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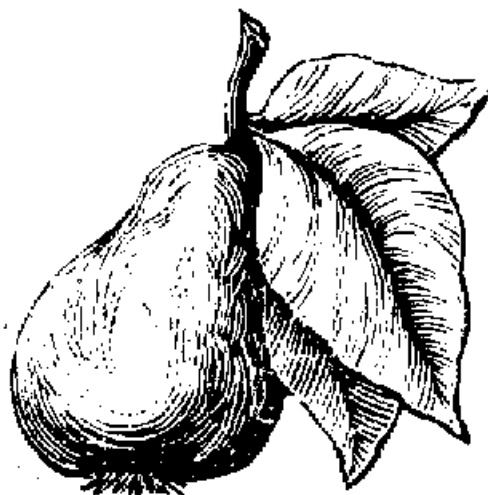
UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

2002

SAMPLE COSTS OF PRODUCTION  
USING MATING DISRUPTION

*PEARS*

GREEN BARTLETT



**NORTH COAST – LAKE COUNTY**

**Transition and production costs using aerosol mating  
disruption (puffers) for codling moth control**

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# SAMPLE COSTS to PRODUCE PEARS

*Green Bartlett – with Mating Disruption*

North Coast Region – Lake County 2002

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## INTRODUCTION

Sample costs to convert a Green Bartlett pear orchard to aerosol-released mating disruption (puffers) for codling moth control and producing pears under the system in the North Coast Region – Lake County are presented in this study. The materials and methods used to monitor insect pests reflect many of the practices implemented by UC Cooperative Extension, Lake County, during the tenure of the Lake County Areawide Codling Moth Puffer Project in Kelseyville. The project ran from 1996 through 2001, but the data in this study is based on data from participating orchards in 2000. The project encompassed 160 acres from 1996-1998, 500 acres in 1999, 820 acres in 2000, and 1,300 acres in 2001. Actual practices will vary due to individual and pest control adviser (PCA) preferences and prevailing economics. Practices described are based on production practices considered typical for California’s North Coast Region of Lake County. Costs and practices for converting to puffers for codling moth control are based on data and pesticide reports collected from farms converting and/or currently using puffers. A blank, *Your Cost*, column is provided to enter your actual costs in Tables 2 and 3.

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 are available for many commodities and can be obtained through the Department of Agricultural and Resource Economics - UC Davis, (530) 752-3589. Current studies can be downloaded from the website, <http://coststudies.ucdavis.edu> or obtained from selected county Cooperative Extension offices.

## ASSUMPTIONS

The following assumptions refer to Tables 1 to 7 and pertain to transition and production costs using an aerosol pheromone mating disruption (puffer) system for codling moth control in the North Coast Region – Lake County. Practices described are not University of California recommendations, but represent typical and/or new production practices for this crop and area. The practices and inputs used in this cost study serve as a guide only. All costs and practices may not be applicable to your situation or used during every production year. Cultural practices for pear production varies by grower and region and variations can be significant. For pear orchard establishment and production costs using standard practices, see *Sample Costs to Establish and Produce Pears, 2002, North Coast*. **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.**

**Farm.** The farm consists of 70 acres of pear production, and five acres occupied by roads, irrigation systems, fencing, and farmstead. The farm is on alluvial bottomland, typical of the North Coast - Lake County.

### Transition Operating Costs

**Table 1 Series.** Grower costs converting from a standard pesticide spray program for codling moth control to a pheromone mating disruption system using puffers are shown in the tables. Pesticide data for Transition Years 1, 2, and 5 are taken from county/state monthly pesticide reports submitted by growers participating in the Lake County puffer project from 1996 to 2000. There were 16 project orchards in the first and second years, and five in the fifth. Predominant grower practices are shown in the tables. Being practices varied slightly among growers, pest applications to less than 20% of the program acres were not considered a normal practice and not included.

**Pest Management.** Codling moth (CM) and obliquebanded leafroller (OBLR) are the primary and secondary pests, respectively, of codling moth mating disruption programs. The mating disruption system reduced the number of CM sprays in the first year and eliminated spraying by the second year. In the first transition year, two CM (cover) sprays are applied – one in May with the blight spray and a single spray in July. In the second and following years, no CM sprays are made. OBLR is controlled with two sprays during the first transition year – Lorsban and Oil in March, and BT (Dipel) and oil in June. In the following years, only the March spray is applied. By the fifth year, the fall psylla and mite sprays are eliminated. The grower applies the sprays with his equipment, and manages the puffers. In this study, the PCA manages the trap operations – hangs traps, checks traps, changes lures, counts eggs, checks tree damage, compiles weekly results, and takes down traps. Table 1B shows man-hours to complete monitoring operations in a typical year as experienced by UCCE staff. This table is provided as a reference and may not reflect the actual monitoring operations or costs incurred by growers and PCA's. PCA's may employ combinations of one or more tactics presented in the table in order to provide cost-effective service to clientele.

**Harvest/Yields.** The growers use standard harvesting practices. Fruit was evaluated for damage, but showed no significant changes in yields and fruit quality versus standard pest control programs.

**Returns.** Cultural costs rose slightly in the transition year, but by Year 5 had declined \$202 per acre from year 1 and \$171 from standard costs. Comparing to standard costs, Year 5's total cash costs declined by \$192 per acre and total cost by \$297 per acre. Based on a 20-ton yield, the total costs declined \$9 per ton from standard costs.

### **Production Operating Costs Using Puffers (Year 5)**

**Trees.** The pear cultivar is Green Bartlett on Winter Nellis rootstock, a common combination in Lake County. Bartlett is a dual-purpose pear, utilized for both fresh market and processing. The trees are planted on 12' X 20' spacing, 182 trees per acre. Other cultivars grown include Bosc, Red Bartlett, Starkrimson (or Red Clapp) and Comice. Pear trees have a long production life if they are well maintained. Some pear orchards have trees over 100 years old that are producing. The life of the orchard at the time of planting in this study is estimated to be 100 years.

**Irrigation.** The irrigation cost includes pumped water plus labor. The cost is based on two 25 - 30 hp motors pumping 48 acre-inches from depths of 60 to 90 feet. The water is pumped through a filtration station, then into the underground, permanent, sprinkler system in the tree rows. The price per acre-foot for water will vary by grower in this region depending on power source, power cost, well characteristics, and other irrigation factors. In this study, water is calculated to cost \$33.00 per acre-foot (\$2.75/acin). No assumption is made about effective rainfall.

**Frost Protection.** Trees may be protected from low temperatures by wind machines, orchard heaters, and/or sprinkler applied water. 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. Water is sprinkled onto the orchard floor using the existing irrigation system.

**Pruning.** In this study, a contract hand crew prunes during the winter months. Prunings are placed in the row middles and shredded in the spring during the first mowing.

**Fertilization.** Tree nitrogen status is determined by visual observation during the season and by leaf analysis in July. 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. Over fertilization can cause excessive shoot growth, resulting in increased susceptibility to fire blight, and reduced fruit set due to shading.

**Pest Management.** Pesticides, rates, and cultural practices mentioned in this cost study are listed in the *UC IPM Pest Management Guidelines, Pear*, and *Integrated Pest Management for Apples and Pears*. For more information on other pesticides available, pest identification, monitoring, and management visit the UC IPM website at [www.ipm.ucdavis.edu](http://www.ipm.ucdavis.edu). For information and pesticide use permits, contact the local county Agricultural Commissioner's office.

*Pest Control Adviser (PCA).* Written recommendations are required for many pesticides and written by licensed PCA's. In addition, the PCA monitors the field for pests and nutrition. Growers may hire private PCA's or receive the service as part of a service agreement with an agricultural chemical and fertilizer company. In this study, the grower hires a private PCA. The PCA charges a fee based on a level of service to the grower. The puffer program requires additional time for hanging and monitoring a greater number of traps versus the standard program, as well as additional monitoring for eggs and damage. In this study, the PCA charges a higher fee than under standard practices.

*Weeds.* Preemergent/residual and contact herbicides (Goal and Roundup) are applied to the tree row during the dormant period - November to February. In this study the dormant strip spray is applied in February. During the growing season, strip sprays using either Roundup or Gramoxone are applied to the tree rows. The row middles are mowed seven times from March through July.

*Insects and Arthropods.* Pests in this study are codling moth (CM), obliquebanded leafroller (OBLR), pear psylla, and mites. CM is the primary pest because it makes fruit unmarketable. Control is based on monitoring of the population and counting degree-days. The first generation usually begins hatching in late April or early May; the second and third generations normally occur in July and August.

Traps are placed in the trees to monitor CM and OBLR populations. Trap type and density in this study are those used by UCCE and assumed to be adopted by the PCA. In late March, the PCA hangs 3 codling moth traps at 3 traps per 5 acres (0.6 traps/acre) in the tree. The three traps, one with a CM 1X lure and one with a CM 10X lure are hung high in the tree, and one with a CM 1X lure is hung low. In this study, the single trap cost is the cost of 2 traps, because each trap is made from parts of 2 traps. The PCA replaces the lures and liners monthly from April through August and checks the traps weekly for moth counts. Also in late March, the grower hangs in the tree an average of 13 puffers per 10 acres or 1.3 puffers per acre. Each puffer unit contains a canister that emits a mating disruption pheromone programmed to emit 7.5 mg of codlemone every 15 minutes from 3:00 pm to 3:00 am per acre over the season. The emissions stop at temperatures below 50° F. The grower inspects the puffers on a regular schedule from March through August and checks the puffer programming and batteries in July. In this study, the grower purchases the traps and lures and the (PCA) hangs the traps, checks the traps, and changes the lures. The trap operations in the study are the material costs. If the PCA provides the traps and lures, the PCA monitoring fee will increase to compensate for these material costs.

The puffer rate of 1.3 puffers per acre is based on orchard blocks over 40 acres. In blocks of 40 acres or less with no adjoining orchards using puffers, the rate remains at 1.5 to 2 units per acre (the first year rate) due to higher border to interior ratio. Blocks with high initial codling moth population will also require the higher rate of puffers as well. Application rates should be decided by the grower and PCA based on initial population, orchard size and layout, and practices of neighboring orchards. The orchards in the Lake County project averaged 1.6 units per acres from 1996 to 1998. The rate decreased to 1.3 per acre in 1999 and 1.13 per acre in 2000 to 2001.

OBLR is the main secondary pest in mating disruption programs. It over winters as immature larvae under the bark scales and emerges in mid-May to mid-June depending upon the temperature. The larvae feed on flower parts and young fruit. In CM mating disruption orchards, Lorsban and oil are applied in March to control OBLR. To monitor the population, the PCA hangs one OBLR trap per five acres (.2 traps/acre) high in the tree in late April, one month after the CM traps are hung, and checks the trap and changes the lures through September.

Pear psylla injects a toxin into the tree, produces honeydew, and vectors the disease pear decline. Psylla is primarily controlled with horticultural oil (Dormant Plus, 415 or 440 Oil) and avermectin (Agrimek). Treatments made in this study include an oil spray in January or early February, and Agrimek plus oil in April and June. The grower applies the insecticides with his spray equipment

Mites can cause damage in pears even at low levels (two per leaf). Dormant oil (Dormant Plus) sprays during the winter control some mites and narrow range oil sprays (415 and 440) mixed with the psylla sprays control mites during the season.

**Diseases.** In the spring, fire blight symptoms can appear in blossom clusters and shoot tips. Severe infections may kill entire branches or trees. Fire blight is controlled with copper compounds (Kocide) or antibiotics (Mycoshield and Agrimycin), avoiding excessive tree vigor, and elimination of infected branches. Antibiotics are used in this study and applied to one side of the tree (alternate rows) when applied alone and every row when applied in combination with other sprays. Twelve blight sprays are applied: five blight only in April and five in May, and two combination scab/blight sprays - one each in April and May.

Pear scab is a serious fungus disease in the North Coast region. It attacks young fruit, and often causes the young pears to drop. Ziram is applied in March. Combination scab/blight sprays are made with Flint for scab control in April and with Syllit in May.

**Vertebrate Pests.** The major vertebrate pest is pocket gopher (*Thomomys sp.*). In this study, poison bait is applied in the spring when populations are low. The bait is placed underground in an artificial burrow made by a mechanical bait applicator and tractor.

**Growth Regulator.** Liqui-Stik or Fruit Fix is applied in August, 5 to 7 days before harvest to control pear drop for up to 4 weeks.

**Harvest.** The orchard is harvested twice in August. The first pick is selective and usually collects 33% of the fruit, most of which will go for fresh market. The second pick gathers the remaining pears about 10 days or two weeks later. Harvest crews use ladders and picking bags to hand pick fruit that is placed into half-ton field bins. Tractors with forklift attachments on both the front loader and 3-point hitch pick up the filled bins, move them from the orchard, and place them on a flatbed truck or drop trailers for transport to a packing shed for cleaning, sorting, and packing. The grower also rents a forklift. The crop is harvested and hauled to the packinghouse by the grower.

**Yields.** Yields fall into three categories: fresh market, processed, and off-grade. Processed is also referred to as canning or unrestricted grade, and off-grade is called restricted grade. Off-grade pears are used in juice, concentrated, fermented, dried, and frozen products. Pears that go to processing and off-grade receive lower prices than fresh market fruit so grower incentive is to produce for the fresh market.

Table A. Tonnage and Percent Packout –  
Lake Counties Bartlett Pears 1997 - 2001<sup>1</sup>

| Lake County       |        |           |           |           |
|-------------------|--------|-----------|-----------|-----------|
| Year              | Tons   | Fresh     | Processed | Off-grade |
|                   |        | % of tons |           |           |
| 1997              | 78,860 | 37        | 45        | 18        |
| 1998 <sup>2</sup> | 72,787 | 25        | 51        | 24        |
| 1999              | 82,453 | 42        | 40        | 18        |
| 2000              | 62,749 | 46        | 42        | 12        |
| 2001 <sup>3</sup> | 51,737 | 42        | 49        | 9         |
| Avg               | 69,717 | 38        | 45        | 16        |

<sup>1</sup>California Pear Advisory Board Annual Reports 1996 – 2000, Ag Commissioner Annual Report, Lake County 1997-2000 <sup>2</sup>Severe scab year <sup>3</sup> Preliminary Report Pear Board

An assumed yield of 20 tons per acre is used to calculate returns and cost per ton. A typical yield range is 15 to 35 tons per acre. This study separates yields for the three different categories from gross tonnage as follows: fresh market, 42%; processed, 40%; and off-grade, 18%. Actual tonnage and percent of packout by various market categories for the past five years in Lake county is shown in Table A.

**Returns.** Growers are paid for fruit based on gross field tons for different grades. Estimated gross return prices per ton for the Bartlett Pear categories described above are: fresh market, \$592; processed, \$220; and off grade, \$20. In the previous ten years fresh market prices ranged from \$400 to \$700 per ton, processed from \$190 to \$230, and off-grade from \$25 to \$125. The return prices are used to calculate ranging analysis for different yields and prices. The prices used in this cost study are estimated based on former and current market conditions.

**Assessments.** Under a state marketing order, mandatory assessment fees for promotion and research are collected and administered by the California Pear Advisory Board (CPAB). This assessment is charged to growers on both fresh and processed markets. This report uses CPAB assessments for the categories: Fresh Market, tight-fill carton, and Processed, unrestricted, and restricted grades as shown in Table B.

| Category                   | Price/Unit | Unit     |
|----------------------------|------------|----------|
| Fresh Market               |            |          |
| Tight-fill carton          | \$0.300    | 36 lb    |
| Standard box               | \$0.375    | 44-46 lb |
| Metric box                 | \$0.337    | 40 lb    |
| LA lug                     | \$0.193    | 28 lb    |
| Processed                  |            |          |
| Unrestricted grades        | \$4.00     | ton      |
| Restricted grade           | \$1.50     | ton      |
| All other special products | \$1.50     | ton      |

Additionally, growers may pay a voluntary assessment to the California Pear Growers (CPG). The CPG uses the funds to negotiate a price for growers who sell their pears to proprietary processors, and to foster markets for processed pears. CPG charges members \$2 per ton of processed fruit.

**Packinghouse.** 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 40% of the fresh market pears are hand wrap packed in 40 or 44 pound boxes at a cost of \$7.80 per box and 60% are packed in tight fill 36 pound boxes at \$5.70 per box. The packinghouse sells the processing pears to the cannery and receives the revenue. The grower receives payment from the packinghouse less packinghouse charges.

**Labor.** Hourly wages for workers are \$9.00 and \$7.25 per hour for machine and non-machine workers, respectively. Adding 34% for the employers share of federal and state payroll taxes, insurance, and other benefits gives the labor rates shown of \$12.06 and \$9.72 per hour for machine labor and non-machine labor, respectively. Labor time 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. Wages for a manager are not included. Returns above total costs are considered a return to management.

**Equipment Operating Costs.** Repair costs are based on purchase price, annual hours of use, total hours of life, and repair coefficients formulated by ASAE. Fuel and lubrication costs are also determined by ASAE equations based on maximum PTO horsepower, and fuel type. Prices for on-farm delivery of diesel and

gasoline are \$1.26 and \$1.51 per gallon, respectively. 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 6 for each piece of equipment used for the selected operation by the hours per acre. Tractor time is 10% higher than implement time for a given operation to account for setup, travel and down time.

**Interest On Operating Capital.** Interest on operating capital is based on cash operating costs and is calculated monthly until harvest at a nominal rate of 7.40% 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 grown 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 0.660% of the average value of the assets over their useful life. Liability insurance covers accidents on the farm and costs \$504 for the entire farm.

**Office Expense.** Office and business expenses are estimated at \$44 per acre. These expenses include office supplies, telephones, bookkeeping, accounting, legal fees, and road maintenance.

**Sanitation Services.** Sanitation services provide single portable toilets and washbasin for the orchard and cost the farm \$117 per month. This cost includes delivery and 8 months of weekly service.

**Investment Repairs.** Annual maintenance is calculated as 2 percent of the purchase price.

### Non-Cash Overhead

Non-cash overhead is calculated as the capital recovery cost for equipment and other farm investments.

**Capital Recovery Costs.** Capital recovery cost is the annual depreciation and interest costs for a capital investment. It is the amount of money required each year to recover the difference between the purchase price and salvage value (unrecovered capital). It is equivalent to the annual payment on a loan for the investment



with the down payment equal to the discounted salvage value. This is a more complex method of calculating ownership costs than straight-line depreciation and opportunity costs, but more accurately represents the annual costs of ownership because it takes the time value of money into account (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.

*Capital Recovery Factor.* Capital recovery factor is the amortization factor or annual payment whose present value at compound interest is 1. The amortization factor is a table value that corresponds to the interest rate used and the life of the machine.

*Interest Rate.* The interest rate of 6.41% used to calculate capital recovery cost is the United States Department of Agriculture-Economic Reporting Service's (USDA-ERS) ten-year average of California's agricultural sector long run rate of return to production assets from current income. It is used to reflect the long-term realized rate of return to these specialized resources that can only be used effectively in the agricultural sector. In other words, the next best alternative use for these resources is in another agricultural enterprise.

**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.

**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.

**Puffer Cabinets/Programmer.** The puffer is registered by Suterra LLC of Bend, Oregon. The puffer cabinet (dispenser) holds the aerosol canister. The dispenser emits a pheromone at preset intervals above a minimum ambient temperature threshold for 200 days. The programmer is for entering and checking the emission parameters. The puffer units should be checked periodically for proper emitting and done on an average of once per month. The grower purchases 1.5 cabinets per acre (first year rate) or 105 for 70 acres.

**Worker Housing.** Miscellaneous housing provided on the ranch to house field workers during harvest.

**Land.** Land values in the North Coast Region range from \$6,000 to \$7,000 per acre. Land in this study is valued at \$6,500 per acre or \$6,964 per producing acre.

**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 in *Sample Cost to Establish and Produce Pears, North Coast* represents the establishment cost per acre. For this study, this cost is \$10,024 per acre or \$701,680 for the 70-acre orchard. Establishment cost is amortized beginning in the sixth year over the remaining 95 years of production.

**Equipment.** Farm equipment is purchased new or used, but the study shows the current purchase price for new equipment. The new purchase price is adjusted to 60% to indicate a mix of new and used equipment. Annual ownership costs for equipment and other investments are shown in Tables 3 and 8. 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.

## ACKNOWLEDGEMENTS

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UC COOPERATIVE EXTENSION  
**Table 1. TRANSITION COSTS PER ACRE to PRODUCE PEARS**  
 NORTH COAST REGION - Lake County 2002  
 Standard Pest Control to Puffer Pest Control

| Operation                               | Total Labor & Material Costs per acre |               |               |               |
|---|---------------------------------------|---------------|---------------|---------------|
|   | Standard Cost                         | Puffer Year 1 | Puffer Year 2 | Puffer Year 5 |
| <b>Cultural:</b>                        |                                       |               |               |               |
| Pest Control - Dormant                  | 27                                    | 37            | 37            | 37            |
| Pest Control - Delayed Dormant          | 18                                    |               |               |               |
| Pest Control - Gophers 3X               | 10                                    | 10            | 10            | 10            |
| Pest Control - OBLR                     |                                       | 74            | 38            | 38            |
| Pest Control - Scab                     | 67                                    | 67            | 67            | 67            |
| Pest Control - Psylla/Mites             | 204                                   | 68            |               |               |
| Pest Control - Psylla                   |                                       | 68            | 68            | 46            |
| Pest Control - Blight*                  | 154                                   | 154           | 171           | 171           |
| Pest Control - Blight & Scab            | 135                                   | 135           | 135           | 135           |
| Pest Control - Blight & Cover (CM)      | 58                                    | 54            |               |               |
| Pest Control - Cover Spray (CM)         | 108                                   | 23            |               |               |
| Pest Control - Hang Puffers             |                                       | 121           | 105           | 105           |
| Pest Control - Inspect Puffers          |                                       | 1             | 1             | 1             |
| Pest Control - Check Batteries Puffers  |                                       | 1             | 1             | 1             |
| Pest Control - Lures                    |                                       | 7             | 7             | 7             |
| Pest Control - OBLR Traps               |                                       | 1             | 1             | 1             |
| Pest Control - CM Traps                 |                                       | 3             | 3             | 3             |
| Pest Control - PCA Fees                 | 35                                    | 40            | 40            | 40            |
| Weed Control - Strip Spray 3X           | 60                                    | 60            | 60            | 60            |
| Weed Control - Mow Middles 7X           | 59                                    | 59            | 59            | 59            |
| Frost Protection - Sprinkle             | 64                                    | 64            | 64            | 64            |
| Irrigate - Sprinkle                     | 76                                    | 76            | 76            | 76            |
| Prune & Train Trees                     | 819                                   | 819           | 819           | 819           |
| Fertilize - Nitrogen                    | 22                                    | 22            | 22            | 22            |
| Fertilize - Leaf Analysis               | 19                                    | 19            | 19            | 19            |
| Growth Regulator Application            | 34                                    | 34            | 34            | 34            |
| Pickup Truck Use                        | 77                                    | 78            | 78            | 78            |
| ATV Use                                 | 61                                    | 61            | 61            | 61            |
| <b>TOTAL CULTURAL COSTS</b>             | <b>2,107</b>                          | <b>2,157</b>  | <b>1,976</b>  | <b>1,955</b>  |
| <b>CULTURAL COSTS/TON (20 Ton/acre)</b> | <b>105</b>                            | <b>108</b>    | <b>99</b>     | <b>98</b>     |
| <b>Harvest:</b>                         |                                       |               |               |               |
| Harvest Fruit - 1st Pick                | 317                                   | 317           | 317           | 317           |
| Harvest Fruit - 2nd Pick                | 634                                   | 634           | 634           | 634           |
| Haul To Packinghouse                    | 157                                   | 157           | 157           | 157           |
| <b>TOTAL HARVEST COSTS</b>              | <b>1,108</b>                          | <b>1,108</b>  | <b>1,108</b>  | <b>1,108</b>  |
| <b>Packing:</b>                         |                                       |               |               |               |
| Sort/Pack/Sell Fruit                    | 3,114                                 | 3,114         | 3,114         | 3,114         |
| <b>TOTAL PACKING COSTS</b>              | <b>3,114</b>                          | <b>3,114</b>  | <b>3,114</b>  | <b>3,114</b>  |
| <b>Assessment:</b>                      |                                       |               |               |               |
| California Pear Advisory Board          | 177                                   | 177           | 177           | 177           |
| California Pear Growers                 | 23                                    | 23            | 23            | 23            |
| <b>TOTAL ASSESSMENT COSTS</b>           | <b>201</b>                            | <b>201</b>    | <b>201</b>    | <b>201</b>    |
| <b>Postharvest:</b>                     |                                       |               |               |               |
| Irrigate                                | 65                                    | 65            | 65            | 65            |
| Fertilize - Nitrogen                    | 22                                    | 22            | 22            | 22            |
| Pest - Psylla                           | 18                                    | 18            | 18            |               |
| <b>TOTAL POSTHARVEST COSTS</b>          | <b>104</b>                            | <b>104</b>    | <b>104</b>    | <b>86</b>     |
| Interest on operating capital @ 7.40%   | 98                                    | 102           | 98            | 98            |
| <b>TOTAL OPERATING COSTS/ACRE</b>       | <b>6,731</b>                          | <b>6,785</b>  | <b>6,601</b>  | <b>6,561</b>  |
| <b>TOTAL OPERATING COSTS/TON</b>        | <b>337</b>                            | <b>339</b>    | <b>330</b>    | <b>328</b>    |

\*Blight sprays costs do not change, only methods and combinations different.

UC COOPERATIVE EXTENSION

Table 1. continued

| Operation                            | Total Labor & Material Costs per acre |               |               |               |
|--------------------------------------|---------------------------------------|---------------|---------------|---------------|
|                                      | Standard Cost                         | Puffer Year 1 | Puffer Year 2 | Puffer Year 5 |
| Cash Overhead:                       |                                       |               |               |               |
| Office Expense                       | 44                                    | 44            | 44            | 44            |
| Liability Insurance                  | 7                                     | 7             | 7             | 7             |
| Sanitation Fee                       | 13                                    | 13            | 13            | 13            |
| Property Taxes                       | 145                                   | 145           | 144           | 144           |
| Property Insurance                   | 49                                    | 49            | 49            | 49            |
| Investment Repairs                   | 77                                    | 78            | 78            | 78            |
| <b>TOTAL CASH OVERHEAD COSTS</b>     | <b>336</b>                            | <b>337</b>    | <b>336</b>    | <b>335</b>    |
| <b>TOTAL CASH COSTS/ACRE</b>         | <b>7,067</b>                          | <b>7,122</b>  | <b>6,937</b>  | <b>6,875</b>  |
| <b>TOTAL CASH COSTS/TON</b>          | <b>353</b>                            | <b>357</b>    | <b>347</b>    | <b>344</b>    |
| Non Cash Overhead:                   |                                       |               |               |               |
| Buildings                            | 58                                    | 58            | 58            | 58            |
| Worker Housing                       | 11                                    | 11            | 11            | 11            |
| Fuel Tanks                           | 4                                     | 4             | 4             | 4             |
| Shop Tools                           | 18                                    | 18            | 18            | 18            |
| Irrigation System                    | 154                                   | 154           | 154           | 154           |
| Ladders - 16 Each                    | 4                                     | 4             | 4             | 4             |
| Land                                 | 446                                   | 446           | 446           | 446           |
| Pear Establishment                   | 644                                   | 644           | 644           | 644           |
| Puffer Cabinets (105)                |                                       | 14            | 14            | 14            |
| Puffer Programmer                    |                                       | 1             | 1             | 1             |
| Equipment                            | 191                                   | 196           | 174           | 174           |
| <b>TOTAL NON-CASH OVERHEAD COSTS</b> | <b>1,530</b>                          | <b>1,550</b>  | <b>1,529</b>  | <b>1,529</b>  |
| <b>TOTAL COSTS/ACRE</b>              | <b>8,697</b>                          | <b>8,673</b>  | <b>8,466</b>  | <b>8,426</b>  |
| <b>TOTAL COSTS/TON</b>               | <b>435</b>                            | <b>434</b>    | <b>423</b>    | <b>421</b>    |

UC COOPERATIVE EXTENSION  
**Table 1A. TRANSITION COSTS AND RETURNS PER ACRE to PRODUCE PEARS**  
 NORTH COAST REGION- Lake County 2002  
 Standard to Puffer

|                            | Cost/<br>Unit | Unit | Standard      |               | Puffer Year 1 |               | Puffer Year 2 |               | Puffer Year 5 |               |
|----------------------------|---------------|------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
|                            |               |      | Amt./<br>Acre | Cost/<br>Acre | Amt./<br>Acre | Cost/<br>Acre | Amt./<br>Acre | Cost/<br>Acre | Amt./<br>Acre | Cost/<br>Acre |
| <b>GROSS RETURNS</b>       |               |      |               |               |               |               |               |               |               |               |
| Fresh                      | 592.00        | ton  | 8.40          | 4,973         | 8.40          | 4,973         | 8.40          | 4,973         | 8.40          | 4,973         |
| Processed/Unrestricted     | 220.00        | ton  | 8.00          | 1,760         | 8.00          | 1,760         | 8.00          | 1,760         | 8.00          | 1,760         |
| Off-Grades/Restricted      | 20.00         | ton  | 3.60          | 72            | 3.60          | 72            | 3.60          | 72            | 3.60          | 72            |
| <b>TOTAL GROSS RETURNS</b> |               |      | <b>20.00</b>  | <b>6,805</b>  | <b>20.00</b>  | <b>6,805</b>  | <b>20.00</b>  | <b>6,805</b>  | <b>20.00</b>  | <b>6,805</b>  |
| <b>OPERATING COSTS</b>     |               |      |               |               |               |               |               |               |               |               |
| <b>Insecticide:</b>        |               |      |               |               |               |               |               |               |               |               |
| 415/440 Oil                | 2.80          | gal  | 11.00         | 31            | 12.00         | 34            | 9.00          | 25            | 5.00          | 14            |
| Dormant Oil Plus           | 2.55          | gal  | 8.00          | 20            | 12.00         | 31            | 12.00         | 31            | 12.00         | 31            |
| Guthion 50W                | 8.10          | lb   | 9.00          | 73            | 4.50          | 36            |               |               |               |               |
| Imidan 70WSB               | 6.63          | lb   | 6.00          | 40            |               |               |               |               |               |               |
| Agri-Mek                   | 4.88          | oz   | 36.00         | 176           | 24.00         | 117           | 12.00         | 59            | 7.50          | 37            |
| Lorsban 4E                 | 5.13          | pt   |               |               | 4.00          | 21            | 4.00          | 21            | 4.00          | 21            |
| Dipel 2X                   | 12.00         | lb   |               |               | 2.00          | 24            |               |               |               |               |
| <b>Herbicide:</b>          |               |      |               |               |               |               |               |               |               |               |
| Gramoxone Extra            | 4.66          | pint | 1.00          | 5             | 1.00          | 5             | 1.00          | 5             | 1.00          | 5             |
| Goal 2XL                   | 15.35         | pint | 2.00          | 31            | 2.00          | 31            | 2.00          | 31            | 2.00          | 31            |
| Roundup Ultra              | 4.50          | pint | 3.00          | 14            | 3.00          | 14            | 3.00          | 14            | 3.00          | 14            |
| <b>Rodenticide:</b>        |               |      |               |               |               |               |               |               |               |               |
| Rodent Bait                | 5.62          | lb   | 1.00          | 6             | 1.00          | 6             | 1.00          | 6             | 1.00          | 6             |
| <b>Fungicide:</b>          |               |      |               |               |               |               |               |               |               |               |
| Ziram WDG 76               | 2.65          | lb   | 8.00          | 21            | 8.00          | 21            | 8.00          | 21            | 8.00          | 21            |
| Flint                      | 12.99         | oz   | 5.00          | 65            | 5.00          | 65            | 5.00          | 65            | 5.00          | 65            |
| Syllit 65W                 | 11.50         | lb   | 3.00          | 35            | 3.00          | 35            | 3.00          | 35            | 3.00          | 35            |
| <b>Antibiotic:</b>         |               |      |               |               |               |               |               |               |               |               |
| Mycoshield                 | 18.95         | lb   | 7.50          | 142           | 7.50          | 142           | 7.00          | 133           | 7.00          | 133           |
| Agri-mycin 17              | 1.09          | oz   | 60.00         | 65            | 60.00         | 65            | 56.00         | 61            | 56.00         | 61            |
| <b>Lures/Confusion:</b>    |               |      |               |               |               |               |               |               |               |               |
| Puffer Canister            | 80.00         | each |               |               | 1.50          | 120           | 1.30          | 104           | 1.30          | 104           |
| Trap 1CP (Double Traps)    | 2.60          | each |               |               | 2.08          | 2             | 0.80          | 2             | 0.80          | 2             |
| Lure CM 1X                 | 1.94          | each |               |               | 4.68          | 5             | 2.40          | 5             | 2.40          | 5             |
| Lure CM 10X                | 1.23          | each |               |               | 1.50          | 1             | 1.20          | 1             | 1.20          | 1             |
| ICP Liner                  | 1.06          | each |               |               | 0.64          | 1             | 0.60          | 1             | 0.60          | 1             |
| Lure OBLR-W                | 1.94          | each |               |               | 1.00          | 2             | 1.00          | 2             | 1.00          | 2             |
| <b>Contract:</b>           |               |      |               |               |               |               |               |               |               |               |
| Pruning Crew               | 4.50          | tree | 182.00        | 819           | 182.00        | 819           | 182.00        | 819           | 182.00        | 819           |
| Hand Pick                  | 45.00         | ton  | 20.00         | 900           | 20.00         | 900           | 20.00         | 900           | 20.00         | 900           |
| PCA Fees                   | 35.00         | acre | 1.00          | 35            | 1.10          | 40            | 1.00          | 40            | 1.00          | 40            |
| Leaf Analysis              | 18.50         | acre | 1.00          | 19            | 1.00          | 19            | 1.00          | 19            | 1.00          | 19            |
| <b>Water:</b>              |               |      |               |               |               |               |               |               |               |               |
| Water - Frost Protection   | 2.75          | acin | 18.00         | 49            | 18.00         | 49            | 18.00         | 49            | 18.00         | 49            |
| Water - Pumped             | 2.75          | acin | 30.03         | 83            | 30.03         | 83            | 30.03         | 83            | 30.03         | 83            |
| <b>Fertilizer:</b>         |               |      |               |               |               |               |               |               |               |               |
| 46-0-0 (Urea)              | 0.22          | lb N | 200.00        | 43            | 200.00        | 43            | 200.00        | 43            | 200.00        | 43            |
| <b>Growth Regulator</b>    |               |      |               |               |               |               |               |               |               |               |
| K-Salt Fruit Fix 200       | 1.15          | oz   | 24.00         | 28            | 24.00         | 28            | 24.00         | 28            | 24.00         | 28            |

UC COOPERATIVE EXTENSION  
Table 1A. continued

|   | Cost/<br>Unit | Unit | Standard      |               | Puffer Year 1 |               | Puffer Year 2 |               | Puffer Year 5 |               |
|---|---------------|------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
|   |               |      | Amt./<br>Acre | Cost/<br>Acre | Amt./<br>Acre | Cost/<br>Acre | Amt./<br>Acre | Cost/<br>Acre | Amt./<br>Acre | Cost/<br>Acre |
| <b>Rent:</b>                              |               |      |               |               |               |               |               |               |               |               |
| Forklift Rental                           | 5.63          | week | 2.00          | 11            | 2.00          | 11            | 2.00          | 11            | 2.00          | 11            |
| <b>Custom:</b>                            |               |      |               |               |               |               |               |               |               |               |
| Pack - Fresh                              | 326.50        | ton  | 8.40          | 2,743         | 8.40          | 2,743         | 8.40          | 2,743         | 8.40          | 2,743         |
| Shed Cost - Processing                    | 32.00         | ton  | 11.60         | 371           | 11.60         | 371           | 11.60         | 371           | 11.60         | 371           |
| <b>Assessment:</b>                        |               |      |               |               |               |               |               |               |               |               |
| Fresh Market -Pear                        | 0.30          | box  | 467.00        | 140           | 467.00        | 140           | 467.00        | 140           | 467.00        | 140           |
| Processed - Unrestricted                  | 4.00          | ton  | 8.00          | 32            | 8.00          | 32            | 8.00          | 32            | 8.00          | 32            |
| Processed - Restricted                    | 1.50          | ton  | 3.60          | 5             | 3.60          | 5             | 3.60          | 5             | 3.60          | 5             |
| CA Pear Growers Association               | 2.00          | ton  | 11.60         | 23            | 11.60         | 23            | 11.60         | 23            | 11.60         | 23            |
| Labor (machine)                           | 12.06         | hrs  | 28.62         | 345           | 27.96         | 337           | 2680          | 319           | 26.47         | 319           |
| Labor (non-machine)                       | 9.72          | hrs  | 7.54          | 73            | 9.72          | 76            | 7.83          | 76            | 7.83          | 76            |
| Fuel - Gas                                | 1.51          | gal  | 12.05         | 18            | 12.05         | 18            | 12.05         | 18            | 12.05         | 18            |
| Fuel - Diesel                             | 1.26          | gal  | 67.02         | 84            | 65.39         | 82            | 62.53         | 79            | 62.13         | 78            |
| Lube                                      |               |      |               | 15            |               | 15            |               | 15            |               | 14            |
| Machinery repair                          |               |      |               | 74            |               | 72            |               | 67            |               | 66            |
| Interest on operating capital @ 7.40%     |               |      |               | 98            |               | 100           |               | 97            |               | 97            |
| <b>TOTAL OPERATING COSTS/ACRE</b>         |               |      |               | <b>6,731</b>  |               | <b>6,785</b>  |               | <b>6,601</b>  |               | <b>6,561</b>  |
| <b>TOTAL OPERATING COSTS/TON</b>          |               |      |               | 337           |               | 339           |               | 330           |               | 328           |
| <b>NET RETURNS ABOVE OPERATING COSTS</b>  |               |      |               | 73            |               | 20            |               | 204           |               | 244           |
| <b>TOTAL CASH OVERHEAD COSTS/ACRE</b>     |               |      |               | 336           |               | 337           |               | 335           |               | 335           |
| <b>TOTAL CASH COSTS/ACRE</b>              |               |      |               | <b>7,067</b>  |               | <b>7,122</b>  |               | <b>6,937</b>  |               | <b>6,897</b>  |
| <b>TOTAL CASH COSTS/TON</b>               |               |      |               | 353           |               | 356           |               | 347           |               | 345           |
| <b>TOTAL NON-CASH OVERHEAD COSTS/ACRE</b> |               |      |               | 1,530         |               | 1,550         |               | 1,529         |               | 1,529         |
| <b>TOTAL COSTS/ACRE</b>                   |               |      |               | <b>8,597</b>  |               | <b>8,673</b>  |               | <b>8,466</b>  |               | <b>8,426</b>  |
| <b>TOTAL COSTS/TON</b>                    |               |      |               | 430           |               | 434           |               | 423           |               | 421           |
| <b>NET RETURNS ABOVE TOTAL COSTS</b>      |               |      |               | <b>-1,793</b> |               | <b>-1,868</b> |               | <b>-1,661</b> |               | <b>-1,621</b> |

UC COOPERATIVE EXTENSION  
Table 1B. PUFFER OPERATION LABOR - UCCE  
NORTH COAST REGION - 2002

| OPERATION                    | Hours per acre (0.1 hr = 6 min) |      |      |      |      |      |      |
|------------------------------|---------------------------------|------|------|------|------|------|------|
|                              | Mar                             | Apr  | May  | Jun  | Jul  | Aug  | Sep  |
| <b>Puffers :</b>             |                                 |      |      |      |      |      |      |
| Hang Puffers                 | 0.08                            |      |      |      |      |      |      |
| Inspect Puffers              | 0.02                            | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |      |
| Check Batteries and Emission |                                 |      |      |      | 0.09 |      |      |
| <b>Trapping:</b>             |                                 |      |      |      |      |      |      |
| Hang CM Traps                | 0.10                            |      |      |      |      |      |      |
| Hang OBLR Traps              |                                 | 0.07 |      |      |      |      |      |
| Take Down Traps              |                                 |      |      |      |      |      | 0.11 |
| Change Lures                 |                                 | 0.13 | 0.13 | 0.13 | 0.13 | 0.13 |      |
| Check Traps                  |                                 | 0.14 | 0.37 | 0.40 | 0.28 | 0.29 | 0.11 |
| Compile Weekly Counts        |                                 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 |
| Egg Counts                   |                                 |      | 0.05 | 0.05 | 0.05 |      |      |
| <b>Fruit Sampling:*</b>      |                                 |      |      |      |      |      |      |
| Check Tree Fruit             |                                 |      |      | 0.17 | 0.17 |      | 0.09 |
| Check Ground Fruit           |                                 |      |      |      | 0.06 |      |      |
| Bin Counts                   |                                 |      |      |      |      | 0.24 |      |

\*Sample sizes: Tree Fruit - 1,000 (June); 2,000 (July); 300 (Sept)  
Ground Fruit - 500 (early July). Bin Counts - 1,000 (Aug)

U.C. COOPERATIVE EXTENSION  
**Table 2. COSTS PER ACRE to PRODUCE PEARS USING PUFFERS**  
 NORTH COAST REGION - Lake County 2002

| Operation                             | Operation<br>Time<br>(Hrs/A) | Cash and Labor Cost per acre |                         |                  |                 |              | Total<br>Cost | Your<br>Cost |
|---------------------------------------|------------------------------|------------------------------|-------------------------|------------------|-----------------|--------------|---------------|--------------|
|                                       |                              | Labor<br>Cost                | Fuel, Lube<br>& Repairs | Material<br>Cost | Custom/<br>Rent |              |               |              |
| <b>Cultural:</b>                      |                              |                              |                         |                  |                 |              |               |              |
| Pest - Dormant                        | 0.28                         | 4                            | 3                       | 31               | 0               | 37           |               |              |
| Pest - Gophers 3X                     | 0.20                         | 3                            | 1                       | 6                | 0               | 10           |               |              |
| Pest - Budbreak OBLR                  | 0.28                         | 4                            | 3                       | 32               | 0               | 38           |               |              |
| Pest - Scab                           | 0.55                         | 8                            | 5                       | 54               | 0               | 67           |               |              |
| Pest - Scab/Blight                    | 0.55                         | 8                            | 5                       | 122              | 0               | 135          |               |              |
| Pest - Blight (Alternate Rows)        | 1.38                         | 20                           | 13                      | 138              | 0               | 171          |               |              |
| Pest - Psylla                         | 0.28                         | 4                            | 3                       | 39               | 0               | 46           |               |              |
| Traps CM- 3/5acres PCA                | 0.00                         | 0                            | 0                       | 3                | 0               | 3            |               |              |
| Traps - Change lures PCA              | 0.00                         | 0                            | 0                       | 7                | 0               | 7            |               |              |
| Traps - OBLR 1/5acres PCA             | 0.00                         | 0                            | 0                       | 1                | 0               | 1            |               |              |
| Puffers - Hang 13/10acres Grower      | 0.08                         | 1                            | 0                       | 104              | 0               | 105          |               |              |
| Puffers - Inspect Grower              | 0.12                         | 1                            | 0                       | 0                | 0               | 1            |               |              |
| Puffers - Check Batteries Grower      | 0.09                         | 1                            | 0                       | 0                | 0               | 1            |               |              |
| Pest - PCA Fees                       | 0.00                         | 0                            | 0                       | 0                | 40              | 40           |               |              |
| Weed - Strip Spray 3X                 | 0.53                         | 8                            | 4                       | 49               | 0               | 60           |               |              |
| Weed - Mow Middles 7X                 | 2.52                         | 36                           | 22                      | 0                | 0               | 59           |               |              |
| Prune & Train Trees                   | 0.00                         | 0                            | 0                       | 0                | 819             | 819          |               |              |
| Frost Protection - Sprinkle           | 1.54                         | 15                           | 0                       | 49               | 0               | 64           |               |              |
| Irrigate - Sprinkle                   | 3.00                         | 29                           | 0                       | 47               | 0               | 76           |               |              |
| Fertilize - Nitrogen                  | 0.00                         | 0                            | 0                       | 22               | 0               | 22           |               |              |
| Fertilize - Leaf Analysis             | 0.00                         | 0                            | 0                       | 0                | 19              | 19           |               |              |
| Growth Regulator                      | 0.28                         | 4                            | 3                       | 28               | 0               | 34           |               |              |
| Pickup Truck Use                      | 3.80                         | 55                           | 23                      | 0                | 0               | 78           |               |              |
| ATV Use                               | 3.80                         | 55                           | 6                       | 0                | 0               | 61           |               |              |
| <b>TOTAL CULTURAL COSTS</b>           | <b>19.28</b>                 | <b>256</b>                   | <b>90</b>               | <b>731</b>       | <b>877</b>      | <b>1,955</b> |               |              |
| <b>Harvest:</b>                       |                              |                              |                         |                  |                 |              |               |              |
| Harvest Fruit - 1st Pick              | 0.32                         | 9                            | 4                       | 0                | 304             | 317          |               |              |
| Harvest Fruit - 2nd Pick              | 0.64                         | 19                           | 8                       | 0                | 607             | 634          |               |              |
| Haul To Packinghouse                  | 5.72                         | 83                           | 75                      | 0                | 0               | 157          |               |              |
| <b>TOTAL HARVEST COSTS</b>            | <b>6.68</b>                  | <b>111</b>                   | <b>86</b>               | <b>0</b>         | <b>911</b>      | <b>1,108</b> |               |              |
| <b>Packing:</b>                       |                              |                              |                         |                  |                 |              |               |              |
| Sort/Pack/Sell Fruit                  | 0.00                         | 0                            | 0                       | 0                | 3,114           | 3,114        |               |              |
| <b>TOTAL PACKING COSTS</b>            | <b>0.00</b>                  | <b>0</b>                     | <b>0</b>                | <b>0</b>         | <b>3,114</b>    | <b>3,114</b> |               |              |
| <b>Assessment:</b>                    |                              |                              |                         |                  |                 |              |               |              |
| California Pear Advisory Board        | 0.00                         | 0                            | 0                       | 177              | 0               | 177          |               |              |
| California Pear Growers               | 0.00                         | 0                            | 0                       | 23               | 0               | 23           |               |              |
| <b>TOTAL ASSESSMENT COSTS</b>         | <b>0.00</b>                  | <b>0</b>                     | <b>0</b>                | <b>201</b>       | <b>0</b>        | <b>201</b>   |               |              |
| <b>Postharvest:</b>                   |                              |                              |                         |                  |                 |              |               |              |
| Irrigate                              | 3                            | 29                           | 0                       | 35               | 0               | 65           |               |              |
| Fertilize - Nitrogen                  | 0                            | 0                            | 0                       | 22               | 0               | 22           |               |              |
| <b>TOTAL POSTHARVEST COSTS</b>        | <b>3</b>                     | <b>29</b>                    | <b>0</b>                | <b>57</b>        | <b>0</b>        | <b>86</b>    |               |              |
| Interest on operating capital @ 7.40% |                              |                              |                         |                  |                 | 97           |               |              |
| <b>TOTAL OPERATING COSTS/ACRE</b>     |                              | <b>395</b>                   | <b>176</b>              | <b>989</b>       | <b>4,903</b>    | <b>6,561</b> |               |              |
| <b>TOTAL OPERATING COSTS/TON</b>      |                              |                              |                         |                  |                 | <b>328</b>   |               |              |



UC COOPERATIVE EXTENSION

**Table 2. Continued**

| Operation                            | Cash and Labor Cost per acre |                    |                      |                  |             |  | Total Cost   | Your Cost |
|--------------------------------------|------------------------------|--------------------|----------------------|------------------|-------------|--|--------------|-----------|
|                                      | Operation Time (Hrs/A)       | Labor Cost         | Fuel, Lube & Repairs | Material Cost    | Custom/Rent |  |              |           |
| <b>CASH OVERHEAD:</b>                |                              |                    |                      |                  |             |  |              |           |
| Office Expense                       |                              |                    |                      |                  |             |  | 44           |           |
| Liability Insurance                  |                              |                    |                      |                  |             |  | 7            |           |
| Sanitation Fee                       |                              |                    |                      |                  |             |  | 13           |           |
| Property Taxes                       |                              |                    |                      |                  |             |  | 144          |           |
| Property Insurance                   |                              |                    |                      |                  |             |  | 49           |           |
| Investment Repairs                   |                              |                    |                      |                  |             |  | 78           |           |
| <b>TOTAL CASH OVERHEAD COSTS</b>     |                              |                    |                      |                  |             |  | <b>335</b>   |           |
| <b>TOTAL CASH COSTS/ACRE</b>         |                              |                    |                      |                  |             |  | <b>6,897</b> |           |
| <b>TOTAL CASH COSTS/TON</b>          |                              |                    |                      |                  |             |  | <b>345</b>   |           |
| Non Cash Overhead                    |                              | Per producing Acre |                      | Annual Cost      |             |  |              |           |
|                                      |                              |                    |                      | Capital Recovery |             |  |              |           |
| Buildings                            |                              | 638                |                      | 58               |             |  | 58           |           |
| Worker Housing                       |                              | 117                |                      | 11               |             |  | 11           |           |
| Fuel Tanks                           |                              | 50                 |                      | 4                |             |  | 4            |           |
| Shop Tools                           |                              | 181                |                      | 18               |             |  | 18           |           |
| Irrigation System                    |                              | 1,894              |                      | 154              |             |  | 154          |           |
| Ladders - 16 Each                    |                              | 31                 |                      | 4                |             |  | 4            |           |
| Land                                 |                              | 6,964              |                      | 446              |             |  | 446          |           |
| Pear Establishment                   |                              | 10,024             |                      | 644              |             |  | 644          |           |
| Puffer Cabinet (105)                 |                              | 60                 |                      | 14               |             |  | 14           |           |
| Puffer Programmer                    |                              | 5                  |                      | 1                |             |  | 1            |           |
| Equipment                            |                              | 1,472              |                      | 174              |             |  | 174          |           |
| <b>TOTAL NON-CASH OVERHEAD COSTS</b> |                              | <b>21,437</b>      |                      | <b>1,529</b>     |             |  | <b>1,529</b> |           |
| <b>TOTAL COSTS/ACRE</b>              |                              |                    |                      |                  |             |  | <b>8,426</b> |           |
| <b>TOTAL COSTS/TON</b>               |                              |                    |                      |                  |             |  | <b>421</b>   |           |

U.C. COOPERATIVE EXTENSION  
**Table 3. COSTS AND RETURNS PER ACRE to PRODUCE PEARS USING PUFFERS**  
 NORTH COAST REGION- Lake County - 2002

|                                  | Quantity/<br>Acre | Unit | Price or<br>Cost/Unit | Value or<br>Cost/Acre | Your<br>Cost |
|----------------------------------|-------------------|------|-----------------------|-----------------------|--------------|
| <b>GROSS RETURNS</b>             |                   |      |                       |                       |              |
| Fresh                            | 8.40              | ton  | 592.00                | 4,973                 |              |
| Processing                       | 8.00              | ton  | 220.00                | 1,760                 |              |
| Off-Grades                       | 3.60              | ton  | 20.00                 | 72                    |              |
| <b>TOTAL GROSS RETURNS</b>       | <b>20.00</b>      |      | <b>*340.25</b>        | <b>6,805</b>          |              |
| <b>OPERATING COSTS</b>           |                   |      |                       |                       |              |
| <b>Insecticide:</b>              |                   |      |                       |                       |              |
| Dormant Oil Plus                 | 12.00             | gal  | 2.55                  | 31                    |              |
| 415 Oil                          | 5.00              | gal  | 2.80                  | 14                    |              |
| Lorsban 4 E                      | 4.00              | pint | 5.13                  | 21                    |              |
| Agri-Mek                         | 7.50              | oz   | 4.88                  | 37                    |              |
| <b>Herbicide:</b>                |                   |      |                       |                       |              |
| Gramoxone Extra                  | 1.00              | pint | 4.66                  | 5                     |              |
| Goal 2XL                         | 2.00              | pint | 15.35                 | 31                    |              |
| Roundup Ultra                    | 3.00              | pint | 4.50                  | 14                    |              |
| <b>Rodenticide:</b>              |                   |      |                       |                       |              |
| Rodent Bait                      | 1.00              | lb   | 5.62                  | 6                     |              |
| <b>Fungicide:</b>                |                   |      |                       |                       |              |
| Ziram WDG 76                     | 8.00              | lb   | 2.65                  | 21                    |              |
| Flint                            | 5.00              | oz   | 12.99                 | 65                    |              |
| Syllit 65W                       | 3.00              | lb   | 11.50                 | 35                    |              |
| <b>Antibiotic:</b>               |                   |      |                       |                       |              |
| Mycoshield                       | 7.00              | lb   | 18.95                 | 133                   |              |
| Agri-mycin 17                    | 56.00             | oz   | 1.09                  | 61                    |              |
| <b>Water:</b>                    |                   |      |                       |                       |              |
| Water - Frost Protection         | 18.00             | acin | 2.75                  | 49                    |              |
| Water - Irrigation               | 30.03             | acin | 2.75                  | 83                    |              |
| <b>Contract:</b>                 |                   |      |                       |                       |              |
| Pruning Crew                     | 182.00            | tree | 4.50                  | 819                   |              |
| Hand Pick                        | 20.00             | ton  | 45.00                 | 900                   |              |
| PCA Fees                         | 1.00              | acre | 40.00                 | 40                    |              |
| Leaf Analysis                    | 1.00              | acre | 18.50                 | 19                    |              |
| <b>Fertilizer:</b>               |                   |      |                       |                       |              |
| 46-0-0 (Urea)                    | 200.00            | lb N | 0.22                  | 43                    |              |
| <b>Growth Regulator:</b>         |                   |      |                       |                       |              |
| Fruit Fix 200                    | 24.00             | oz   | 1.15                  | 28                    |              |
| <b>Rent:</b>                     |                   |      |                       |                       |              |
| Forklift Rental                  | 2.00              | week | 5.63                  | 11                    |              |
| <b>Custom:</b>                   |                   |      |                       |                       |              |
| Pack - Fresh                     | 8.40              | ton  | 326.50                | 2,743                 |              |
| Shed Cost - Processing           | 11.60             | ton  | 32.00                 | 371                   |              |
| <b>Assessment:</b>               |                   |      |                       |                       |              |
| Fresh Market – Tight Fill Carton | 467.00            | box  | 0.30                  | 140                   |              |
| Processed - Unrestricted         | 8.00              | ton  | 4.00                  | 32                    |              |
| Processed - Restricted           | 3.60              | ton  | 1.50                  | 5                     |              |
| CA Pear Growers Association      | 11.60             | ton  | 2.00                  | 23                    |              |
| <b>Lures/Confusion:</b>          |                   |      |                       |                       |              |
| Puffer Canister                  | 1.30              | each | 80.00                 | 104                   |              |
| Trap 1CP (2 traps)               | 0.80              | each | 2.60                  | 2                     |              |
| Lure CM 1X                       | 2.40              | each | 1.94                  | 5                     |              |
| Lure CM 10X                      | 1.20              | each | 1.23                  | 1                     |              |
| Lure OBLR-W                      | 1.00              | each | 1.94                  | 2                     |              |
| Liner 1CP                        | 0.60              | each | 1.06                  | 1                     |              |

## UC COOPERATIVE EXTENSION

Table 3. continued

|   | Quantity/ |      | Price or<br>Cost/Unit | Value or<br>Cost/Acre | Your<br>Cost |
|---|-----------|------|-----------------------|-----------------------|--------------|
|   | Acre      | Unit |                       |                       |              |
| Labor (machine)                                   | 26.47     | hrs  | 12.06                 | 319                   |              |
| Labor (non-machine)                               | 7.83      | hrs  | 9.72                  | 76                    |              |
| Fuel - Gas  | 12.05     | gal  | 1.51                  | 18                    |              |
| Fuel - Diesel                                     | 62.13     | gal  | 1.26                  | 78                    |              |
| Lube  |           |      |                       | 14                    |              |
| Machinery repair                                  |           |      |                       | 66                    |              |
| Interest on operating capital @ 7.40%             |           |      |                       | 97                    |              |
| <b>TOTAL OPERATING COSTS/ACRE</b>                 |           |      |                       | <b>6,561</b>          |              |
| <b>TOTAL OPERATING COSTS/TON</b>                  |           |      |                       | <b>328</b>            |              |
| <b>NET RETURNS ABOVE OPERATING COSTS</b>          |           |      |                       | <b>244</b>            |              |
| <b>CASH OVERHEAD COSTS:</b>                       |           |      |                       |                       |              |
| Office Expense                                    |           |      |                       | 44                    |              |
| Liability Insurance                               |           |      |                       | 7                     |              |
| Sanitation Fee                                    |           |      |                       | 13                    |              |
| Property Taxes                                    |           |      |                       | 144                   |              |
| Property Insurance                                |           |      |                       | 49                    |              |
| Investment Repairs                                |           |      |                       | 78                    |              |
| <b>TOTAL CASH OVERHEAD COSTS/ACRE</b>             |           |      |                       | <b>336</b>            |              |
| <b>TOTAL CASH COSTS/ACRE</b>                      |           |      |                       | <b>6,897</b>          |              |
| <b>TOTAL CASH COSTS/TON</b>                       |           |      |                       | <b>345</b>            |              |
| <b>NON-CASH OVERHEAD COSTS (Capital Recovery)</b> |           |      |                       |                       |              |
| Buildings   |           |      |                       | 58                    |              |
| Worker Housing                                    |           |      |                       | 11                    |              |
| Fuel Tanks 2-500g                                 |           |      |                       | 4                     |              |
| Shop Tools  |           |      |                       | 18                    |              |
| Irrigation System                                 |           |      |                       | 154                   |              |
| Ladders - 16 Each                                 |           |      |                       | 4                     |              |
| Land  |           |      |                       | 446                   |              |
| Pear Establishment                                |           |      |                       | 644                   |              |
| Puffer Cabinets (105)                             |           |      |                       | 14                    |              |
| Puffer Programmer                                 |           |      |                       | 1                     |              |
| Equipment   |           |      |                       | 174                   |              |
| <b>TOTAL NON-CASH OVERHEAD COSTS/ACRE</b>         |           |      |                       | <b>1,529</b>          |              |
| <b>TOTAL COSTS/ACRE</b>                           |           |      |                       | <b>8,426</b>          |              |
| <b>TOTAL COSTS/TON</b>                            |           |      |                       | <b>421</b>            |              |
| <b>NET RETURNS ABOVE TOTAL COSTS</b>              |           |      |                       | <b>-1,621</b>         |              |

\*weighted overall return

UC COOPERATIVE EXTENSION  
**Table 4. MONTHLY CASH COSTS PER ACRE to PRODUCE PEARS USING PUFFERS**  
 NORTH COAST REGION - Lake County - 2002

| Beginning JAN 02<br>Ending DEC 02   | JAN<br>02  | FEB<br>02 | MAR<br>02  | APR<br>02  | MAY<br>02  | JUN<br>02  | JUL<br>02  | AUG<br>02    | SEP<br>02 | OCT<br>02 | NOV<br>02 | DEC<br>02 | TOTAL        |
|-------------------------------------|------------|-----------|------------|------------|------------|------------|------------|--------------|-----------|-----------|-----------|-----------|--------------|
| <b>Cultural:</b>                    |            |           |            |            |            |            |            |              |           |           |           |           |              |
| Prune & Train Trees                 | 819        |           |            |            |            |            |            |              |           |           |           |           | 819          |
| Pest - Dormant                      | 37         |           |            |            |            |            |            |              |           |           |           |           | 37           |
| Weed - Strip Spray 3X               |            | 43        |            | 8          |            |            | 8          |              |           |           |           |           | 60           |
| Pest - Gophers 3X                   |            |           | 10         |            |            |            |            |              |           |           |           |           | 10           |
| Pest - Budbreak OBLR                |            |           | 38         |            |            |            |            |              |           |           |           |           | 38           |
| Pest - Scab                         |            |           | 67         |            |            |            |            |              |           |           |           |           | 67           |
| Pest - Scab/Blight                  |            |           |            | 67         | 69         |            |            |              |           |           |           |           | 135          |
| Weed - Mow Middles 7X               |            |           | 9          | 9          | 9          | 16         | 16         |              |           |           |           |           | 59           |
| Frost Protection                    |            |           |            | 32         | 32         |            |            |              |           |           |           |           | 64           |
| Pest - Psylla                       |            |           |            | 46         |            |            |            |              |           |           |           |           | 46           |
| Pest - Blight (Alternate Rows)      |            |           |            | 85         | 85         |            |            |              |           |           |           |           | 171          |
| Irrigate                            |            |           |            |            |            | 38         | 38         |              |           |           |           |           | 76           |
| Fertilize - Nitrogen                |            |           |            |            |            | 22         |            |              |           |           |           |           | 22           |
| Growth Regulator                    |            |           |            |            |            |            |            | 34           |           |           |           |           | 34           |
| PCA Fees                            | 4          | 4         | 4          | 4          | 4          | 4          | 4          | 4            | 4         |           |           |           | 40           |
| Leaf Analysis                       |            |           |            |            |            |            | 19         |              |           |           |           |           | 19           |
| Pickup Truck Use                    | 7          | 7         | 7          | 7          | 7          | 7          | 7          | 7            | 7         | 7         | 7         | 7         | 78           |
| ATV Use                             | 5          | 5         | 5          | 5          | 5          | 5          | 5          | 5            | 5         | 5         | 5         | 5         | 61           |
| Puffers - Hang 13/10acres by Grower |            |           | 105        |            |            |            |            |              |           |           |           |           | 105          |
| Traps CM- Hang 3/5acres by PCA      |            |           | 3          |            |            |            |            |              |           |           |           |           | 3            |
| Puffers - Inspect by Grower         |            |           | 1          | 0          | 0          | 0          |            |              |           |           |           |           | 1            |
| Puffers - Reprogram by Grower       |            |           |            |            |            |            | 1          |              |           |           |           |           | 1            |
| Traps - Check/Change lures by PCA   |            |           |            | 1          | 1          | 1          | 1          | 1            |           |           |           |           | 7            |
| Traps - OBLR Hang 1/5acre by PCA    |            |           |            | 1          |            |            |            |              |           |           |           |           | 1            |
| <b>TOTAL CULTURAL COSTS</b>         | <b>872</b> | <b>49</b> | <b>248</b> | <b>265</b> | <b>213</b> | <b>94</b>  | <b>100</b> | <b>52</b>    | <b>16</b> | <b>12</b> | <b>12</b> | <b>12</b> | <b>1,955</b> |
| <b>Harvest:</b>                     |            |           |            |            |            |            |            |              |           |           |           |           |              |
| Harvest Fruit - 1st Pick            |            |           |            |            |            |            |            | 317          |           |           |           |           | 317          |
| Harvest Fruit - 2nd Pick            |            |           |            |            |            |            |            | 634          |           |           |           |           | 634          |
| Haul To Packinghouse                |            |           |            |            |            |            |            | 157          |           |           |           |           | 157          |
| <b>TOTAL HARVEST COSTS</b>          |            |           |            |            |            |            |            | <b>1,108</b> |           |           |           |           | <b>1,108</b> |
| <b>Packing:</b>                     |            |           |            |            |            |            |            |              |           |           |           |           |              |
| Sort/Pack/Sell Fruit                |            |           |            |            |            |            |            | 3,114        |           |           |           |           | 3,114        |
| <b>TOTAL PACKING COSTS</b>          |            |           |            |            |            |            |            | <b>3,114</b> |           |           |           |           | <b>3,114</b> |
| <b>Assessment:</b>                  |            |           |            |            |            |            |            |              |           |           |           |           |              |
| California Pear Advisory            |            |           |            |            |            |            |            | 177          |           |           |           |           | 177          |
| California Pear Growers             |            |           |            |            |            |            |            | 23           |           |           |           |           | 23           |
| <b>TOTAL ASSESSMENT COSTS</b>       |            |           |            |            |            |            |            | <b>201</b>   |           |           |           |           | <b>201</b>   |
| <b>Postharvest:</b>                 |            |           |            |            |            |            |            |              |           |           |           |           |              |
| Irrigate                            |            |           |            |            |            |            |            | 43           | 22        |           |           |           | 65           |
| Fertilize - Nitrogen                |            |           |            |            |            |            |            |              | 22        |           |           |           | 22           |
| <b>TOTAL POSTHARVEST COSTS</b>      |            |           |            |            |            |            |            | <b>43</b>    | <b>43</b> |           |           |           | <b>86</b>    |
| Interest on operating capital       | 5          | 6         | 7          | 9          | 10         | 11         | 11         | 39           | 0         | 0         | 0         | 0         | 97           |
| <b>TOTAL OPERATING COSTS/ACRE</b>   | <b>878</b> | <b>55</b> | <b>256</b> | <b>275</b> | <b>223</b> | <b>104</b> | <b>111</b> | <b>4,556</b> | <b>59</b> | <b>12</b> | <b>11</b> | <b>11</b> | <b>6,561</b> |
| <b>TOTAL OPERATING COSTS/TON</b>    | <b>44</b>  | <b>3</b>  | <b>12</b>  | <b>14</b>  | <b>11</b>  | <b>5</b>   | <b>6</b>   | <b>228</b>   | <b>3</b>  | <b>1</b>  | <b>1</b>  | <b>1</b>  | <b>328</b>   |
| <b>OVERHEAD:</b>                    |            |           |            |            |            |            |            |              |           |           |           |           |              |
| Office Expense                      | 4          | 4         | 4          | 4          | 4          | 4          | 4          | 4            | 4         | 4         | 4         | 4         | 44           |
| Liability Insurance                 | 7          |           |            |            |            |            |            |              |           |           |           |           | 7            |
| Sanitation Fee                      | 1          | 1         | 1          | 1          | 1          | 1          | 1          | 1            | 1         |           |           |           | 13           |
| Property Taxes                      | 72         |           |            |            |            |            | 72         |              |           |           |           |           | 144          |
| Property Insurance                  | 24         |           |            |            |            |            | 24         |              |           |           |           |           | 51           |
| Investment Repairs                  | 7          | 7         | 7          | 7          | 7          | 7          | 7          | 7            | 7         | 7         | 7         | 7         | 78           |
| <b>TOTAL CASH OVERHEAD COSTS</b>    | <b>115</b> | <b>12</b> | <b>12</b>  | <b>12</b>  | <b>12</b>  | <b>12</b>  | <b>108</b> | <b>12</b>    | <b>12</b> | <b>10</b> | <b>10</b> | <b>10</b> | <b>335</b>   |
| <b>TOTAL CASH COSTS/ACRE</b>        | <b>993</b> | <b>77</b> | <b>267</b> | <b>286</b> | <b>235</b> | <b>116</b> | <b>219</b> | <b>4,568</b> | <b>71</b> | <b>22</b> | <b>22</b> | <b>22</b> | <b>6,897</b> |
| <b>TOTAL CASH COSTS/TON</b>         | <b>49</b>  | <b>4</b>  | <b>13</b>  | <b>14</b>  | <b>12</b>  | <b>6</b>   | <b>11</b>  | <b>228</b>   | <b>4</b>  | <b>1</b>  | <b>1</b>  | <b>1</b>  | <b>345</b>   |

UC COOPERATIVE EXTENSION  
**Table 5. WHOLE FARM ANNUAL EQUIPMENT, INVESTMENT,  
and BUSINESS OVERHEAD COSTS**  
NORTH COAST REGION - Lake County 2002

ANNUAL EQUIPMENT COSTS

| Yr               | Description              | Price          | Yrs<br>Life | Salvage<br>Value | Capital<br>Recovery | Cash Overhead  |              | Total         |
|------------------|--------------------------|----------------|-------------|------------------|---------------------|----------------|--------------|---------------|
|                  |                          |                |             |                  |                     | Insur-<br>ance | Taxes        |               |
| 02               | 3 Point Forks #1         | 670            | 15          | 64               | 68                  | 2              | 4            | 78            |
| 02               | 3 Point Forks #2         | 670            | 15          | 64               | 68                  | 2              | 4            | 78            |
| 02               | 55 HP 2WD Tractor #2     | 32,269         | 12          | 8,068            | 3,469               | 133            | 202          | 3,979         |
| 02               | 55 HP 2WD Tractor #1     | 32,269         | 12          | 8,068            | 3,469               | 133            | 202          | 3,979         |
| 02               | ATV 4WD                  | 7,430          | 7           | 2,818            | 1,019               | 34             | 51           | 1,104         |
| 02               | Bait Applicator          | 1,046          | 10          | 185              | 131                 | 4              | 6            | 147           |
| 02               | Mower - Flail 9'         | 7,372          | 10          | 1,304            | 924                 | 29             | 43           | 1,034         |
| 02               | Orchard Sprayer 500 G #1 | 19,741         | 10          | 3,491            | 2,475               | 77             | 116          | 2,769         |
| 02               | Pickup Truck 1/2 T       | 24,500         | 7           | 9,294            | 3,359               | 112            | 169          | 3,640         |
| 02               | Truck - 10 Ton           | 41,827         | 10          | 12,355           | 4,874               | 179            | 271          | 5,553         |
| 02               | Weed Sprayer 100 G       | 3,947          | 10          | 698              | 495                 | 15             | 23           | 554           |
| <b>TOTAL</b>     |                          | <b>171,741</b> |             | <b>46,409</b>    | <b>20,351</b>       | <b>720</b>     | <b>1,091</b> | <b>22,915</b> |
| 60% of New Cost* |                          | 103,045        |             | 27,845           | 12,211              | 432            | 654          | 13,298        |

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

ANNUAL INVESTMENT COSTS

| Description             | Price            | Yrs<br>Life | Salvage<br>Value | Capital<br>Recovery | Cash Overhead  |              |              | Total          |
|-------------------------|------------------|-------------|------------------|---------------------|----------------|--------------|--------------|----------------|
|                         |                  |             |                  |                     | Insur-<br>ance | Taxes        | Repairs      |                |
| <b>INVESTMENT</b>       |                  |             |                  |                     |                |              |              |                |
| Buildings               | 44,693           | 20          |                  | 4,027               | 147            | 223          | 894          | 5,292          |
| Fuel Tanks 2-500 gal    | 3,500            | 25          | 350              | 279                 | 13             | 19           | 70           | 380            |
| Ladders - 16 Each       | 2,196            | 10          | 220              | 288                 | 8              | 12           | 44           | 352            |
| Land                    | 487,500          | 99          | 487,500          | 31,249              | 0              | 4,875        | 0            | 36,124         |
| Pear Establishment      | 701,680          | 95          |                  | 45,101              | 2,316          | 3,508        | 0            | 50,925         |
| Puffer Cabinets (105)   | 4,200            | 5           |                  | 1,008               | 0              | 0            | 84           | 1,092          |
| Puffer Programmer       | 350              | 5           |                  | 84                  | 0              | 0            | 7            | 91             |
| Shop Tools              | 12,637           | 15          | 1,264            | 1,284               | 46             | 70           | 253          | 1,652          |
| Irrigation System       | 132,555          | 25          |                  | 10,777              | 437            | 663          | 3,973        | 15,850         |
| Worker Housing          | 8,217            | 20          |                  | 740                 | 27             | 41           | 164          | 973            |
| <b>TOTAL INVESTMENT</b> | <b>1,397,528</b> |             | <b>489,334</b>   | <b>94,836</b>       | <b>2,994</b>   | <b>9,412</b> | <b>5,489</b> | <b>112,731</b> |

ANNUAL BUSINESS OVERHEAD COSTS

| Description         | Units/ |      | Price/<br>Unit | Total<br>Cost |
|---------------------|--------|------|----------------|---------------|
|                     | Farm   | Unit |                |               |
| Liability Insurance | 70     | acre | 7.20           | 504           |
| Office Expense      | 70     | acre | 44.00          | 3,080         |
| Sanitation Fee      | 70     | acre | 13.37          | 936           |

UC COOPERATIVE EXTENSION  
**Table 6. HOURLY EQUIPMENT COSTS**  
 NORTH COAST REGION – Lake County 2002

| Yr | Description           | COSTS PER HOUR          |                     |                |       |         |                |       | Total<br>Costs/Hr. |                |
|----|-----------------------|-------------------------|---------------------|----------------|-------|---------|----------------|-------|--------------------|----------------|
|    |                       | Actual<br>Hours<br>Used | Capital<br>Recovery | Cash Overhead  |       |         | Operating      |       |                    | Total<br>Oper. |
|    |                       |                         |                     | Insur-<br>ance | Taxes | Repairs | Fuel &<br>Lube |       |                    |                |
| 02 | 3 Point Forks #1      | 67.20                   | 0.61                | 0.02           | 0.03  | 0.10    | 0.00           | 0.10  | 0.76               |                |
| 02 | 3 Point Forks #2      | 67.20                   | 0.61                | 0.02           | 0.03  | 0.10    | 0.00           | 0.10  | 0.76               |                |
| 02 | 55 HP 2WD Tractor #2  | 73.90                   | 28.16               | 1.08           | 1.64  | 1.43    | 3.91           | 5.34  | 36.21              |                |
| 02 | 55 HP 2WD Tractor #1  | 599.10                  | 3.47                | 0.13           | 0.20  | 1.43    | 3.91           | 5.34  | 9.15               |                |
| 02 | ATV 4WD               | 266.00                  | 2.30                | 0.08           | 0.12  | 0.55    | 1.16           | 1.71  | 4.20               |                |
| 02 | Bait Applicator       | 14.00                   | 5.62                | 0.17           | 0.26  | 0.40    | 0.00           | 0.40  | 6.46               |                |
| 02 | Mower - Flail 9'      | 176.30                  | 3.15                | 0.10           | 0.15  | 3.04    | 0.00           | 3.04  | 6.43               |                |
| 02 | Orchard Sprayer 500 G | 250.20                  | 5.93                | 0.18           | 0.28  | 3.34    | 0.00           | 3.34  | 9.73               |                |
| 02 | Pickup Truck 1/2 T    | 266.00                  | 7.58                | 0.25           | 0.38  | 1.79    | 4.34           | 6.13  | 14.34              |                |
| 02 | Truck - 10 Ton        | 400.40                  | 7.30                | 0.27           | 0.41  | 3.99    | 9.06           | 13.05 | 21.03              |                |
| 02 | Weed Sprayer 100 G    | 37.00                   | 8.03                | 0.25           | 0.38  | 1.05    | 0.00           | 1.05  | 9.71               |                |

UC COOPERATIVE EXTENSION  
**Table 7. RANGING ANALYSIS USING PUFFERS**  
 NORTH COAST REGION – Lake County 2002

COSTS PER ACRE AT VARYING YIELD TO PRODUCE PEARS

|                                     | YIELD (tons/acre) |              |              |              |              |              |               |
|-------------------------------------|-------------------|--------------|--------------|--------------|--------------|--------------|---------------|
|                                     | 16.00             | 18.00        | 20.00        | 22.00        | 24.00        | 26.00        | 28.00         |
| <b>OPERATING COSTS/ACRE:</b>        |                   |              |              |              |              |              |               |
| Cultural Cost                       | 1,955             | 1,955        | 1,955        | 1,955        | 1,955        | 1,955        | 1,955         |
| Harvest Cost                        | 889               | 998          | 1,108        | 1,218        | 1,327        | 1,437        | 1,547         |
| Postharvest Cost                    | 86                | 86           | 86           | 86           | 86           | 86           | 86            |
| Packing Cost                        | 2,491             | 2,802        | 3,114        | 3,425        | 3,737        | 4,048        | 4,359         |
| Assessment Cost                     | 161               | 181          | 201          | 221          | 241          | 261          | 281           |
| Interest on operating capital       | 93                | 95           | 98           | 101          | 103          | 106          | 109           |
| <b>TOTAL OPERATING COSTS/ACRE</b>   | <b>5,675</b>      | <b>6,117</b> | <b>6,561</b> | <b>7,006</b> | <b>7,449</b> | <b>7,893</b> | <b>8,337</b>  |
| <b>TOTAL OPERATING COSTS/ton</b>    | <b>355</b>        | <b>340</b>   | <b>328</b>   | <b>318</b>   | <b>310</b>   | <b>304</b>   | <b>298</b>    |
| <b>CASH OVERHEAD COSTS/ACRE</b>     | <b>335</b>        | <b>335</b>   | <b>335</b>   | <b>336</b>   | <b>337</b>   | <b>337</b>   | <b>337</b>    |
| <b>TOTAL CASH COSTS/ACRE</b>        | <b>6,011</b>      | <b>6,453</b> | <b>6,898</b> | <b>7,342</b> | <b>7,786</b> | <b>8,230</b> | <b>8,674</b>  |
| <b>TOTAL CASH COSTS/ton</b>         | <b>376</b>        | <b>359</b>   | <b>345</b>   | <b>334</b>   | <b>324</b>   | <b>317</b>   | <b>310</b>    |
| <b>NON-CASH OVERHEAD COSTS/ACRE</b> | <b>1,529</b>      | <b>1,529</b> | <b>1,529</b> | <b>1,529</b> | <b>1,529</b> | <b>1,529</b> | <b>1,529</b>  |
| <b>TOTAL COSTS/ACRE</b>             | <b>7,540</b>      | <b>7,982</b> | <b>8,426</b> | <b>8,871</b> | <b>9,315</b> | <b>9,759</b> | <b>10,203</b> |
| <b>TOTAL COSTS/ton</b>              | <b>471</b>        | <b>443</b>   | <b>421</b>   | <b>403</b>   | <b>388</b>   | <b>375</b>   | <b>364</b>    |

UC COOPERATIVE EXTENSION  
Table 7 continued

NET RETURNS PER ACRE ABOVE OPERATING COSTS

| PRICE (\$/ton) |               |              | YIELD (tons/acre) |       |             |       |       |       |       |
|----------------|---------------|--------------|-------------------|-------|-------------|-------|-------|-------|-------|
| Fresh          | Processing    | Off-Grades   | 6.72              | 7.56  | <b>8.40</b> | 9.24  | 10.08 | 10.92 | 11.76 |
|                |               |              | 6.40              | 7.20  | <b>8.00</b> | 8.80  | 9.60  | 10.40 | 11.20 |
|                |               |              | 2.88              | 3.24  | <b>3.60</b> | 3.96  | 4.32  | 4.68  | 5.01  |
| 492.00         | 200.00        | 16.00        | -637              | -449  | -264        | -79   | 108   | 294   | 479   |
| 542.00         | 210.00        | 18.00        | -231              | 7     | 243         | 479   | 717   | 953   | 1,189 |
| <b>592.00</b>  | <b>220.00</b> | <b>20.00</b> | 175               | 464   | 750         | 1,037 | 1,325 | 1,613 | 1,899 |
| 642.00         | 230.00        | 22.00        | 580               | 920   | 1,257       | 1,595 | 1,934 | 2,272 | 2,609 |
| 692.00         | 240.00        | 24.00        | 986               | 1,377 | 1,764       | 2,153 | 2,543 | 2,931 | 3,319 |
| 742.00         | 250.00        | 26.00        | 1,392             | 1,833 | 2,272       | 2,711 | 3,151 | 3,591 | 4,029 |
| 792.00         | 260.00        | 28.00        | -637              | -449  | -264        | -79   | 108   | 294   | 479   |

NET RETURNS PER ACRE ABOVE CASH COSTS

| PRICE (\$/ton) |               |              | YIELD (tons/acre) |        |             |       |       |       |       |
|----------------|---------------|--------------|-------------------|--------|-------------|-------|-------|-------|-------|
| Fresh          | Processing    | Off-Grades   | 6.72              | 7.56   | <b>8.40</b> | 9.24  | 10.08 | 10.92 | 11.76 |
|                |               |              | 6.40              | 7.20   | <b>8.00</b> | 8.80  | 9.60  | 10.40 | 11.20 |
|                |               |              | 2.88              | 3.24   | <b>3.60</b> | 3.96  | 4.32  | 4.68  | 5.01  |
| 492.00         | 200.00        | 16.00        | -1,379            | -1,242 | -1,108      | -973  | -838  | -702  | -568  |
| 542.00         | 210.00        | 18.00        | -973              | -785   | -600        | -415  | -229  | -43   | 142   |
| <b>592.00</b>  | <b>220.00</b> | <b>20.00</b> | -567              | -329   | -93         | 143   | 380   | 616   | 852   |
| 642.00         | 230.00        | 22.00        | -161              | 128    | 414         | 701   | 988   | 1,276 | 1,562 |
| 692.00         | 240.00        | 24.00        | 244               | 584    | 921         | 1,259 | 1,597 | 1,935 | 2,272 |
| 742.00         | 250.00        | 26.00        | 650               | 1,041  | 1,428       | 1,817 | 2,206 | 2,594 | 2,982 |
| 792.00         | 260.00        | 28.00        | 1,056             | 1,497  | 1,936       | 2,375 | 2,814 | 3,254 | 3,692 |

NET RETURNS PER ACRE ABOVE TOTAL COSTS

| PRICE (\$/ton) |               |              | YIELD (tons/acre) |        |             |        |        |        |        |
|----------------|---------------|--------------|-------------------|--------|-------------|--------|--------|--------|--------|
| Fresh          | Processing    | Off-Grades   | 6.72              | 7.56   | <b>8.40</b> | 9.24   | 10.08  | 10.92  | 11.76  |
|                |               |              | 6.40              | 7.20   | <b>8.00</b> | 8.80   | 9.60   | 10.40  | 11.20  |
|                |               |              | 2.88              | 3.24   | <b>3.60</b> | 3.96   | 4.32   | 4.68   | 5.01   |
| 492.00         | 200.00        | 16.00        | -2,908            | -2,771 | -2,637      | -2,502 | -2,367 | -2,231 | -2,097 |
| 542.00         | 210.00        | 18.00        | -2,502            | -2,314 | -2,129      | -1,944 | -1,758 | -1,572 | -1,387 |
| <b>592.00</b>  | <b>220.00</b> | <b>20.00</b> | -2,096            | -1,858 | -1,622      | -1,386 | -1,149 | -913   | -677   |
| 642.00         | 230.00        | 22.00        | -1,690            | -1,401 | -1,115      | -828   | -541   | -253   | 33     |
| 692.00         | 240.00        | 24.00        | -1,285            | -945   | -608        | -270   | 68     | 406    | 743    |
| 742.00         | 250.00        | 26.00        | -879              | -488   | -101        | 288    | 677    | 1,065  | 1,453  |
| 792.00         | 260.00        | 28.00        | -473              | -32    | 407         | 846    | 1,285  | 1,725  | 2,163  |