip spray in the tree row. A preharvest weed control spray is applied starting in the third year to clean up the orchard floor in preparation for harvest.

Beginning the third year mowing is used to manage the resident vegetation. Row middles are mowed to control vegetation on the orchard floor up to the preharvest herbicide application. Four passes are made during the growing season.

Insect, Mite, and Disease Management. The management of almond pests and diseases occurs at different times during the year. This study refers to the months that certain pest sprays are applied, but the actual timing of these control sprays is determined by the tree growth or life cycle of the pest. Some of the typical flowering stages mentioned are pink bud, popcorn, and full bloom. Refer to the publication [UC Integrated Pest Management for Almonds](#) for further information.

Insect control in the first and second year include an in-season and one dormant spray applied with a sprayer and handgun. An in-season spray includes mite control or miscellaneous insect control. The dormant spray includes oil and an insecticide to control peach twig borer (PTB), San Jose scale (SJS), and early season mites. Zinc is added to the in-season sprays for nutritional needs.

During the second year dormant and nutrient sprays are added to the pest management program. In the third year a fungicide is applied during pink bud stage to prevent brown rot. By the fourth year a hull split spray is made to manage navel orangeworm (NOW) prior to harvest. These first two year's pest and disease sprays are applied by a sprayer with a handgun instead of with an airblast sprayer due to the small size of the trees. Because of the minor tree size, less material per acres required to effectively treat the trees. Starting in the fourth year these materials are sprayed using an airblast sprayer.

Vertebrate Pest Management. Gophers can cause major losses to trees through the fourth leaf. 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 fumigation and the use of anti-coagulant bait in above-ground bait stations during the growing season.

Establishment Cost. The cost to establish the orchard is used to determine the non-cash overhead expenses: depreciation and interest on investment for production years. The establishment cost is the sum of cash costs for land preparation, planting, trees, production expenses, and cash overhead for growing almond trees through the first year fruit is harvested minus any returns from production. The *Total Accumulated Net Cash Cost* in the third year shown in Table 1, represents the establishment cost per acre. For this study, this cost is \$3,014 per acre or \$301,500 for the 100 acre orchard. Establishment cost is amortized over the remaining 22 years that the orchard is assumed to be in production.

Production Cultural Practices and Material Inputs

Winter Sanitation. Winter sanitation practices includes removal of the mummy nuts from the trees and their destruction. This reduces overwintering sites for navel orangeworm. Operations for sanitation include; knocking the mummy nuts off the tree with a shaker, blowing the nuts into the row middles with a blower, sweeper, raking and shredding the mummies. Winter sanitation operations are custom hired from December through January. Hand polling may be needed in low rainfall years.

Pruning. In this study, pruning is done from October through early December before heavy rainfall with hand crews. Prunings are stacked in the center of the row middles and bucked (pushed) out of the orchard by a tractor with a brush rake and burned or otherwise disposed of. Bucking and disposal are done during the winter months. One tree per acre was assumed to die and would need to be replaced. It is removed and replanted in the late winter or spring.

Pollination. Pollination is one of the most important cultural practices required for good nut set. Having strong, healthy hives in the orchard during bloom increases the probability of higher yields. Two and one half hives (each hive should have 5+ frames of bees) per acre are contracted for pollination and are set in the orchard by the beekeeper before bloom starts. All hives should be moved out of the orchard before insecticide spraying occurs to avoid any contact between pesticides and bees.

Fertilization. Tree nitrogen status is determined by leaf analysis; sampling for analysis is done in July. Half of the nitrogen is applied by early spring after leaves have emerged to aid shoot development. The remaining 100 pounds of N per acre is added in late spring or summer. A liquid fertilizer is used as the nitrogen source.

Orchard Floor Management. There are many different and acceptable ways of controlling weeds and ground floor management. In this study, the raised berms are treated differently from the orchard middles. One dormant strip spray of pre-emergent and post emergent herbicides to control weeds in the tree rows can be applied after the first significant winter rain. Weed control continues with two monthly post emergent spot sprays on the berms and where needed to control perennial weeds. Resident species are allowed to grow and become ground cover in the centers, between the tree rows. Row middles are mowed three times to control resident vegetation during spring and summer. Frost damage can increase due to cooling effect caused by ground covers on orchard temperature. Injury to the almond buds can be mitigated by keeping the orchard vegetation mowed low during the bloom period. Mowed vegetation also reduces the number of blooms and increase competition for almond pollination. A preharvest weed control spray is used to prepare the orchard floor for harvest.

Insect and Mite Management. Pest control is achieved by a variety of management techniques. Insect and mite management begins with a dormant spray for control of peach twig borer, San Jose scale, and certain mite eggs. The dormant spray of horticultural oil and insecticide is made, December through January, before bud swell. A second in-season spray may be needed for ant, leafhopper, or worm control. At the beginning of hull split, an in-season spray mix to control navel orangeworm (NOW) and various mites is applied. NOW is also managed by early and timely harvest and winter sanitation. Harvest can occur too early and picking up green nuts can lead to post harvest problems.

Disease Management. Control of bloom and foliar disease problems becomes more critical at maturity. Brown rot and shothole are the two main diseases, but more diseases are causing damage. Three applications of fungicides are made for control of diseases. These sprays are timed for pink bud, full bloom, or petal fall and after petal fall, but before a rain. The brown rot treatment is made in February, sometime between popcorn and full bloom stage. Shot hole treatments are made after leaf emergence

Vertebrate Pest Management. Gophers are managed with the use of poison bait applied in the spring by 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.

Pesticide Recommendations. For specific pesticides choices and rates consult the publication UC IPM Pest Management Guidelines, Almonds . Cultural practices are discussed in the publication Integrated Pest Management for Almonds. Written recommendations are required for many pesticides and are made by licensed pest control advisors. For information and pesticide use permits, contact the local county Agricultural Commissioner's office.

A pesticide Control Advisor (PCA) is employed to monitor pest levels and make recommendations regarding their control. Fees vary widely depending on area and level of service. The monthly fee per acre is \$20, which includes insect, disease, and weed control.

Harvest. Harvest starts in the third year after the orchard is planted. Yield maturity is reached in the seventh year. In this cost study the grower contracts to have the almond crop custom harvested. All of the harvest operations are done mechanically except for raking. Hand raking also known as check raking, moves nuts that were missed by the sweeper into the windrows. Harvest begins with the early maturing varieties in August and continues into October for pollenizers and other late maturing varieties.

For growers who own harvesting equipment, the equipment used for harvesting operations should be added to the equipment and investment inventories on Table 5 and custom harvest charges should be replaced in Harvest costs in Tables 1 and 2, with grower performed harvest and hauling costs.

Assessment. The California Almond Board (CAB) assess 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.

Yields and Returns. Almonds begin bearing an economic crop in the third year after planting. Typical annual yields for almonds are measured in meat pounds per acre and are shown in Table C. Yields are from the third year of orchard establishment to maturity. An estimated price of a \$1.30 per pound of almonds is used in this study to determine potential profits/losses. Returns, shown in Table 7, will vary and the yields and prices used in this cost study are estimates taking into consideration current situations.

| Year | Pounds of Nut |
|------|---------------|
| 3 | 400 |
| 4 | 800 |
| 5 | 1,600 |
| 6 | 1,800 |
| 7 | 2,000 |
| 8+ | 2,200 |

Risk. The risks associated with producing and marketing almonds should not be minimized. While this study makes every effort to model a production system based on typical, real world practices, it cannot fully represent financial, agronomic and market risks which affect the profitability and economic viability of almond production.

Risk is caused by various sources of uncertainty which include production, price, and financial. Examples of these are insect damage, a decrease in price, or an increase in interest rates. Due to the risk involved, access to a market is crucial. A market channel should be determined before almond orchards are planted and brought into production.

Labor. Hourly wages for workers are \$8.00, and \$5.15 per hour for skilled, and field workers respectively. Adding 34% for Workers Compensation, Social Security, Medicare insurance, and other possible benefits gives the labor rates shown of \$10.72 per hour for skilled labor, and \$6.90 per hour for field labor. Labor for operations involving machinery are 20% higher than the operation time given in Table 2 to account for the extra labor involved in equipment set up, moving, maintenance, work breaks, and repair. Wages for management are not included as a cash cost. Returns above total costs is considered a return to management and risk.

Cash Overhead. Cash overhead consists of various cash expenses paid out during the year that are assigned to the whole farm and not to a particular operation. These costs include property taxes, interest on operating capital, office expense, liability and property insurance, sanitation services, and equipment repairs.

Property Taxes Counties charge a base property tax rate of 1% on the assessed value of the property. In some counties special assessment districts exist and charge additional taxes on property including equipment, buildings, and improvements. For this study, county taxes are calculated as 1% of the average value of the property. Average value equals new cost plus salvage value divided by 2 on a per acre basis. Salvage value for investments will vary.

Interest On Operating Capital Interest on operating capital is based on cash operating costs and is calculated monthly until harvest at a nominal rate of 11.61% per year. A nominal interest rate is the going market cost of borrowed funds.

Insurance Insurance for farm investments vary depending on the assets included and the amount of coverage. Property insurance provides coverage for property loss and is charged at 0.713% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$336 for the entire farm.

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

Sanitation Services Sanitation services provide portable toilets for the orchard and cost the farm \$654 annually. This cost includes delivery and servicing of toilets. Cash overhead costs are included in Tables 1-5.

Non-Cash Overhead. Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments. Although farm equipment on almond orchards in the Southern San Joaquin Valley might be purchased new or used, this study shows the current purchase price for new equipment. The new purchase price is adjusted to 60% to indicate a mix of new and used equipment. Annual ownership costs (Equipment and Investments) are shown in Tables 1-3, and 5. They represent the capital recovery cost for investments on an annual per acre basis.

Capital Recovery 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). Put another way, it is equivalent to the annual payment on a loan for the investment with the downpayment equal to the discounted salvage value. This is a more complex method of calculating ownership costs than straight-line depreciation and opportunity costs, but more accurately represents the annual costs of ownership because it takes the time value of money into account. The calculation for the annual capital recovery costs is taken from the publication *Farm Management* (Boehlje and Eidman) and is as follows.

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

Salvage Value. Salvage value is an estimate of the remaining value of an investment at the end of its life. For farm machinery (e.g., tractors and implements) the remaining value is a percentage of the new cost of the investment. The life in years is estimated by dividing the wear-out life, as given by American Society of Agricultural Engineers (ASAE) by the annual use in hours. Salvage value is calculated by Boelje and Eidman as

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

Salvage value for other investments including irrigation systems, buildings, and miscellaneous equipment is zero. The salvage value for land is equal to the purchase price because land does not depreciate from use. The purchase price and salvage value for certain equipment and investments are shown in Table 5.

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

Interest Rate. The interest rate of 8.25% used to calculate capital recovery cost is the USDA-ERS's ten year average of California's agricultural sector longrun rate of return to production assets from current income. It is used to reflect the long-term realized rate of return to these specialized resources that can only be used effectively in the agricultural sector. In other words, the next best alternative use for these resources is in another agricultural enterprise.

Equipment Cash Costs. 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 fuel, lubrication, and repairs.

In allocating equipment costs on a per acre basis, the following hourly charges are calculated first and shown in Table 6. Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by the ASAE. Fuel and lubrication costs are also determined by ASAE equations based on maximum PTO hp, and type of fuel used. The fuel and repair cost per acre for each operation in Table 2 is determined by multiplying the total hourly operating cost in Table 6 for each piece of equipment used for the cultural practice by the number of hours per acre for that operation. Tractor time is 10% higher than implement time (Operation Time) for a given operation to account for fueling, moving equipment, and setup time. Prices for on-farm delivery of diesel and gasoline are \$0.97 and \$1.30 per gallon, respectively.

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For information concerning the above mentioned University of California publications contact UC DANR Communications Services (1-800-994-8849) or your local county Cooperative Extension office.

Table 1.

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 SAMPLE COSTS PER ACRE TO ESTABLISH AN ALMOND ORCHARD
 SOUTHERN SAN JOAQUIN VALLEY - 1997

Labor Rate: \$10.72/hr. machine labor
 \$6.90/hr. non-machine labor

Interest Rate: 10.00%

| Year | Cost Per Acre | | | | | | |
|---|---------------|-----|------|------|-------|-------|-------|
| | 1st | 2nd | 3rd | 4th | 5th | 6th | 7th |
| Meat Pounds Per Acre | | | 400 | 800 | 1,600 | 1,800 | 2,000 |
| Planting Costs: | | | | | | | |
| Land Preparation - Slip Plow | \$250 | | | | | | |
| Land Preparation - Disc 2X | 27 | | | | | | |
| Land Preparation - Put Up Borders | 4 | | | | | | |
| Land Preparation - Pre-irrigate: Apply 8 AcIn | 20 | | | | | | |
| Land Preparation - Laser Level | 140 | | | | | | |
| Weed Control - Preplant | 38 | | | | | | |
| Incorporate Herbicide - Disc 1X | 13 | | | | | | |
| Trees: 90 Per Acre (1% Replant In 2nd Year) | 360 | \$3 | | | | | |
| Layout, Dig, Gall Prevention, Guards, and Plant | 308 | 4 | | | | | |
| Trees | | | | | | | |
| TOTAL PLANTING COSTS | 1,160 | 7 | | | | | |
| Cultural Costs: | | | | | | | |
| Winter Sanitation: | | | | | | | |
| Knock Mummies | | | | | \$62 | \$62 | \$63 |
| Blow & Rake Mummies | | | | | 40 | 40 | 40 |
| Shread Mummies | | | | | 13 | 13 | 13 |
| Insect Control - Dormant | 16 | 15 | \$44 | \$44 | 44 | 44 | 45 |
| Weed Control - Dormant Strip | 38 | 45 | 45 | 36 | 36 | 36 | 36 |
| Pruning & Suckering | 9 | 15 | 30 | 30 | 24 | 24 | 24 |
| Brush Disposal | | 18 | 25 | 25 | 25 | 25 | 25 |
| Fertilizer - Nitrogen | 16 | 15 | 36 | 53 | 69 | 77 | 85 |
| Pollination | | | 20 | 40 | 80 | 80 | 80 |
| Weed Control - Disc 3X | 31 | 31 | | | | | |
| Weed Control - Mow 4X | | | 51 | 51 | 51 | 51 | 51 |
| Weed Control - Spot Spray Tree Rows 2X | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| Vertebrate Control - Rodents | 7 | 7 | 7 | 13 | 13 | 13 | 13 |
| Insect Control - In-Season Spray | 79 | 79 | 65 | 65 | 65 | 65 | 65 |
| Disease Control - Shothole/Brown Rot | | | 29 | 157 | 157 | 157 | 157 |
| Furrow Middles 3X | 15 | 15 | | | | | |
| Irrigate | 57 | 56 | 75 | 95 | 95 | 110 | 110 |
| Insect Control - Mite/Hull Split Spray | | | | 35 | 35 | 35 | 35 |
| Weed Control - Preharvest Spray | | | 16 | 16 | 16 | 16 | 16 |
| Pickup Truck Use | 48 | 48 | 48 | 48 | 48 | 48 | 48 |
| ATV Use | 40 | 40 | 40 | 40 | 40 | 40 | 40 |

Table 1. Continued

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| Year | Cost Per Acre | | | | | | |
|--|---------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | 1st | 2nd | 3rd | 4th | 5th | 6th | 7th |
| Meat Pounds Per Acre | | | 400 | 800 | 1,600 | 1,800 | 2,000 |
| Miscellaneous Labor | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Consultant Service | 5 | 5 | 5 | 20 | 20 | 20 | 20 |
| Leaf Analysis | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| TOTAL CULTURAL COSTS | 398 | 426 | 573 | 805 | 970 | 993 | 1,003 |
| Harvest Costs: | | | | | | | |
| Shake Trees | | | 62 | 62 | 62 | 62 | 62 |
| Hand Rake | | | 2 | 2 | 4 | 4 | 4 |
| Sweep Nuts | | | 40 | 40 | 40 | 40 | 40 |
| Pick Up and Haul | | | 18 | 35 | 70 | 79 | 88 |
| Hull Nuts | | | 20 | 40 | 80 | 90 | 100 |
| TOTAL HARVEST COSTS | | | 142 | 179 | 256 | 275 | 294 |
| Interest On Operating Capital @ 11.61% | 124 | 16 | 18 | 29 | 28 | 29 | 28 |
| TOTAL OPERATING COSTS/ACRE | 1,682 | 449 | 733 | 1,013 | 1,254 | 1,297 | 1,325 |
| Cash Overhead Costs: | | | | | | | |
| Office Expense | 40 | 40 | 40 | 40 | 40 | 40 | 41 |
| Liability Insurance | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Sanitation Fees | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Safety Training | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| Management Services | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| Property Taxes | 50 | 49 | 49 | 49 | 49 | 49 | 49 |
| Property Insurance | 36 | 35 | 35 | 35 | 35 | 35 | 35 |
| Investment Repairs | 11 | 11 | 11 | 11 | 11 | 11 | 11 |
| TOTAL CASH OVERHEAD COSTS | 225 | 223 | 223 | 223 | 223 | 223 | 224 |
| TOTAL CASH COSTS/ACRE | 1,907 | 672 | 956 | 1,236 | 1,477 | 1,520 | 1,549 |
| INCOME/ACRE FROM PRODUCTION | | | 520 | 1,040 | 2,080 | 2,340 | 2,600 |
| NET CASH COSTS/ACRE FOR THE YEAR | 1,907 | 672 | 436 | 196 | | | |
| PROFIT/ACRE ABOVE CASH COSTS | | | | | 603 | 820 | 1,051 |
| ACCUMULATED NET CASH COSTS/ACRE | 1,907 | 2,579 | 3,015 | 3,211 | 2,608 | 1,788 | 737 |
| Non-Cash Overhead Costs (Capital Recovery): | | | | | | | |
| Shop Building | 41 | 41 | 41 | 41 | 41 | 41 | 41 |
| Fuel Tank & Pump | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| Shop Tools | 13 | 13 | 13 | 13 | 13 | 13 | 13 |
| Flood Irrigation System | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Pruning Equipment | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Land @ \$4,000/Acre | 347 | 347 | 347 | 347 | 347 | 347 | 347 |
| Equipment | 89 | 65 | 60 | 60 | 60 | 60 | 60 |
| TOTAL NON-CASH OVERHEAD COST | 511 | 487 | 482 | 482 | 482 | 482 | 482 |

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Table 1.Continued

| Year | Cost Per Acre | | | | | | |
|---|---------------|-------|-------|-------|-------|-------|-------|
| | 1st | 2nd | 3rd | 4th | 5th | 6th | 7th |
| Meat Pounds Per Acre | | | 400 | 800 | 1,600 | 1,800 | 2,000 |
| TOTAL COST/ACRE FOR THE YEAR | 2,929 | 1,646 | 1,920 | 2,200 | 2,441 | 2,484 | 2,513 |
| INCOME/ACRE FROM PRODUCTION | | | 520 | 1,040 | 2,080 | 2,340 | 2,600 |
| TOTAL NET COST/ACRE FOR THE YEAR | 2,929 | 1,646 | 1,400 | 1,160 | 361 | 144 | |
| NET PROFIT/ACRE ABOVE TOTAL COST | | | | | | | 87 |
| TOTAL ACCUMULATED NET COST/ACRE | 2,929 | 4,575 | 5,975 | 7,135 | 7,496 | 7,640 | 7,553 |

Table 2.

U C COOPERATIVE EXTENSION
 COSTS PER ACRE TO PRODUCE ALMONDS
 SOUTHERN SAN JOAQUIN VALLEY - 1997

Labor Rate: \$10.72/hr. machine labor Interest Rate: 10.00%
 \$6.90/hr. non-machine labor Yield per Acre: 2000 Lb

| Operation | Time (Hrs/A) | Labor Cost | Fuel, Lube & Repairs | Material Cost | Cash and Labor Costs per Acre Custom/ Rent | Total Cost | Your Cost |
|--|-----------------|---------------|-------------------------|------------------|--|---------------|--------------|
| Cultural: | | | | | | | |
| Pest Control - Dormant | 0.25 | 3 | 2 | 39 | 0 | 44 | |
| Brush Disposal | 0.28 | 24 | 2 | 0 | 0 | 25 | |
| Weed Control - Mow Middles 8X | 3.20 | 41 | 22 | 0 | 0 | 63 | |
| Pollination | 0.00 | 0 | 0 | 0 | 100 | 100 | |
| Pest Control - Rodents | 1.00 | 7 | 0 | 7 | 0 | 13 | |
| Pest Control - Brown Rot | 0.25 | 3 | 2 | 70 | 0 | 75 | |
| Fertilizer - Nitrogen | 0.50 | 3 | 0 | 82 | 0 | 85 | |
| Pest Control - Shot Hole 2X | 0.50 | 6 | 4 | 147 | 0 | 157 | |
| Pest Control - Disease/Worms | 0.25 | 3 | 2 | 44 | 0 | 49 | |
| Irrigate | 0.70 | 5 | 0 | 105 | 0 | 110 | |
| Weed Control - Spot Spray 2X | 0.50 | 6 | 3 | 7 | 0 | 16 | |
| Pest Control - In-season Spray | 0.33 | 4 | 2 | 58 | 0 | 65 | |
| Pest Control - Mite/Hull Split | 0.25 | 3 | 2 | 30 | 0 | 35 | |
| Weed Control - Preharvest Spray | 0.25 | 3 | 1 | 12 | 0 | 16 | |
| Pruning & Summer Suckering | 11.00 | 74 | 0 | 0 | 0 | 74 | |
| Weed Control - Dormant Strip | 0.25 | 3 | 1 | 31 | 0 | 36 | |
| Winter Sanitation: | | | | | | | |
| Knock Mummies | 0.00 | 0 | 0 | 0 | 62 | 62 | |
| Blow and Rake Mummies | 0.00 | 0 | 0 | 0 | 40 | 40 | |
| Shread Mummies | 0.40 | 5 | 3 | 0 | 0 | 8 | |
| Pickup Truck Use | 2.85 | 37 | 11 | 0 | 0 | 48 | |
| ATV Use | 2.85 | 37 | 4 | 0 | 0 | 40 | |
| Miscellaneous Labor | 3.00 | 20 | 0 | 0 | 0 | 20 | |
| Consultant Fees (Pest Control) | 0.00 | 0 | 0 | 0 | 20 | 20 | |
| Leaf Analysis | 0.00 | 0 | 0 | 0 | 1 | 1 | |
| TOTAL CULTURAL COSTS | 28.61 | 288 | 60 | 631 | 223 | 1202 | |
| Harvest: | | | | | | | |
| Shake | 0.00 | 0 | 0 | 0 | 62 | 62 | |
| Hand Rake | 2.00 | 13 | 0 | 0 | 0 | 13 | |
| Sweep | 0.00 | 0 | 0 | 0 | 40 | 40 | |
| Pickup and Haul | 0.00 | 0 | 0 | 0 | 97 | 97 | |
| Hull and Shell | 0.00 | 0 | 0 | 0 | 110 | 110 | |
| TOTAL HARVEST COSTS | 2.00 | 13 | 0 | 0 | 309 | 322 | |
| Interest on operating capital @ 10.00% | | | | | | 33 | |
| TOTAL OPERATING COSTS/ACRE | | 302 | 60 | 631 | 532 | 1558 | |

U C COOPERATIVE EXTENSION

Table 2. Continued

| Operation | Operation | Cash and Labor Costs per Acre | | | | | Total Cost | Your Cost |
|-------------------------------|--------------------|-------------------------------|----------------------|------------------|-------------|------|------------|-----------|
| | Time (Hrs/A) | Labor Cost | Fuel, Lube & Repairs | Material Cost | Custom/Rent | | | |
| CASH OVERHEAD: | | | | | | | | |
| Office Expense | | | | | | 40 | | |
| Liability Insurance | | | | | | 3 | | |
| Sanitation Fees | | | | | | 3 | | |
| Safety Training | | | | | | 7 | | |
| Management Service | | | | | | 75 | | |
| Property Taxes | | | | | | 64 | | |
| Property Insurance | | | | | | 45 | | |
| Investment Repairs | | | | | | 11 | | |
| TOTAL CASH OVERHEAD COSTS | | | | | | 248 | | |
| TOTAL CASH COSTS/ACRE | | | | | | 1806 | | |
| NON-CASH OVERHEAD: | | | | | | | | |
| Investment | Per producing Acre | -- Annual Cost -- | | Capital Recovery | | | | |
| Buildings | 393 | 41 | | 41 | | | | |
| Fuel Tanks & Pumps | 65 | 7 | | 7 | | | | |
| Shop Tools | 113 | 13 | | 13 | | | | |
| Flood Irrigation System | 140 | 12 | | 12 | | | | |
| Pruning Equipment | 13 | 2 | | 2 | | | | |
| Almond Orchard Establishment | 3015 | 301 | | 301 | | | | |
| Land | 4200 | 347 | | 347 | | | | |
| Equipment | 461 | 60 | | 60 | | | | |
| TOTAL NON-CASH OVERHEAD COSTS | | 8400 | 783 | | 783 | | | |
| TOTAL COSTS/ACRE | | | | | | 2589 | | |

Table 3.

U C COOPERATIVE EXTENSION
 COSTS AND RETURNS PER ACRE TO PRODUCE ALMONDS
 SOUTHERN SAN JOAQUIN VALLEY - 1997

The use of trade names in this report does not constitute an endorsement or recommendation by the University of California nor is any criticism implied by omission of other similar products.

| | Quantity/Acre | Unit | Price or Cost/Unit | Value or Cost/Acre | Your Cost |
|---------------------------------|---------------|------|-----------------------|-----------------------|--------------|
| ----- | | | | | |
| GROSS RETURNS | | | | | |
| Almonds | 2200.00 | Lb | 1.30 | 2860 | |
| | | | | ----- | |
| TOTAL GROSS RETURNS FOR ALMONDS | | | | 2860 | |
| ----- | | | | | |
| OPERATING COSTS | | | | | |
| Insecticide: | | | | | |
| Dormant Oil | 6.00 | Gal | 3.29 | 20 | |
| Diazinon 50 W | 4.00 | Lb | 4.72 | 19 | |
| Dipel | 1.00 | Lb | 12.98 | 13 | |
| Apollo 5C | 4.00 | Oz | 14.53 | 58 | |
| Lorsban 4 E | 4.00 | Pint | 7.40 | 30 | |
| Contract: | | | | | |
| Pollination Fee | 2.50 | Hive | 40.00 | 100 | |
| Consultant Fee | 1.00 | Acre | 20.00 | 20 | |
| Leaf Analysis | 1.00 | Acre | 1.00 | 1 | |
| Rodenticide: | | | | | |
| Rodent Bait | 2.00 | Lb | 3.27 | 7 | |
| Fungicide: | | | | | |
| Benalate | 1.00 | Lb | 20.88 | 21 | |
| Rovral | 6.00 | Lb | 24.73 | 148 | |
| Ziram WDG 76 | 16.00 | Lb | 3.03 | 48 | |
| Captan 50W | 8.00 | Lb | 3.82 | 31 | |
| Fertilizer: | | | | | |
| UN-32 | 200.00 | Lb N | 0.41 | 82 | |
| Irrigation: | | | | | |
| Water | 42.00 | AcIn | 2.50 | 105 | |
| Herbicide: | | | | | |
| Roundup | 2.25 | Pint | 6.88 | 15 | |
| Goal 1.6E | 0.19 | Gal | 81.51 | 15 | |
| Surflan 4 AS | 1.00 | Qt | 18.67 | 19 | |
| Custom: | | | | | |
| Shake Nuts | 2.00 | Hour | 62.00 | 124 | |
| Sweep Nuts | 2.00 | Hour | 40.00 | 80 | |
| Pickup Nuts | 2200.00 | Lb | 0.039 | 86 | |
| Haul Nuts | 2200.00 | Lb | 0.005 | 11 | |
| Hull and Shell | 2200.00 | Lb | 0.05 | 110 | |
| ----- | | | | | |

Table 3. Continued

U C COOPERATIVE EXTENSION
 COSTS AND RETURNS PER ACRE TO PRODUCE ALMONDS
 SOUTHERN SAN JOAQUIN VALLEY - 1997

The use of trade names in this report does not constitute an endorsement or recommendation by the University of California nor is any criticism implied by omission of other similar products.

| Quantity/Acre | Unit | Price or Cost/Unit | Value or Cost/Acre | Your Cost |
|---|-------|-----------------------|-----------------------|--------------|
| Labor (machine) | 14.89 | hrs | 10.72 | 160 |
| Labor (non-machine) | 21.20 | hrs | 6.70 | 142 |
| Fuel - Gas | 7.26 | gal | 1.30 | 9 |
| Fuel - Diesel | 22.44 | gal | 0.97 | 22 |
| Lube | | | | 5 |
| Machinery repair | | | | 24 |
| Interest on operating capital @ 10.00% | | | | 33 |
| | | | | ----- |
| <u>TOTAL OPERATING COSTS/ACRE</u> | | | | <u>1558</u> |
| <u>NET RETURNS ABOVE OPERATING COSTS</u> | | | | <u>1302</u> |
| Office Expense | | | | 40 |
| Liability Insurance | | | | 3 |
| Sanitation Fees | | | | 3 |
| Safety Training | | | | 7 |
| Management Service | | | | 75 |
| Property Taxes | | | | 64 |
| Property Insurance | | | | 45 |
| Investment Repairs | | | | 11 |
| | | | | ----- |
| <u>TOTAL CASH OVERHEAD COSTS/ACRE</u> | | | | <u>248</u> |
| <u>TOTAL CASH COSTS/ACRE</u> | | | | <u>1806</u> |
| NON-CASH OVERHEAD COSTS (CAPITAL RECOVERY): | | | | |
| Buildings | | | | 41 |
| Fuel Tanks & Pumps | | | | 7 |
| Shop Tools | | | | 13 |
| Flood Irrigation System | | | | 12 |
| Pruning Equipment | | | | 2 |
| Almond Orchard Establishment | | | | 301 |
| Land | | | | 347 |
| Equipment | | | | 60 |
| | | | | ----- |
| <u>TOTAL NON-CASH OVERHEAD COSTS/ACRE</u> | | | | <u>783</u> |
| <u>TOTAL COSTS/ACRE</u> | | | | <u>2589</u> |
| <u>NET RETURNS ABOVE TOTAL COSTS</u> | | | | <u>271</u> |
| ===== | | | | |

Table 4.

U C COOPERATIVE EXTENSION
MONTHLY CASH COSTS PER ACRE TO PRODUCE ALMONDS
SOUTHERN SAN JOAQUIN VALLEY - 1997

| Beginning JAN 97 | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | TOTAL |
|---------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| Ending DEC 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | |
| Cultural: | | | | | | | | | | | | | |
| Pest Control - Dormant | 44 | | | | | | | | | | | | 44 |
| Brush Disposal | | 25 | | | | | | | | | | | 25 |
| Weed Control - Mow Middles 8X | | 8 | 8 | 8 | 16 | 8 | 8 | 8 | | | | | 63 |
| Pollination | | 50 | 50 | | | | | | | | | | 100 |
| Pest Control - Rodents | | 13 | | | | | | | | | | | 13 |
| Pest Control - Brown Rot | | 75 | | | | | | | | | | | 75 |
| Fertilizer - Nitrogen | | | 43 | | | | 43 | | | | | | 85 |
| Pest Control - Shot Hole | | | 79 | 79 | | | | | | | | | 157 |
| Pest Control - Disease/Worms | | | 49 | | | | | | | | | | 49 |
| Irrigate | | | | 9 | 16 | 23 | 23 | 16 | 13 | 9 | | | 110 |
| Weed Control - Spot Spray 2X | | | | | 8 | 8 | | | | | | | 16 |
| Pest Control - In-season | | | | | 65 | | | | | | | | 65 |
| Pest Control - Mite/Hull Split | | | | | | | 35 | | | | | | 35 |
| Weed Control - Preharvest Spray | | | | | | | | 16 | | | | | 16 |
| Pruning | | | | | | | | | | | 74 | | 74 |
| Weed Control - Dormant Strip | | | | | | | | | | | 36 | | 36 |
| Winter Sanitation: | | | | | | | | | | | | | |
| Knock Mummies | | | | | | | | | | | | 62 | 62 |
| Blow and Rake Mummies | | | | | | | | | | | | 40 | 40 |
| Shread Mummies | | | | | | | | | | | | 8 | 8 |
| Pickup Truck Use | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 48 |
| ATV Use | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 40 |
| Miscellaneous Labor | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 20 |
| Consultant Fees (Pest Control) | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 20 |
| Leaf Analysis | | | | | | | 1 | | | | | | 1 |
| TOTAL CULTURAL COSTS | 54 | 182 | 239 | 107 | 115 | 50 | 120 | 51 | 24 | 20 | 120 | 121 | 1202 |
| Harvest: | | | | | | | | | | | | | |
| Shake | | | | | | | | 62 | | | | | 62 |
| Hand Rake | | | | | | | | 13 | | | | | 13 |
| Sweep | | | | | | | | 40 | | | | | 40 |
| Pickup and Haul | | | | | | | | 97 | | | | | 97 |
| Hull and Shell | | | | | | | | 110 | | | | | 110 |
| TOTAL HARVEST COSTS | | | | | | | | 322 | | | | | 322 |
| Interest on oper. capital | 0 | 2 | 4 | 5 | 6 | 6 | 7 | 10 | -2 | -2 | -2 | -1 | 33 |
| TOTAL OPERATING COSTS/ACRE | 55 | 184 | 243 | 112 | 121 | 56 | 127 | 383 | 22 | 18 | 118 | 119 | 1558 |

U C COOPERATIVE EXTENSION

Table 4. Continued

| Beginning JAN 97 | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | TOTAL |
|---------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| Ending DEC 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | 97 | |
| OVERHEAD: | | | | | | | | | | | | | |
| Office Expense | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 40 |
| Liability Insurance | 3 | | | | | | | | | | | | 3 |
| Sanitation Fees | | 3 | | | | | | | | | | | 3 |
| Safety Training | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 7 |
| Management Service | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 75 |
| Property Taxes | | | | 32 | | | | | | | | 32 | 64 |
| Property Insurance | 45 | | | | | | | | | | | | 45 |
| Investment Repairs | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 11 |
| ----- | | | | | | | | | | | | | |
| TOTAL CASH OVERHEAD COSTS | 60 | 14 | 11 | 43 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 43 | 248 |
| TOTAL CASH COSTS/ACRE | 115 | 198 | 254 | 154 | 132 | 67 | 138 | 394 | 33 | 29 | 129 | 162 | 1806 |

U C COOPERATIVE EXTENSION

Table 5.

WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT, AND BUSINESS OVERHEAD COSTS
SOUTHERN SAN JOAQUIN VALLEY - 1997

ANNUAL EQUIPMENT COSTS

| ===== | | | | | | | | |
|-------------------|---------------------------|-------|----------|---------------|------------------|----------------|-------|-------|
| - Cash Overhead - | | | | | | | | |
| Yr | Description | Price | Yrs Life | Salvage Value | Capital Recovery | Insur- ance | Taxes | Total |
| ----- | | | | | | | | |
| 97 | 62 HP 2WD Tractor | 25492 | 15 | 4963 | 2845 | 109 | 152 | 3105 |
| 97 | ATV 4WD | 3861 | 7 | 1465 | 585 | 19 | 27 | 631 |
| 97 | Brush Rake - 10' | 1450 | 25 | 41 | 138 | 5 | 7 | 151 |
| 97 | Front End Loader | 4440 | 15 | 426 | 511 | 17 | 24 | 553 |
| 97 | Mower - Flail 10' | 5000 | 10 | 884 | 693 | 21 | 29 | 744 |
| 97 | Orchard Sprayer - 500 Gal | 17055 | 10 | 3016 | 2365 | 72 | 100 | 2537 |
| 97 | Pickup Truck - 1/2 Ton | 16226 | 7 | 6155 | 2459 | 80 | 112 | 2650 |
| 97 | Weed Sprayer - 100 Gal | 3228 | 10 | 571 | 448 | 14 | 19 | 480 |
| ----- | | | | | | | | |
| TOTAL | | 76752 | | 17521 | 10043 | 336 | 471 | 10851 |
| ===== | | | | | | | | |
| 60% of New Cost * | | 46051 | | 10513 | 6026 | 202 | 283 | 6510 |
| ----- | | | | | | | | |

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

U C COOPERATIVE EXTENSION

Table 5. Continued

| ANNUAL INVESTMENT COSTS | | | | | | | | |
|------------------------------|--------|-------------|------------------|---------------------|----------------|-------|---------|-------|
| Description | Price | Yrs Life | Salvage Value | Cash Overhead | | | Repairs | Total |
| | | | | Capital Recovery | Insur- ance | Taxes | | |
| INVESTMENT | | | | | | | | |
| Almond Orchard Establishment | 301500 | 22 | | 30143 | 1075 | 1507 | 0 | 32726 |
| Buildings | 39253 | 20 | | 4073 | 140 | 196 | 785 | 5194 |
| Flood Irrigation System | 14000 | 40 | | 1206 | 50 | 70 | 35 | 1361 |
| Fuel Tanks & Pumps | 6546 | 20 | | 679 | 23 | 33 | 131 | 866 |
| Land | 420000 | 23 | 420000 | 34650 | 2995 | 4200 | 0 | 41845 |
| Pruning Equipment | 1287 | 10 | 129 | 185 | 5 | 7 | 25 | 222 |
| Shop Tools | 11330 | 15 | 1133 | 1303 | 44 | 62 | 113 | 1523 |
| TOTAL INVESTMENT | 793916 | 421262 | 72239 | 4332 | 6076 | 1089 | 83736 | |

ANNUAL BUSINESS OVERHEAD COSTS

| Description | Units/ Farm | Unit | Price/ Unit | Total Cost |
|---------------------|----------------|------|----------------|---------------|
| Liability Insurance | 105.00 | Acre | 3.20 | 336 |
| Management Service | 100.00 | Acre | 75.00 | 7500 |
| Office Expense | 100.00 | Acre | 40.00 | 4000 |
| Safety Training | 100.00 | Acre | 7.00 | 700 |
| Sanitation Fees | 100.00 | Acre | 2.79 | 279 |

Table 6.

U C COOPERATIVE EXTENSION
 HOURLY EQUIPMENT COSTS
 SOUTHERN SAN JOAQUIN VALLEY - 1997

| Yr Description | Actual Hours Used | COSTS PER HOUR | | | | | | | Total Costs/Hr. |
|------------------------------|-------------------|------------------|---------------------------|-------|---------|-----------------------|-------------|-------|-----------------|
| | | Capital Recovery | Cash Overhead - Insurance | Taxes | Repairs | Operating Fuel & Lube | Total Oper. | | |
| 97 62 HP 2WD Tractor | 737.9 | 2.31 | 0.09 | 0.12 | 1.04 | 3.40 | 4.44 | 6.96 | |
| 97 ATV 4WD | 285.0 | 1.23 | 0.04 | 0.06 | 0.28 | 1.00 | 1.28 | 2.61 | |
| 97 Brush Rake - 10' | 27.5 | 3.02 | 0.12 | 0.16 | 0.19 | 0.00 | 0.19 | 3.49 | |
| 97 Front End Loader | 27.5 | 11.16 | 0.38 | 0.53 | 0.61 | 0.00 | 0.61 | 12.68 | |
| 97 Mower - Flail 10' | 360.0 | 1.16 | 0.03 | 0.05 | 2.02 | 0.00 | 2.02 | 3.26 | |
| 97 Orchard Sprayer - 500 Gal | 183.3 | 7.74 | 0.23 | 0.33 | 2.36 | 0.00 | 2.36 | 10.67 | |
| 97 Pickup Truck - 1/2 Ton | 285.0 | 5.18 | 0.17 | 0.24 | 1.18 | 2.80 | 3.98 | 9.56 | |
| 97 Weed Sprayer - 100 Gal | 100.0 | 2.69 | 0.08 | 0.11 | 0.85 | 0.00 | 0.85 | 3.73 | |

Table 7.

U C COOPERATIVE EXTENSION
 RANGING ANALYSIS
 SOUTHERN SAN JOAQUIN VALLEY - 1997

| | COSTS PER ACRE AT VARYING YIELDS TO PRODUCE ALMONDS | | | | | | |
|-------------------------------|---|------|------|------|------|------|------|
| | YIELD (LB/ACRE) | | | | | | |
| | 1500 | 1750 | 2000 | 2200 | 2500 | 2750 | 3000 |
| OPERATING COSTS/ACRE: | | | | | | | |
| Cultural Cost | 1202 | 1202 | 1202 | 1202 | 1202 | 1202 | 1202 |
| Harvest Cost | 220 | 256 | 293 | 322 | 366 | 403 | 439 |
| Interest on operating capital | 32 | 33 | 33 | 33 | 34 | 34 | 34 |
| TOTAL OPERATING COSTS/ACRE | 1455 | 1491 | 1528 | 1558 | 1602 | 1639 | 1676 |
| TOTAL OPERATING COSTS/LB | 0.97 | 0.85 | 0.76 | 0.71 | 0.64 | 0.60 | 0.56 |
| CASH OVERHEAD COSTS/ACRE | | | | | | | |
| | 248 | 248 | 248 | 248 | 248 | 248 | 248 |
| TOTAL CASH COSTS/ACRE | 1703 | 1739 | 1776 | 1806 | 1850 | 1887 | 1924 |
| TOTAL CASH COSTS/LB | 1.14 | 0.99 | 0.89 | 0.82 | 0.74 | 0.69 | 0.64 |
| NON-CASH OVERHEAD COSTS/ACRE | | | | | | | |
| | 783 | 783 | 783 | 783 | 783 | 783 | 783 |
| TOTAL COSTS/ACRE | 2485 | 2522 | 2559 | 2589 | 2633 | 2670 | 2707 |
| TOTAL COSTS/LB | 1.66 | 1.44 | 1.28 | 1.18 | 1.05 | 0.97 | 0.90 |

U C COOPERATIVE EXTENSION

Table 7. Continued

NET RETURNS PER ACRE ABOVE OPERATING COSTS FOR ALMONDS

| PRICE (DOLLARS/LB) | YIELD (LB/ACRE) | | | | | | |
|-----------------------|--------------------|------|------|------|------|------|------|
| Almonds | 1500 | 1750 | 2000 | 2200 | 2500 | 2750 | 3000 |
| 0.50 | -705 | -616 | -528 | -458 | -352 | -264 | -176 |
| 0.75 | -330 | -179 | -28 | 92 | 273 | 423 | 574 |
| 1.00 | 45 | 259 | 472 | 642 | 898 | 1111 | 1324 |
| 1.30 | 495 | 784 | 1072 | 1302 | 1648 | 1936 | 2224 |
| 1.50 | 795 | 1134 | 1472 | 1742 | 2148 | 2486 | 2824 |
| 1.75 | 1170 | 1571 | 1972 | 2292 | 2773 | 3173 | 3574 |
| 2.00 | 1545 | 2009 | 2472 | 2842 | 3398 | 3861 | 4324 |

NET RETURNS PER ACRE ABOVE CASH COSTS FOR ALMONDS

| PRICE (DOLLARS/LB) | YIELD (LB/ACRE) | | | | | | |
|-----------------------|--------------------|------|------|------|------|------|------|
| Almonds | 1500 | 1750 | 2000 | 2200 | 2500 | 2750 | 3000 |
| 0.50 | -953 | -864 | -776 | -706 | -600 | -512 | -424 |
| 0.75 | -578 | -427 | -276 | -156 | 25 | 175 | 326 |
| 1.00 | -203 | 11 | 224 | 394 | 650 | 863 | 1076 |
| 1.30 | 247 | 536 | 824 | 1054 | 1400 | 1688 | 1976 |
| 1.50 | 547 | 886 | 1224 | 1494 | 1900 | 2238 | 2576 |
| 1.75 | 922 | 1323 | 1724 | 2044 | 2525 | 2925 | 3326 |
| 2.00 | 1297 | 1761 | 2224 | 2594 | 3150 | 3613 | 4076 |

NET RETURNS PER ACRE ABOVE TOTAL COSTS FOR ALMONDS

| PRICE (DOLLARS/LB) | YIELD (LB/ACRE) | | | | | | |
|-----------------------|--------------------|-------|-------|-------|-------|-------|-------|
| Almonds | 1500 | 1750 | 2000 | 2200 | 2500 | 2750 | 3000 |
| 0.50 | -1735 | -1647 | -1559 | -1489 | -1383 | -1295 | -1207 |
| 0.75 | -1360 | -1210 | -1059 | -939 | -758 | -607 | -457 |
| 1.00 | -985 | -772 | -559 | -389 | -133 | 80 | 293 |
| 1.30 | -535 | -247 | 41 | 271 | 617 | 905 | 1193 |
| 1.50 | -235 | 103 | 441 | 711 | 1117 | 1455 | 1793 |
| 1.75 | 140 | 540 | 941 | 1261 | 1742 | 2143 | 2543 |
| 2.00 | 515 | 978 | 1441 | 1811 | 2367 | 2830 | 3293 |

Table 8.

UC COOPERATIVE EXTENSION
 COSTS AND RETURNS / BREAKEVEN ANALYSIS
 SOUTHERN SAN JOAQUIN VALLEY - 1997

COSTS AND RETURNS - PER ACRE BASIS

| Crop | 1. Gross Returns | 2. Operating Costs | 3. Net Returns Above Oper. Costs (1-2) | 4. Cash Costs | 5. Net Returns Above Cash Costs (1-4) | 6. Total Costs | 7. Net Returns Above Total Costs (1-6) |
|---------|------------------|--------------------|--|---------------|---------------------------------------|----------------|--|
| Almonds | 2860 | 1558 | 1302 | 1806 | 1054 | 2589 | 271 |

COSTS AND RETURNS - TOTAL ACREAGE

| Crop | 1. Gross Returns | 2. Operating Costs | 3. Net Returns Above Oper. Costs (1-2) | 4. Cash Costs | 5. Net Returns Above Cash Costs (1-4) | 6. Total Costs | 7. Net Returns Above Total Costs (1-6) |
|---------|------------------|--------------------|--|---------------|---------------------------------------|----------------|--|
| Almonds | 286000 | 155793 | 130207 | 180590 | 105410 | 258855 | 27145 |

BREAKEVEN PRICES PER YIELD UNIT

| CROP | Base Yield (Units/Acre) | Yield Units | ----- Breakeven Price To Cover ----- | | |
|---------|-------------------------|-------------|--------------------------------------|------------|-------------|
| | | | Operating Costs | Cash Costs | Total Costs |
| Almonds | 2200.0 | Lb | 0.71 | 0.82 | 1.18 |

BREAKEVEN YIELDS PER ACRE

| CROP | Yield Units | Base Price (\$/Unit) | ----- Breakeven Yield To Cover ----- | | |
|---------|-------------|----------------------|--------------------------------------|------------|-------------|
| | | | Operating Costs | Cash Costs | Total Costs |
| Almonds | Lb | 1.30 | 1198.4 | 1389.2 | 1991.2 |