
UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2006

**SAMPLE COSTS to
ESTABLISH and PRODUCE
SPECIALTY PEARS**

High Density Planting with Sleeping Eye Trees



NORTH COAST REGION

Lake and Mendocino Counties

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INTRODUCTION

Sample costs to establish a pear orchard and produce specialty pears under high density plantings using Sleeping Eye trees in the North Coast Region are presented in this study. **Companion studies are available incorporating a standard planting with standard trees (2 year old grafted trees) and a high density planting with standard trees.** This analysis is intended *as a guide only*, and may be used to make production decisions, determine potential returns, prepare budgets and evaluate production loans. **PRACTICES DESCRIBED FOR THE PEARS ARE BASED ON HIGH DENSITY PLANTING DATA FROM OTHER CROPS WITH SIMILAR TYPE PLANTINGS, AND NOT FROM ANY ACTUAL HIGH DENSITY PEAR FARMING OPERATIONS.** The 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 for entering your costs.

The hypothetical farm operation, production practices, overhead, and calculations are described under the assumptions. For additional information or explanation of calculations used in the study call the Department of Agricultural and Resource Economics, University of California, Davis, (530) 752-3589 or the Lake County UC Cooperative Extension office at (707) 263-6838.

Sample Cost of Production Studies for many commodities are available and can be requested through the Department of Agricultural and Resource Economics, UC Davis, (530) 752-4424. Current studies can be downloaded from the department website at <http://coststudies.ucdavis.edu> or obtained from selected county UC Cooperative Extension offices.

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ASSUMPTIONS

The assumptions refer to Tables 1 to 8 and pertain to sample costs to establish a high density pear orchard using Sleeping Eye trees and produce pears in the North Coast Region – Lake and Mendocino counties. **THE OPERATIONS DESCRIBED REPRESENT PRODUCTION PRACTICES AND MATERIALS THAT MAY BE CONSIDERED FOR A HIGH DENSITY ORCHARD IN THE REGION. THE COSTS, MATERIALS, AND PRACTICES SHOWN ARE EXTRAPOLATED FROM RESEARCH DATA AND OTHER SIMILAR CROPS OR CROPS WITH SIMILAR SETUPS TO DESCRIBE THEORETICAL SAMPLE COSTS.** Establishment and cultural practices will vary by grower and the differences can be significant. 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.

Farm. The farm consists of 75 acres of land: 25 acres are high density specialty pears being established, 45 acres are producing Bartlett pear trees, and five acres are occupied by roads, irrigation systems, fencing, and farmstead. The farm is on alluvial bottomland, typical of the North Coast region of Lake and Mendocino counties. Costs in this study are based on the 25 acres.

Orchard Establishment Operating Costs

Site/Land Preparation. Land preparation begins with removing the old orchard. The trees are pushed out with a large bulldozer, piled and burned. The soil is ripped twice, 2 to 3 feet deep. The ripping breaks up underlying hardpan to improve root and water penetration, pulls up roots from the previous orchard that could harbor disease, and opens up the soil profile. Afterwards the ground is disced two times to break up large clods, and smooth the surface. Following discing, the orchard site is fumigated with methyl bromide to control soil-borne pathogens and pests. Contract or custom operators do the orchard removal, ripping, and fumigation. The orchard site is sprayed with a contact herbicide (Roundup) and disced prior to planting. All operations that prepare the orchard for planting are done in the summer or fall of the year prior to planting, but costs are shown in the first year.

Planting. Planting the orchard starts by laying out and marking tree sites with a small stake. After the soil has dried from the winter rains in late March or April, holes are dug by hand. The trees are planted, an NPK fertilizer mixture is hand applied around the base of the tree, a tree wrap is placed around the trunk to protect it from vertebrate damage and sunburn, and a 3-foot bamboo stake placed next to the tree for structural support. The planting crew consists of a tractor driver and two men planting. In the second year, 7% of the trees or 87 trees per acre are replaced.

Trees. No specific cultivar is planted in this study. Examples of specialty pears that may be planted are Bosc, Comice, Seckel and Starkrimson. The trees are planted on 5 foot X 14 foot spacing (tree x row), double trees, 1,244 trees per acre. The trees are sleeping eye trees in which two dormant buds are placed into a one year old rootstock in September. The life of the orchard at the time of planting in this study is estimated to be 30 years.

Trellis. The trees are trained on an Open Tatura trellis system. The open V trellis is at a 30 degree angle with one tree planted inside of each side of the trellis row (double trees) and maintained at an eight foot height. A three-foot bamboo stake is placed by each tree to support it until it is secure on the trellis.

Irrigation. The irrigation cost includes pumped water plus labor. The water is pumped through a filtration station, then into the underground, permanent, sprinkler system in the tree rows. Either drip or sprinkler systems may be used. The prices per acre-foot for water will vary by grower in this region depending on power source, power cost, various well characteristics, and other irrigation factors. In this study, water is calculated to cost \$45.12 per acre-foot (\$3.76/acin). No assumption is made about effective rainfall. The amount of water applied to the orchard increases each year as the trees mature. The average amount of water applied is shown in Table A.

Year	Irrigation	Frost	Total
		Protection	Water
AcIn/Year			
1	24	0	24
2	24	0	24
3	30	0	30
4	30	0	30
5+	30	18	48

Frost Protection. Protecting the orchard from frost begins in the fifth year when fruit is set. Trees may be protected from low temperatures by wind machines, orchard heaters, and/or sprinkler applied water. Water is sprinkled onto the orchard floor using the existing irrigation system. To protect against frost damage, one acre-inch of water is applied in six hours per night on approximately 18 nights during April and May, however it may begin as early as March and extend into June. The amount of water applied for frost protection is shown in Table A.

Training/Pruning. Training begins in the first year during the growing and dormant season. In the first and second years, the trees are trained twice a month from May through October and once during the dormant period in either December or January. In the third year during the same period, the young trees are pruned and trained up the trellis once per month. By the fourth year, the trees have reached the top of the trellis and require only maintenance pruning and suckering at one time per month during May, June, July, and December or January. Pruning times for each pruning are 30 seconds per tree in year 1, 60 seconds in years 2 and 3, and 1.2 minutes in year 4 and the following years. Prunings are shredded during the regular mowing.

Fertilization. An NPK (15-15-15) fertilizer at one-ounce per tree is applied to the trees at planting. Nitrogen is the major nutrient required for proper tree growth and optimum yields. In the first year Urea is applied by hand at the base of the young tree. In the remaining years granular urea is dissolved in the irrigation water and applied in two irrigations. Annual rates of applied N are shown in Table B. Leaf samples are taken in July to determine nutrient requirements, beginning in the fifth year.

Year	lbs N/acre	lbs Urea/acre
1	35	76
2	45	98
3	75	163
4 - 6	100	217
7+	200	435

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, Pear*. Pesticides mentioned in the study are commonly used, but are not recommendations.

Weeds. Prior to planting, the orchard is sprayed with Roundup and later disced. During the first year the middles are disced four times – March, April, May, June. In the second year the resident vegetation in the row middles is left to grow and is mowed seven times from March through July. One pass per middle is made with a 9-foot mower. Roundup and Prowl (pre-emergent herbicide) are applied to the tree rows as a dormant strip spray in December of the first and second years. The spray can be applied anytime between November and February. Beginning in the third year, Roundup, Karmex and Princep are applied to the tree row in the fall/winter (December). Beginning in the second year in the spring and during the growing season, Roundup is applied to the tree row. In this study Roundup is applied in April and July by the grower.

Insects. Pears have many insect and mite pests: codling moth (*Cydia [Laspeyresia] pomonella*), pear psylla (*Cacopsylla pyricola*), several species of mites (*Tetranychus spp.*, *Epitrimerus pyri*, *Phytoptus pyri*, and *Panonychus ulmi*) and Obliquebanded Leafroller (OBLR) (*Choristoneura rosaceana*). Dormant oil sprays for insects and mites start in January of the second year and continue throughout the life of the orchard. The spray is targeted at psylla, but also provides some control of aphids, mites and scale. Beginning in the fifth year additional applications of horticultural oil, pheromones (ties) and other pesticides are added as needed in the delayed dormant and summer periods to control codling moth, pear psylla, mites and other pests. In addition to the dormant sprays, psylla and mites are controlled with Agrimek and oil in April, and with oil in September (post harvest). Codling moth traps are hung

Table C. Insect and Disease Management Year 5 through Maturity.

Month		Psylla & Mites	Codling Moth	OBLR	Blight	Blight	Scab
Jan	Dormant	Oil					
Feb	Delay Dormant	Oil					
Mar	PCA		Hang Ties				
Mar	Budbreak	Thiolux					
Mar							Ziram
Mar							Flint
Apr	PCA		Hang Traps				
Apr		Agrimek/Oil					
Apr			Intrepid				
Apr	Alternate Row				Agrimycin	Mycoshield	
Apr	Alternate Row				Agrimycin	Mycoshield	
Apr	PCA		Hang Traps				
Apr	Alternate Row				Agrimycin	Mycoshield	
Apr	Alternate Row				Agrimycin	Mycoshield	
Apr					Agrimycin	Mycoshield	Flint
Apr*	Alternate Row				Agrimycin	Mycoshield	
May					Agrimycin	Mycoshield	Syllit
May*	Alternate Row				Agrimycin	Mycoshield	
May	Alternate Row				Agrimycin	Mycoshield	
May	Alternate Row				Agrimycin	Mycoshield	
May	Alternate Row				Agrimycin	Mycoshield	
May			Intrepid		Agrimycin	Mycoshield	
May	Petal Fall			Success			
June			Intrepid				
Sept	Post Harvest	Oil					

*Not applied in Year 5. Total 10 blight applications. Yr 6+, 12 blight applications

in the trees by the PCA, who also monitors the traps during the season. The labor and materials are included in the PCA cost. Codling moth are controlled with pheromones hung in late March or early April, followed by Intrepid insecticide applications in April, combined with the antibiotics (Agrimycin, Mycoshield) for disease control in May and as a single spray in June. Success is applied at petal fall in May for OBLR control. The pest control sprays are made with the grower's tractor and orchard sprayer.

Diseases. Many pear diseases can affect pears in the North Coast Region production area, but the two major diseases are pear scab (*Venturia pirina*) and fire blight (*Erwinia amylovora*). Scab can infect blossoms, leaves, and fruit, but generally does not cause significant damage to the blossoms and leaves. Disease management begins in the fifth year (first year of crop set) at bud break, but prior to cluster bud for pear scab and pear psylla control. Ziram is applied in March, Flint in April and Syllit are applied in May. The April and May applications are combined with a blight spray.

In the spring, fire blight symptoms can appear in blossom clusters and shoot tips. Fire blight management includes applications of copper compounds or antibiotics, avoiding excessive tree vigor, and elimination of infected branches below any visible infection. During years of heavy disease pressure, fire blight may require 10 or more applications of pesticides, which results in 3 to 4 day spray cycles. In this report fire blight treatment begins in the fifth year with 10 treatments using Agrimycin and Mycoshield and increases to 12 in the sixth year. Treatments for fire blight are sometimes mixed with other pest control applications, usually with a scab and a cover spray. Treatments for blight occur during April and May and the applications for blight treatment only are applied to alternate rows. Insect and disease applications are shown in Table C.

Vertebrate. Bait is applied to orchard in March beginning in the first year. The grower uses a tractor and bait applicator to move around the field.

Harvest. In this study, high density pear plantings with sleeping eye trees produce a commercial crop in the fifth year after planting, although some fruit may be harvested earlier in some cases. Growers are paid for fruit based on gross field tons for different grades. The crop is harvested and hauled by the grower, although a contracted harvesting company may be hired. Cleaning, sorting, and packing costs are paid by the grower. The harvest season in this study is in August. Five to seven year old orchards are harvested once and older pear orchards twice. In the fifth and sixth years, the grower uses a five man picking crew and one tractor driver with bin trailers moving through the orchard with the pickers. The pickers pick from the ground (no ladders) into 45 pound bags, and when full dump into the bins on the trailer. The grower rents a forklift to load the bins on the truck and trailers. The truck makes one delivery per day (one hour per roundtrip) to the packer. In the seventh and subsequent years, two tractor drivers pulling bin trailers drive through the field and the picking crew is increased to 10 pickers, and the crop is harvested in two pickings. It is assumed for this study that one-half of the fruit is picked each time, but would more likely be one-third and two-thirds.

Table D. Assumed Yields*

Year	Total Yield	Fresh Market	By-Product
5	2.0	1.80	0.20
6	4.0	3.60	0.40
7	10.0	9.00	1.00
8	15.0	13.50	1.50
9	20.0	18.00	2.00
10+	25.0	22.50	2.50

*Based on 1996-2005 Lake County research trial data

Yields. Typical assumed annual yields for pears are measured in tons per acre. Yields are 90% for fresh market and 10% to by-products. See Table D.

Returns. See Yield and Returns under Harvest in the Production Operating Costs section.

Production Operating Costs

Pruning. The trees are pruned during the dormant season in January and during the growing season in May, June, and July. Prunings are placed in the row middles and shredded during the regular mowings.

Fertilization. Tree nitrogen status is determined by visual observation (shoot vigor and leaf color) and validated by leaf analysis. Urea at 200 pounds per acre of N is split equally in two applications through the irrigation system in June and in September after harvest. Leaf samples for nutrient analysis at three per 25 acres are taken in July. It is assumed that it takes 3 hours per 25 acres to collect and package the samples.

Pest Management. Pesticides, rates, and cultural practices mentioned in this cost study are a few of those listed in the *UC IPM Pest Management Guidelines, Pear*, and *Integrated Pest Management for Apples and Pears*. For more information on pest identification, monitoring, and management visit the UC IPM website at www.ipm.ucdavis.edu. For information and pesticide use permits, contact the local county Agricultural Commissioner's office. Adjuvants may be used or be required with many pesticides, but are not included in this study. Pesticide costs may vary by location, brand, and grower volume. Pesticide costs in this study are taken from a single dealer and shown as full retail.

Pest Control Advisor (PCA). Written recommendations are required for many pesticides and are made by licensed pest control advisors. In addition the PCA will 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. The private PCA in this study monitors the field for agronomic problems, pest, and diseases. As part of the monitoring, the PCA furnishes, hangs and checks the traps.

Weeds. Pre-emergent weeds are controlled in the tree row with a dormant strip spray (November to February) of residual and contact herbicides (Roundup, Karmex, Princep). In this study the strip spray is in December. During the growing season, weeds are controlled with in-season strip sprays using Roundup in April and July. The orchard floor vegetation in the tree middles is mowed seven times from March through July.

Insects and Arthropods. Several insect and arthropod pests are treated each year. Pests in this study are codling moth, pear psylla, and mites. The grower does all pest management operations with his own equipment. See Table C for insect and disease applications.

Codling moth is considered the primary pear pest because it makes fruit unmarketable. Its control largely determines subsequent control of other pests. Since multiple generations occur annually, control with insecticide treatments based on careful monitoring of the population and degree-days is essential. The first generation usually begins hatching in late April or early May; the second and third generations normally occur in July and August. Isomate ties are placed in the trees in March and traps are hung in the trees in April. The PCA hangs the traps and monitors them during the season. In this study, Intrepid is applied in April and June, and with a blight spray in May. Additional applications or other insecticides may be required depending on variety and moth populations. Treatments for codling moth also help to control other lepidopteron pests such as leaf rollers, but reduce natural enemy populations of mites and pear psylla.

Pear psylla injects a toxin into the tree, produces honeydew, and vectors the disease pear decline (caused by a mycoplasma). Pear decline is not considered a major problem if trees are grafted to a resistant rootstock. Psylla is primarily controlled with horticultural oil (415 Oil) and Agrimek. Treatments in this study include a dormant spray (Dormant Plus Oil) in January or early February, a delayed dormant spray (415 or 440 Oil) in late February, Thiolux (sulfur) at budbreak in March, Oil and Agrimek in April, and a postharvest spray (Oil) in September.

Dormant oil sprays during the winter control some mites before damage occurs. However, use of certain insecticides can suppress mite predators and create outbreaks of harmful mites during the growing season. Mites in this study are controlled with the same materials and applications as psylla.

Obliquebanded leafroller (OBLR) (*Choristoneura rosaceana*) larvae may feed on flower parts or young fruit causing rough or russeted fruit. Success insecticide is applied in May for control.

Diseases. Fire blight, previously described in the Establishment section, can cause the loss of complete branches or trees. Twelve treatments are made from April (6 treatments) through May (6 treatments) using an Agri-mycin and Mycoshield tank mix. Three of the blight sprays are combined with other pest applications: two with a scab treatment (one in April and one in May) and one with a codling moth spray in May. Blight sprays that include only antibiotics are made to every other row. The combined blight/scab or codling moth treatments are applied to every row. The biological control *Pseudomonas fluorescens* A506 (Blight Ban A506) is also used for fire blight as well as a frost and russet management tool by many growers, but is not included in this study.

Pear scab, a serious disease in the North Coast region, is a fungus that first attacks young fruit. In this study, four fungicide treatments are made in the spring prior to infection. Temperature and moisture monitoring are used to pinpoint timing for the fungicide applications. In the first treatment Ziram is applied in March during bud break followed by a second application with Flint. Two additional scab sprays (combined with fire blight treatments) are made, one in April using Flint and one in May using Syllit.

Vertebrate Pests. The major vertebrate pest in pear orchards in the region is pocket gopher (*Thomomys sp.*). Trapping and/or baiting control them. In this study, gophers are managed by applying poison bait in the spring when populations are still low. The bait is placed underground in an artificial burrow made by a mechanical bait applicator and tractor. Gophers intersecting the tunnels will explore them and eat the bait.

Harvest. Mature pear orchards are harvested twice. The first pick in August is selective and usually collects 33% of the fruit. In this study it is assumed that one-half of the pears are picked at each pick. The second pick gathers the remaining pears about 10 days to two weeks later. Harvest crews (10 person crews) pick from the ground using picking bags that hold 45- pounds of fruit and when full, the fruit is placed into half-ton field bins on bin trailers. Two tractors pulling bin trailers drive alongside the picking crew. The tractor driver may also do some sorting while waiting for the bins to be filled. The grower rents a forklift and it is used to pick up the filled bins, and place them on a flatbed truck or drop-trailers for transport to a packing shed for cleaning, sorting, and packing. Empty bins are loaded on the bin trailers. The crop is harvested and hauled by the grower, although a contracted harvesting company may be hired.

Yields. Typical annual yields for specialty pears are measured in tons per acre. Yields vary by variety. An assumed yield of 25 tons per acre based on research trial data is used to calculate returns and costs per ton. Yield maturity is reached in the seventh year. Yields are 90% to fresh market and 10% to culls or by-products. The culls or by product pears may be sorted by the tractor driver in the field or placed in a bin at the packing house.

Returns. Gross return prices per ton for the specialty pear categories described above are: fresh market, \$700; by-products \$20. The return prices are approximated from the 2005 Agricultural Commissioner's Annual Crop Reports and do not include packing house charges. Typically, the grower receives payment from the packinghouse less packing house charges. For average returns and yields in previous years, see the Lake County and Mendocino County Annual Crop Reports for the year desired.

Packinghouse. The packinghouse receives the pears delivered by the grower. The fees charged vary by packinghouse and include the sorting, grading, storage, packaging materials and selling costs. Selling costs are F.O.B. packinghouse. In this study 30% of the fresh market pears are hand wrap packed in 40 or 44 pound boxes at a cost of \$8.00 per box, 30% are packed in tight fill 36 pound boxes at \$6.00 per box, and 30% are packed in 27 pound returnable plastic containers (RPC) at \$7.00 per container. The packinghouse charges a handling fee of \$35 per ton for the culls or by-products. Cleaning, sorting, and packing costs are paid by the grower.

Labor. Hourly wages for workers are \$10.00 and \$7.50 per hour for machine and non-machine workers, respectively. Adding 43% for the employer's share of federal and state payroll taxes, insurance, and other benefits gives the labor rates shown of \$14.30 and \$10.72 per hour for machine labor and non-machine labor, respectively. The overhead includes the employers' share of federal and California state payroll taxes, workers' compensation insurance for fruit orchards (code 0016), and a percentage for other possible benefits. Workers' compensation costs will vary among growers, but for this study the cost is based upon the average industry final rate as of January 1, 2005 (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 Take Off (PTO) horsepower, and fuel type. Prices for on-farm delivery of diesel and gasoline are \$2.00 and \$2.55 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 9.25% 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.

Risk. The risks associated with producing and marketing pears 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 pear production. When selecting varieties to plant, growers should consider not only whether they can be successfully grow in the North Coast Region, but if there is a market that will bring an adequate return.

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, 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.

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 0.70% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$529 for the entire farm.

Office Expense. Office and business expenses are estimated at \$50 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, and road maintenance.

Sanitation Services. Sanitation services provide single portable toilets and washbasins for the orchard and cost the farm \$150 per month or \$4,800 per acre for the entire farm. This cost includes delivery and 8 months of weekly service.

Investment Repairs. Annual repairs on investments or capital recovery items that require maintenance are calculated as two percent of the purchase price, except for the orchard establishment costs which are calculated at 0.10% to cover tree replacement each 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 5.

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 Long Term. The interest rate of 6.25% used to calculate capital recovery cost is the rate available in January 2006 from a farm lending agency.

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

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

Irrigation System. Because an older orchard was removed at this location, pumps and wells already existed. The cost of the irrigation system is for recasing of the wells, refurbishing the pumps and motors, installing underground, permanent sprinklers and a new filtration system. The new irrigation system was installed after the orchard had been laid out, but prior to planting. The life of the irrigation system is estimated to be 25 years. The irrigation system is considered an improvement to the property. The irrigation system cost shown in the Investment Tables is the cost for the 70 acres.

Land. Bare agricultural land and pear land values in the North Coast Region range from \$6,000 to \$10,000 per acre. Land in this study is valued at \$8,000 per acre or \$8,571 per producing acre. Smaller parcels, 30 acres and under, may have a homesite value of \$150,000 to \$200,000 per acre and the remaining acreage an agricultural value. For example, 15 acres purchased for \$280,000 less the homesite value of \$150,000 per acre yields an agricultural value of \$9,285 on the remaining 14 acres.

Establishment Cost. Costs to establish the orchard are used to determine the non-cash overhead expenses, capital recovery, and interest on investment for the production years. The establishment cost is the sum of cash costs for land preparation, planting, trees, production expenses, and cash overhead for growing pear trees through the first year fruit is harvested less returns from production. The Total Accumulated Net Cash Cost in the fifth year shown in Table 1 represents the establishment cost per acre. For this study, this cost is \$23,111 per acre or \$577,775 for the 25-acre orchard. Establishment cost is amortized beginning in the sixth year over the remaining 25 years of production.

Equipment. Farm equipment is purchased new or used, but the study shows the current purchase price for new equipment. The new purchase price is adjusted to 60% to indicate a mix of new and used equipment. 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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UC COOPERATIVE EXTENSION

Table 1. SAMPLE COSTS PER ACRE TO ESTABLISH A HIGH DENSITY PEAR ORCHARD (Sleeping Eye Trees)
NORTH COAST REGION – Lake and Mendocino Counties 2006

	Cost Per Acre						
	Year:	1st	2nd	3rd	4th	5th	6th
Tons Per Acre:						2.0	4.0
Planting Costs:							
Remove Old Orchard (Custom)		425					
Land Prep: Rip 2X (Custom)		250					
Land Prep: Disc 2X		21					
Land Prep: Fumigate (Custom)		2,100					
Land Prep: Apply Herbicide (Roundup)		21					
Land Prep: Disc 1X		10					
Plant: Layout Orchard		214					
Trellis: Open V (Custom)		1,700					
Plant: Plant, Stake, Fertilize, Wrap (Bamboo Stake, 15-15-15, Wrap)		777	36				
Trees: 1244 Per Acre @ \$2.50 ea., (2% in 2nd year)		3,110	218				
TOTAL PLANTING COSTS		8,628	254				
Cultural Costs:							
Train/Prune: Trees		1,444	2,902	1,556	1,072	1,072	1,072
Fertilizer: Nitrogen (Yr 1, hand applied. Yr 2+ through irrigation system)		32	18	31	41	41	41
Weed: Disc 4X		39					
Weed: Mow Middles 7X			51	51	51	51	51
Weed: Strip Spray (Roundup)		0	33	33	33	33	33
Weed: Strip Spray Dormant (Roundup, Prowl)		25	26				
Weed: Strip Spray Dormant (Roundup, Karmex, Princep)				24	24	24	24
Pest: Insects (Dormant Oil) Dormant Spray			27	42	42	42	42
Pest: Insects (415 Oil) Delayed Dormant Spray						33	33
Pest: Gophers		11	11	11	11	11	11
Pest: Scab (Ziram)						37	37
Pest: Scab (Flint)						53	53
Pest: OBLR (Success)						52	52
Pest: Blight (Agrimycin, Mycoshield) Alt Rows						126	162
Pest: Blight /Scab (Agrimycin, Mycoshield/Flint)						77	77
Pest: Blight/Scab (Agrimycin, Mycoshield/Syllit)						85	85
Pest: Blight/Codling Moth (Agrimycin, Mycoshield/Intrepid)						77	77
Pest: Codling Moth Pheromone (Isomate) Hung by PCA						125	125
Pest: Codling Moth Intrepid						105	105
Pest: Psylla/Mite (Thiolux) Budbreak						31	31
Pest: Psylla/Mite (Oil/Agrimek)						111	111
Pest: Psylla/Mite (Oil)						17	17
Fruit Sizing: Growth Regulator						50	50
Irrigate: Water		155	155	177	177	177	177
Frost Protection: Sprinkle 18X						84	84
Pest: PCA Fees						45	45
Fertilize: Leaf Analysis						4	4
Pickup Truck Use		100	100	100	100	100	100
ATV Use		75	75	75	75	75	75
TOTAL CULTURAL COSTS		1,881	3,399	2,101	1,627	2,738	2,774
Harvest Costs:							
Pick Fruit						92	203
Haul to Shed						4	6
Pack Fruit						753	1,519
TOTAL HARVEST COSTS		0	0	0	0	849	1,727
Interest On Operating Capital @ 9.25%*		896	159	86	74	65	74
TOTAL OPERATING COSTS/ACRE		11,405	3,812	2,187	1,700	3,653	4,575

UC COOPERATIVE EXTENSION

Table 1. continued

	Cost Per Acre						
	Year:	1st	2nd	3rd	4th	5th	6th
Tons Per Acre:						2.0	4.0
Cash Overhead Costs:							
Office Expense		50	50	50	50	50	50
Sanitation Fees		69	69	69	69	69	69
Liability Insurance		8	8	8	8	8	8
Property Taxes		108	107	107	107	111	111
Property Insurance		15	15	15	15	17	17
Investment Repairs		74	74	74	74	74	74
TOTAL CASH OVERHEAD COSTS		323	322	322	322	328	328
TOTAL CASH COSTS/ACRE		11,728	4,134	2,509	2,022	3,981	4,903
INCOME/ACRE FROM PRODUCTION		0	0	0	0	1,264	2,528
NET CASH COSTS/ACRE FOR THE YEAR		11,728	4,134	2,509	2,022	2,717	2,375
ACCUMULATED NET CASH COSTS/ACRE		11,728	15,863	18,372	20,394	23,111	25,486
Non-Cash Overhead Costs (Capital Recovery):							
Shop Building		64	64	64	64	64	64
Worker Housing		10	10	10	10	10	10
Fuel Tank & Pump		4	4	4	4	4	4
Shop Tools		22	22	22	22	22	22
Sprinkler Irrigation System		156	156	156	156	156	156
Deer Fence: Electric		32	32	32	32	32	32
Land		536	536	536	536	536	536
Equipment		62	58	55	57	125	139
TOTAL NON-CASH OVERHEAD		885	882	878	880	949	958
TOTAL COST/ACRE FOR THE YEAR		12,614	5,016	3,387	2,902	4,930	5,861
INCOME/ACRE FROM PRODUCTION		0	0	0	0	1,264	2,528
TOTAL NET COST/ACRE FOR THE YEAR		12,614	5,016	3,387	2,902	3,666	3,333
TOTAL ACCUMULATED NET COST/ACRE		12,614	17,630	21,017	23,919	27,585	30,918

*Interest calculated for 12 months in Yrs. 1-4. Yrs. 5+, calculated through harvest.

UC COOPERATIVE EXTENSION

Table 2. COSTS PER ACRE to PRODUCE HIGH DENSITY SPECIALTY PEARS (Sleeping Eye Trees)

NORTH COAST REGION - Lake and Mendocino Counties 2006

Operation	Operation Time (Hrs/A)	Cash and Labor Cost per acre					Total Cost	Your Cost
		Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent			
Cultural:								
Prune: Prune & Sucker 4X	100.00	1,072	0	0	0	1,072		
Pest: Insects Dormant Spray (Oil)	0.39	7	5	31	0	42		
Pest: Insects Delayed Dormant (Oil)	0.39	7	5	22	0	33		
Pest: Gophers (Bait)	0.20	3	2	6	0	11		
Weed: Mow Middles 7X	1.72	30	22	0	0	51		
Pest: Budbreak, Psylla/Mites (Thiolux)	0.39	7	5	20	0	31		
Pest: Scab (Ziram)	0.39	7	5	25	0	37		
Pest: Scab (Flint)	0.39	7	5	41	0	53		
Pest: CM, PCA hand pheromones (Isomate)	0.00	0	0	125	0	125		
Pest: PCA Hang CM Traps	0.01	0	0	0	0	0		
Pest: Psylla/Mite (Agrimek, Oil)	0.39	7	5	99	0	111		
Pest: Codling Moth (Intrepid)	0.79	14	9	83	0	106		
Weed Strip Spray (Roundup) 2X	0.60	10	6	17	0	33		
Frost Protection: Sprinkle	1.50	16	0	68	0	84		
Pest: Blight (Agrimycin, Mycoshield) Alt. Row	1.77	30	21	111	0	162		
Pest: Blight/Scab (Agrimycin, Mycoshield/Flint)	0.39	7	5	66	0	77		
Pest: Blight/Scab (Agrimycin, Mycoshield/Syllit)	0.39	7	5	73	0	85		
Pest: Blight/Codling Moth (Agrimycin, Mycoshield/Intrepid)	0.39	7	5	66	0	77		
Pest: Insect - OBLR (Success)	0.39	7	5	41	0	52		
Irrigate (includes postharvest)	6.00	64	0	113	0	177		
Fertilize: Nitrogen (Urea)	0.30	3	0	75	0	78		
Fertilize: Leaf Analysis	0.08	1	0	0	3	4		
Growth Regulator: Fruit Retention (Liqui Stik)	0.39	7	5	39	0	50		
Pest: Psylla/Mite @ postharvest (Oil)	0.39	7	5	5	0	17		
Weed: Strip Spray Dormant (Roundup, Karmex, Princep)	0.30	5	3	16	0	24		
Pest: PCA (includes managing traps)	0.00	0	0	0	45	45		
Pickup Truck Use	3.80	65	35	0	0	100		
ATV Use	3.80	65	9	0	0	75		
TOTAL CULTURAL COSTS	125.55	1,461	164	1,140	48	2,812		
Harvest:								
Harvest Fruit: 1st Pick	2.75	94	47	0	430	571		
Harvest Fruit: 2nd Pick	2.75	94	47	0	430	571		
Haul To Packinghouse	0.64	11	12	0	0	23		
TOTAL HARVEST COSTS	6.14	200	106	0	860	1,166		
Packing:								
Sort/Pack/Sell Fruit	0.00	0	0	0	9,475	9,475		
TOTAL PACKING COSTS	0.00	0	0	0	9,475	9,475		
Interest on operating capital @ 9.25%						167		
TOTAL OPERATING COSTS/ACRE		1,660	269	1,140	10,383	13,620		

UC COOPERATIVE EXTENSION

Table 2. continued

Operation	Operation Time (Hrs/A)	Cash and Labor Cost per acre				Total Cost	Your Cost
		Labor Cost	Fuel, Lube & Repairs	Material Cost	Custom/ Rent		
CASH OVERHEAD:							
Office Expense						50	
Liability Insurance						8	
Sanitation Fee						69	
Property Taxes						226	
Property Insurance						98	
Investment Repairs						87	
TOTAL CASH OVERHEAD COSTS						537	
TOTAL CASH COSTS/ACRE						14,156	
NON-CASH OVERHEAD (Capital Recovery):							
INVESTMENT		Per producing Acre		Annual Cost Capital Recovery			
Buildings		857		64		64	
Worker Housing		117		10		10	
Fuel Tanks & Pumps		50		4		4	
Shop Tools		214		22		22	
Sprinkler System		1,950		156		156	
Land		8,571		536		536	
Pear Establishment		23,111		1,851		1,851	
Equipment		1,332		159		159	
TOTAL NON-CASH OVERHEAD COSTS						2,802	
TOTAL COSTS/ACRE						16,958	

UC COOPERATIVE EXTENSION
Table 3. COSTS AND RETURNS PER ACRE to PRODUCE HIGH DENSITY SPECIALTY PEARS
(Sleeping Eye Trees)

NORTH COAST REGION - Lake and Mendocino Counties 2006

	Quantity/ Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
GROSS RETURNS					
Fresh	22.50	ton	700.00	15,750	
By Products	2.50	ton	20.00	50	
TOTAL GROSS RETURNS FOR PEAR	25.00	ton		15,800	
OPERATING COSTS					
Insecticide:					
Dormant Oil Plus	8.00	gal	3.83	31	
415 Oil	6.00	gal	5.38	32	
Agri-Mek	12.00	floz	7.82	94	
Intrepid 2F	48.00	floz	2.58	124	
Success	6.00	floz	6.75	41	
Herbicide:					
Roundup Ultra Max	3.00	pint	8.60	26	
Karmex DF	0.75	lb	5.66	4	
Princep Caliber 90	0.75	lb	4.69	4	
Rodenticide:					
Gopher Getter Ag	1.00	lb	5.56	6	
Fungicide:					
Thiolux Jet (micronized sulfur)	25.00	lb	0.80	20	
Ziram Granuflo	8.00	lb	3.15	25	
Flint	5.00	oz	16.50	83	
Syllit 65W	3.00	lb	16.19	49	
Antibiotic:					
Mycoshield	3.75	lb	36.15	136	
Agri-mycin 17	30.00	oz	1.62	49	
Pheromone:					
Isomate C Plus (200 ties/acre)	1.00	acre	125.00	125	
Fertilizer:					
46-0-0 (Urea)	200.00	lb N	0.38	75	
Growth Regulator:					
Liqui-Stik	24.00	oz	1.62	39	
Water:					
Water - Frost Protection	18.00	acin	3.76	68	
Water - Pumped	30.00	acin	3.76	113	
Rent:					
Forklift Rental	4.00	acwk	15.00	60	
Contract:					
Hand Pick	25.00	ton	32.00	800	
PCA Fees	1.00	acre	45.00	45	
Leaf Analysis	0.10	acre	30.00	3	
Custom:					
Pack - Fresh 36 lb box tight pack	417.00	box	6.00	2,502	
Pack - Fresh 40/44 lb box	375.00	box	8.00	3,000	
Pack - RPC 27 lb box wrapped	555.00	box	7.00	3,885	
Shed Cost – By-Products	2.50	ton	35.00	88	
Labor (machine)	35.21	hrs	14.30	504	
Labor (non-machine)	107.89	hrs	10.72	1,157	
Fuel - Gas	12.04	gal	2.55	31	
Fuel - Diesel	66.66	gal	2.00	133	
Lube				25	
Machinery repair				81	
Interest on operating capital @ 9.25%				167	
TOTAL OPERATING COSTS/ACRE				13,619	
NET RETURNS ABOVE OPERATING COSTS				2,181	

UC COOPERATIVE EXTENSION

Table 3. continued

	Value or Cost/Acre	Your Cost
CASH OVERHEAD COSTS:		
Office Expense	50	
Liability Insurance	8	
Sanitation Fee	69	
Property Taxes	226	
Property Insurance	98	
Investment Repairs	87	
TOTAL CASH OVERHEAD COSTS/ACRE	537	
TOTAL CASH COSTS/ACRE	14,156	
NON-CASH OVERHEAD COSTS (Capital Recovery)		
Buildings	64	
Worker Housing	10	
Fuel Tanks & Pumps	4	
Shop Tools	22	
Sprinkler System	156	
Land	536	
Pear Establishment	1,851	
Equipment	159	
TOTAL NON-CASH OVERHEAD COSTS/ACRE	2,802	
TOTAL COSTS/ACRE	16,958	
NET RETURNS ABOVE TOTAL COST/ACRE	-1,158	

UC COOPERATIVE EXTENSION

Table 4. MONTHLY CASH COSTS PER ACRE to PRODUCE HIGH DENSITY SPECIALTY PEARS (Sleeping Eye Trees)
NORTH COAST REGION - Lake and Mendocino Counties 2006

Beginning JAN 06 Ending DEC 06	JAN 06	FEB 06	MAR 06	APR 06	MAY 06	JUN 06	JUL 06	AUG 06	SEP 06	OCT 06	NOV 06	DEC 06	TOTAL
Cultural:													
Prune: Prune & Sucker 4X	268				268	268	268						1,072
Pest: Insects Dormant Spray (Oil)	42												42
Pest: Insects Delayed Dormant (Oil)		33											33
Pest: Gophers (Bait)			11										11
Weed: Mow Middles 7X			7	7	7	15	15						51
Pest: Budbreak, Psylla/Mites (Thiolux)			31										31
Pest: Scab (Ziram)			37										37
Pest: Scab (Flint)			53										53
Pest: Codling Moth. PCA hand pheromones (Isomate)			125										125
Pest: PCA Hang CM Traps				0									0
Pest: Psylla/Mite (Agrimek, Oil)				111									111
Pest: Codling Moth (Intrepid)				53		53							105
Weed Strip Spray (Roundup) 2X				17			17						33
Frost Protection: Sprinkle				42	42								84
Pest: Blight (Agrimycin, Mycoshield) Alt. Row				90	72								162
Pest: Blight/Scab (Agrimycin, Mycoshield/Flint)				77									77
Pest: Blight/Scab (Agrimycin, Mycoshield/Syllit)					85								85
Pest: Blight/Codling Moth (Agrimycin, Mycoshield/Intrepid)					77								77
Pest: Insect - OBLR (Success)					52								52
Irrigate (includes postharvest)						48	48	54	27				177
Fertilize: Nitrogen (Urea)						39			39				78
Fertilize: Leaf Analysis							4						4
Growth Regulator: Fruit Retention (Liqui Stik)								50					50
Pest: Psylla/Mite (Oil)									17				17
Weed: Strip Spray Dormant (Roundup, Karmex, Princep)												24	24
Pest: PCA (includes managing traps)	4	4	4	4	4	4	4	4	4	4	4	4	45
Pickup Truck Use	8	8	8	8	8	8	8	8	8	8	8	8	100
ATV Use	6	6	6	6	6	6	6	6	6	6	6	6	75
TOTAL CULTURAL COSTS	328	51	282	415	621	441	370	122	101	18	18	43	2,812
Harvest:													
Harvest Fruit: 1st Pick								571					571
Harvest Fruit: 2nd Pick								571					571
Haul To Packinghouse								23					23
TOTAL HARVEST COSTS								1,166					1,166
Packing:													
Sort/Pack/Sell Fruit								9,475					9,475
TOTAL PACKING COSTS								9,475					9,475

UC COOPERATIVE EXTENSION

Table 4. continued

Beginning JAN 06 Ending DEC 06	JAN 06	FEB 06	MAR 06	APR 06	MAY 06	JUN 06	JUL 06	AUG 06	SEP 06	OCT 06	NOV 06	DEC 06	TOTAL
Interest on operating Capital @ 9.25%	3	3	5	8	13	16	19	102	-1	0	-1	-1	167
TOTAL OPERATING COSTS/ACRE	331	54	287	423	634	458	389	10,865	100	18	18	42	13,619
TOTAL OPERATING COSTS/TON	13	2	11	17	25	18	16	435	4	1	1	2	545
CASH OVERHEAD:													
Office Expense	4	4	4	4	4	4	4	4	4	4	4	4	50
Liability Insurance								8					8
Sanitation Fee	6	6	6	6	6	6	6	6	6	6	6	6	69
Property Taxes				113								113	226
Property Insurance				49								49	98
Investment Repairs	7	7	7	7	7	7	7	7	7	7	7	7	87
TOTAL CASH OVERHEAD COSTS	17	17	17	179	17	17	17	25	17	17	17	179	537
TOTAL CASH COSTS/ACRE	348	71	304	602	652	475	406	10,889	117	35	35	221	14,156
TOTAL CASH COSTS/TON	14	3	12	24	26	19	16	436	5	1	1	9	566

UC COOPERATIVE EXTENSION
Table 5. RANGING ANALYSIS
 NORTH COAST REGION – Lake and Mendocino Counties 2006

COSTS PER ACRE AT VARYING YIELD TO PRODUCE HIGH DENSITY SPECIALTY PEARS (Sleeping Eye Trees)

	TOTAL YIELD (tons/acre)						
	17.50	20.00	22.50	25.00	27.50	30.00	32.50
OPERATING COSTS/ACRE:							
Cultural Cost	2,812	2,812	2,812	2,812	2,812	2,812	2,812
Harvest Cost	834	944	1,055	1,166	1,276	1,387	1,497
Packing Cost	6,632	7,580	8,527	9,474	10,422	11,369	12,317
Interest on operating capital	143	151	159	167	175	184	192
TOTAL OPERATING COSTS/ACRE	10,421	11,487	12,553	13,619	14,685	15,752	16,818
TOTAL OPERATING COSTS/TON	595	574	558	545	534	525	517
CASH OVERHEAD COSTS/ACRE							
TOTAL CASH COSTS/ACRE	10,957	12,023	13,089	14,156	15,222	16,289	17,355
TOTAL CASH COSTS/TON	626	601	582	566	554	543	534
NON-CASH OVERHEAD COSTS/ACRE							
TOTAL COSTS/ACRE	13,751	14,820	15,889	16,958	18,027	19,096	20,165
TOTAL COSTS/TON	786	741	706	678	656	637	620

NET RETURNS PER ACRE ABOVE OPERATING COSTS

Price (\$/ton)		Yields (ton/acre)						
Fresh	By-Products	15.75	18.00	20.25	22.50	24.75	27.00	29.25
		1.75	2.00	2.25	2.50	2.75	3.00	3.25
400.00	20.00	-4,086	-4,247	-4,408	-4,569	-4,730	-4,892	-5,053
500.00	20.00	-2,511	-2,447	-2,383	-2,319	-2,255	-2,192	-2,128
600.00	20.00	-936	-647	-358	-69	220	508	797
700.00	20.00	639	1,153	1,667	2,181	2,695	3,208	3,722
800.00	20.00	2,214	2,953	3,692	4,431	5,170	5,908	6,647
900.00	20.00	3,789	4,753	5,717	6,681	7,645	8,608	9,572
1,000.00	20.00	5,364	6,553	7,742	8,931	10,120	11,308	12,497

NET RETURNS PER ACRE ABOVE CASH COSTS

Price (\$/ton)		Yield (tons/acre)						
Fresh	By-Products	15.75	18.00	20.25	22.50	24.75	27.00	29.25
		1.75	2.00	2.25	2.50	2.75	3.00	3.25
400.00	20.00	-4,622	-4,783	-4,944	-5,106	-5,267	-5,429	-5,590
500.00	20.00	-3,047	-2,983	-2,919	-2,856	-2,792	-2,729	-2,665
600.00	20.00	-1,472	-1,183	-894	-606	-317	-29	260
700.00	20.00	103	617	1,131	1,644	2,158	2,671	3,185
800.00	20.00	1,678	2,417	3,156	3,894	4,633	5,371	6,110
900.00	20.00	3,253	4,217	5,181	6,144	7,108	8,071	9,035
1,000.00	20.00	4,828	6,017	7,206	8,394	9,583	10,771	11,960

UC COOPERATIVE EXTENSION

Table 5. continued

NET RETURNS PER ACRE ABOVE TOTAL COSTS

Price (\$/ton)		Yield (tons/acre)						
Fresh	By- Products	15.75	18.00	20.25	22.50	24.75	27.00	29.25
		1.75	2.00	2.25	2.50	2.75	3.00	3.25
400.00	20.00	-7,416	-7,580	-7,744	-7,908	-8,072	-8,236	-8,400
500.00	20.00	-5,841	-5,780	-5,719	-5,658	-5,597	-5,536	-5,475
600.00	20.00	-4,266	-3,980	-3,694	-3,408	-3,122	-2,836	-2,550
700.00	20.00	-2,691	-2,180	-1,669	-1,158	-647	-136	375
800.00	20.00	-1,116	-380	356	1,092	1,828	2,564	3,300
900.00	20.00	459	1,420	2,381	3,342	4,303	5,264	6,225
1,000.00	20.00	2,034	3,220	4,406	5,592	6,778	7,964	9,150

UC COOPERATIVE EXTENSION
**Table 6. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT,
and BUSINESS OVERHEAD COSTS**
NORTH COAST REGION - Lake County and Mendocino Counties 2006

ANNUAL EQUIPMENT COSTS

Yr	Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead		Total
						Insur- ance	Taxes	
06	55 HP 2WD Tractor #2	32,269	12	8,068	3,431	141	202	3,773
06	55 HP 2WD Tractor #1	32,269	12	8,068	3,431	141	202	3,773
06	ATV 4WD	7,430	7	2,818	1,010	36	51	1,097
06	Bait Applicator	1,046	10	185	130	4	6	140
06	Bin Trailer #1	979	15	94	98	4	5	108
06	Bin Trailer #2	979	15	94	98	4	5	108
06	Mower - Flail 9'	10,200	10	1,804	1,267	42	60	1,369
06	Orchard Sprayer 500 gal #1	21,000	10	3,714	2,609	87	124	2,819
06	Orchard Sprayer 500 gal #2	21,000	10	3,714	2,609	87	124	2,819
06	Pickup Truck 1/2 Ton	26,000	7	9,863	3,533	126	179	3,838
06	Truck - 10 Ton	41,827	10	12,355	4,824	190	271	5,285
06	Weed Sprayer 100 gal	3,947	10	698	490	16	23	530
TOTAL		198,946		51,475	23,529	876	1,252	25,657
60% of New Cost *		119,368		30,885	14,118	526	751	15,394

*Used to reflect a mix of new and used equipment

ANNUAL INVESTMENT COSTS

Description	Price	Yrs Life	Salvage Value	Capital Recovery	Cash Overhead			Total
					Insur- ance	Taxes	Repairs	
INVESTMENT								
Buildings 1800sqft	60,000	30		4,476	210	300	1,200	6,186
Fuel Tanks 2-500 gal	3,500	25	350	274	13	19	70	377
Land 75 acres	600,000	95	600,000	37,500	0	6,000	0	43,500
Orchard Establishment (25 acres)	577,775	25		46,277	2,022	2,889	578	51,766
Shop Tools	15,000	15	1,500	1,507	58	83	300	1,947
Sprinkler Pears (70 acres)	136,500	25		10,933	478	683	2,730	14,823
Worker Housing	8,217	20		731	29	41	164	965
TOTAL INVESTMENT	1,400,992		601,850	101,697	2,810	10,014	5,042	119,564

ANNUAL BUSINESS OVERHEAD COSTS

Description	Units/ Farm	Unit	Price/ Unit	Total Cost
Liability Insurance	70	acre	7.56	529
Office Expense	70	acre	50.00	3,500
Sanitation Fee	70	acre	68.57	4,800

UC COOPERATIVE EXTENSION
Table 7. HOURLY EQUIPMENT COSTS
 NORTH COAST REGION – Lake/and Mendocino Counties 2006

Yr	Description	COSTS PER HOUR							Total Oper.	Total Costs/Hr.
		Actual Hours Used	Capital Recovery	Cash Overhead			Operating			
				Insur- ance	Taxes	Repairs	Fuel & Lube			
06	55 HP 2WD Tractor #2	1,000.00	2.06	0.08	0.12	1.43	6.21	7.64	9.90	
06	55 HP 2WD Tractor #1	1,000.00	2.06	0.08	0.12	1.43	6.21	7.64	9.90	
06	ATV 4WD	290.00	2.09	0.07	0.11	0.55	1.95	2.50	4.77	
06	Bait Applicator	120.00	0.65	0.02	0.03	0.40	0.00	0.40	1.10	
06	Bin Trailer #1	166.00	0.36	0.01	0.01	0.14	0.00	0.14	0.52	
06	Bin Trailer #2	166.00	0.36	0.01	0.01	0.14	0.00	0.14	0.52	
06	Mower - Flail 9'	200.00	3.80	0.13	0.18	4.22	0.00	4.22	8.33	
06	Orchard Sprayer 500 G#1	200.00	7.82	0.26	0.37	3.55	0.00	3.55	12.00	
06	Orchard Sprayer 500 G#2	200.00	7.84	0.26	0.37	3.55	0.00	3.55	12.02	
06	Pickup Truck 1/2 T	285.00	7.44	0.26	0.38	1.91	7.33	9.24	17.32	
06	Truck - 10 Ton	200.00	14.47	0.57	0.81	4.00	14.38	18.38	34.23	
06	Weed Sprayer 100 Gal	150.00	1.97	0.07	0.09	1.06	0.00	1.06	3.19	

UC COOPERATIVE EXTENSION

Table 8. OPERATIONS WITH EQUIPMENT AND MATERIALS LISTED HIGH DENSITY PEARS (Sleeping Eye Trees)
NORTH COAST REGION - Lake and Mendocino Counties 2006

Operation	Operation Month	Equipment		Labor Hr/acre	Material	Rate/acre	Unit
		Tractor	Implement				
Prune: Prune & Sucker 4X	January			31.00			
	May			31.00			
	June			31.00			
	July			31.00			
Pest: Dormant	January	55HP 2WD	Orchard Sprayer		Dormant Oil	8.00	gal
Pest: Delayed Dormant	February	55HP 2WD	Orchard Sprayer		415 Oil	4.00	gal
Pest: Gophers	March	55HP 2WD	Bait Applicator		Gopher Bait	1.00	lb
Weed: Mow Middles 7X	March	55HP 2WD	Mower - Flail 9'				
	April	55HP 2WD	Mower - Flail 9'				
	May	55HP 2WD	Mower - Flail 9'				
	June (2X)	55HP 2WD	Mower - Flail 9'				
	July (2X)	55HP 2WD	Mower - Flail 9'				
Pest: Psylla/Mites	March	55HP 2WD	Orchard Sprayer		Thiolux	25.00	lb
Pest Control - Scab	March	55HP 2WD	Orchard Sprayer		Ziram	8.00	lb
	March	55HP 2WD	Orchard Sprayer		Flint	2.50	oz
	April	55HP 2WD	Orchard Sprayer		Agri-mek	12.00	floz
Pest: Psylla/Mites	April	55HP 2WD	Orchard Sprayer		415 Oil	1.00	gal
					415 Oil	1.00	gal
					415 Oil	1.00	gal
Pest: Codling Moth	March	Custom			Hang Traps	0.00	
	March	Custom			Isomate	200.00	each
Pest: Codling Moth	April	55HP 2WD	Orchard Sprayer		Intrepid	16.00	floz
Weed: Strip Spray	April	55HP 2WD	Weed Sprayer		Roundup	1.00	pt
	July	55HP 2WD	Weed Sprayer		Roundup	1.00	pt
	December	55HP 2WD	Weed Sprayer		Roundup	1.00	pt
Weed: Mow Middles 7X	March	55HP 2WD	Mower - Flail 9'		Karmex	0.75	lb
					Princep	0.75	lb
Frost Protection	April			0.80	Water	9.00	acin
	May			0.80	Water	9.00	acin
Pest: Blight (Alternate Rows)	April	55HP 2WD	Orchard Sprayer		Mycoshield	0.25	lb
					Agri-mycin	2.00	oz
					Mycoshield	0.25	lb
	April	55HP 2WD	Orchard Sprayer		Agri-mycin	2.00	oz
					Mycoshield	0.25	lb
					Agri-mycin	2.00	oz
	April	55HP 2WD	Orchard Sprayer		Mycoshield	0.25	lb
					Agri-mycin	2.00	oz
					Mycoshield	0.25	lb
	April	55HP 2WD	Orchard Sprayer		Agri-mycin	2.00	oz
					Mycoshield	0.25	lb
					Agri-mycin	2.00	oz
	May	55HP 2WD	Orchard Sprayer		Mycoshield	0.25	lb
					Agri-mycin	2.00	oz
					Mycoshield	0.25	lb
May	55HP 2WD	Orchard Sprayer		Agri-mycin	2.00	oz	
				Mycoshield	0.25	lb	
				Agri-mycin	2.00	oz	
May	55HP 2WD	Orchard Sprayer		Mycoshield	0.25	lb	
				Agri-mycin	2.00	oz	
				Mycoshield	0.25	lb	
					Agri-mycin	2.00	oz

UC COOPERATIVE EXTENSION

Table 8. continued

Operation	Month	Tractor	Implement	Labor Hr/acre	Material	Rate/acre	Unit	
Pest: Blight & Scab	April	55HP 2WD	Orchard Sprayer		Mycoshield	0.50	lb	
					Agri-mycin	8.00	oz	
						Flint	2.50	oz
	May	55HP 2WD	Orchard Sprayer		Mycoshield	0.50	lb	
					Agri-mycin	4.00	oz	
Syllit					3.00	lb		
Pest: OBLR	May	55HP 2WD	Orchard Sprayer		Success	6.00	floz	
Pest: Blight & Codling Moth	May	55HP 2WD	Orchard Sprayer		Mycoshield	0.50	lb	
					Agri-mycin	4.00	oz	
					Intrepid	16.00	floz	
Pest: Codling Moth	June	55HP 2WD	Orchard Sprayer		Intrepid	16.00	floz	
	July	55HP 2WD	Orchard Sprayer		Guthion	1.50	lb	
	August	55HP 2WD	Orchard Sprayer		Imidan	6.00	lb	
Irrigate	June			1.50	Water	8.58	acin	
	July			1.50	Water	8.58	acin	
	August			2.00	Water	8.58	acin	
	September			1.00	Water	4.29	acin	
Fertilize - Nitrogen	June			0.20	46-0-0	100.00	lb N	
	September			0.20	46-0-0	100.00	lb N	
Fertilize - Leaf Analysis	July			0.10	Samples	0.10	each	
Apply Hormone	August	55HP 2WD	Orchard Sprayer		Liqui-Stik	24.00	floz	
Pickup Truck Use	Annual	Pickup						
ATV Use	Annual	ATV 4WD						
Harvest Fruit - 1st Pick	August	55HP 2WD	Bin Trailer #1		Contract Labor			
		55HP 2WD #2	Bin Trailer #2		Forklift Rental	2.00	acwk	
Harvest Fruit - 2nd Pick	August	55HP 2WD	Bin Trailer #1		Contract Labor			
		55HP 2WD #2	Bin Trailer #2		Forklift Rental	1.33	acwk	
Haul To Packinghouse	August	Truck 10 ton						
Pack	August				36 lb box	417.00	box	
					40/44 lb box	375.00	box	
					27 lb RFC box	555.00	box	