

**Orchard Economics:**

**The Costs and Returns to  
Establish and Produce  
Hazelnuts on a Standard-Density and Double  
-Density Orchard System in the  
Willamette Valley**

*Nik Wiman, Matt Miller, and Clark Seavert*



# Orchard Economics: The Costs and Returns to Establish and Produce Hazelnuts on a Standard-Density and Double-Density Orchard System in the Willamette Valley.

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## Introduction

Oregon's Willamette Valley is the home of the United States hazelnut industry. In 2022, it was projected that Oregon growers would produce about 65,500 tons on approximately 84,190 acres (Hazelnut Marketing Board). The industry has grown tremendously in the past decade, doubling production. However, several non-bearing acres are yet to reach full harvesting age. The interest in continuing the expansion of hazelnut acreage is evident in the number of requests for updated cost and returns data.

Many factors affect the decision to renew an existing orchard or develop a new one. Both require the commitment of considerable effort and financial resources. Planting a double-density orchard can increase production during the early establishment years and reduce the time to reach full production compared to a standard-density orchard. However, while double-density orchards have higher economic potential, they also have more significant financial risks.

This analysis is intended for growers and investors considering the economic and financial consequences of planting a standard-density or double-density hazelnut orchard. It is impossible to cover all hazelnut varieties, rootstocks, and market channel combinations in a publication of this type. This attempts to reflect the typical dryland hazelnut production practices in the Willamette Valley. Soon a more in-depth publication will highlight the economic differences between varieties, rootstock, irrigated vs. non-irrigated, and locations within the Willamette Valley.

## Assumptions for Both Systems

In the preparation of this publication, assumptions were made that reflect current trends in orchard design for establishing a hazelnut orchard. These assumptions are:

1. **Farm size.** The typical farm operation in the Willamette Valley that grows hazelnuts has 100 acres in its crop mix.
2. **Land.** The market value of non-irrigated land is valued at \$20,000 per acre.
3. **Labor.** Pruning and general labor are hired at a rate of \$22.00 per hour and machine labor at \$29.70 per hour, which includes worker's compensation, unemployment insurance, and other labor overhead expenses. All labor rates are increased three percent annually due to inflation in subsequent years after 2022. All pruning, general, tractor, and harvest labor is a cash variable expense.
4. **Machinery and equipment.** The machinery and equipment reflect the typical machinery complement of a 100-acre hazelnut farm in the Willamette Valley. A detailed breakdown of machinery values is shown in Appendix A, Table 1, page 9. Estimated machinery costs are shown in Appendix A, Table 2, page 10.
5. **Machine costs per acre.** Appendix A, Table 3, page 10 lists the estimated costs per acre for each machine operation with a 20' tree row spacing. A 75-hp tractor is used to pull an air-blast sprayer, flail chopper, and harvester with a cart during harvest. A 50-hp tractor is used to pull a

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- brush rake, weed sprayer, and fertilizer spreader. Self-propelled equipment includes a sweeper and pruning power lift.
6. **Fuel.** Gasoline and diesel fuel are both \$4.00 per gallon.
  7. **Interest.** The interest rate on operating funds is eight percent, treated as a cash expense. One-half of the cash expenses are borrowed for six months.
  8. Machinery and land are owned and charged an eight and four percent interest rate, respectively, and treated as a fixed non-cash opportunity cost to the owner.
  9. The operator provides the previous year's establishment costs at a charge of six percent interest and is treated as a fixed non-cash opportunity cost to the owner.
  10. **Orchard Life.** The productive life of a hazelnut orchard is 25 years once full production of 3,200 pounds of nuts per acre is reached.
  11. **Grower returns.** Area packers were asked about the long-term average price for hazelnuts due to the recent decrease in price. A general agreement was that the average hazelnut price to the grower could be \$0.85 per pound, which does not include the drying costs of \$0.055 per pound.
  12. **Chemicals.** Herbicides used for strip maintenance are applied to 30 percent of each acre.
  13. **Tile.** Drain tile is installed at the cost of \$1,500 per acre, which includes materials and installation.
  14. **Fixed costs.** Fixed cost input assumptions are listed in Appendix B, Table 5, page 13.
  15. **Omitted from this study.** Not included in this study is a return to management, owner labor, family living withdrawals, an accounting for all regulatory costs, annual price and yield volatility, price inflation (other than hired labor), and local, state, and federal income taxes paid by the owner.

## Standard-Density Orchard Assumptions

16. **Orchard description.** This orchard is planted to a spacing of 20' x 20' (108 hazelnut trees per acre).
17. **Hazelnut yields.** Commercial yields begin in year 3 and full production is reached 12 years after planting with 75, 285, 440, 600, 1,100, 1,200, 1,600, 2,000, 2,300 and 3,200 pounds per acre, respectively.
18. **Other assumptions.** Other assumptions for variable, cash fixed, and non-cash fixed costs are listed in Appendix B, Table 4SD, page 11. Standard-density tables are displayed with a gray background to differentiate them from double-density tables.

## Double-Density Orchard Assumptions

19. **Orchard description.** This orchard is planted to a spacing of 10' x 20' (216 hazelnut trees per acre). In year 10, however, every other tree is removed to prevent crowding of fruiting wood for future yields.
20. **Hazelnut yields.** Commercial yields begin in year 3 and full production is reached 11 years after planting with 150, 570, 880, 1,200, 2,200, 2,300, 2,400, 2,000 and 3,200 pounds per acre, respectively.
21. **Tree Removal.** In year 10, every other tree is removed to prevent a decline in yields from overcrowding at a cost of \$500 per acre.
22. **Other assumptions.** Other assumptions for variable, cash fixed, and non-cash fixed costs are listed in Appendix B, Table 4DD, page 12.

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## Results of establishing a standard-density Hazelnut orchard

### Cash flow analysis

A cash flow analysis for establishing a standard-density hazelnut orchard is presented in Appendix C, Table 6SD, page 14. It shows the cash costs required to develop this type of orchard. Cash costs include labor, trees, drain tile, fertilizer, chemicals, machinery repairs, fuel, lube, and oil, operating (short-term) interest, machinery and whole-farm insurance, and property taxes. The income, variable costs, and cash fixed costs are shown for each of the eleven establishment years plus the first full production year. Production begins in year 3 with 75 pounds of hazelnuts per acre and increases to 3,200 pounds at full production. Total variable costs are \$3,317 in the first year, with an additional \$57 of cash fixed costs for a total cash cost of \$3,374 per acre.

A positive cash flow begins in year 7, with gross income exceeding total cash costs by \$63 per acre. At full production or eleven years after planting, the orchard cannot pay all previous years' cash costs with a deficit of \$2,421 per acre.

The major cost components as a percent of total cash costs are shown in Table 8SD, page 18. Fertilizers and chemicals represent 25 percent of the total cash costs. Labor is the second-largest cost item, making up 20 percent, followed by tree and drain tile costs together at 17 percent. Machine costs are 14 percent of the total cash costs. The remaining three items comprise about 24 percent of the total cash costs.

### Economic costs and returns

The economic costs and returns for establishing a standard-density hazelnut orchard are shown in Appendix C, Table 7SD, page 15. Economic costs include all

cash costs and ownership costs, either an opportunity cost to the owner or money borrowed from a financial institution. These ownership costs include the principal and interest payments or a return on investment to the grower for machinery, facilities, land, and funds to pay previous years' establishment costs. The gross income and variable cash costs remain the same as in Table 6SD.

Net projected returns (gross income minus total costs) are negative for all 12 years of establishment; furthermore, there are \$32,009 per acre remaining to pay all previous establishment costs. This cost is amortized over 25 years as an annual payment of \$2,143 per acre, included as either principal and interest or opportunity costs to recover the capital investment of establishing the orchard. At full production and subsequent years, including the amortized cost of establishment results in a -\$2,397 net projected return each year; with these assumptions, the orchard system will never pay back the previous year's establishment costs.

The major cost components as a percent of total economic costs are shown in Table 8SD, page 18. When all expenses are included, the most significant cost item is interest charges at almost 51 percent for the first twelve years of establishment. Machine costs are 20 percent of the total economic costs. The remaining six items comprise about 29 percent of the total economic costs.

### Summary of establishing a standard-density orchard

Figure 1, page 18, shows the cumulative cash flow and economic costs of establishing a standard-density orchard. The light and darker blue dashed lines denote these results. The cumulative cash flow turns positive in year 14, with \$263 and the cumulative economic returns decrease each year. This is due to the assumed price for

hazelnuts and interest rates for land and establishment costs. A sensitivity analysis based on these three assumptions is discussed in the Conclusion section.

Appendix D, Tables 10SD-21SD, pages 20-31, contains the annual cost and return budgets for establishing this standard-density orchard.

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## Results of establishing a double-density hazelnut orchard

### Cash flow analysis

A cash flow analysis for establishing a double-density hazelnut orchard is presented in Appendix C, Table 6DD, page 16. It shows the cash costs required to develop this type of orchard. Cash costs include labor, trees, drain tile, fertilizer, chemicals, machinery repairs, fuel, lube, and oil, operating (short-term) interest, machinery and whole-farm insurance, and property taxes. The income, variable costs, and cash fixed costs are shown for each of the ten establishment years plus the first full production year. Production begins in year 3 with 150 pounds of hazelnuts per acre and increases to 3,200 pounds at full production. Total variable costs are \$4,069 in the first year, with an additional \$57 of cash fixed costs for a total cash cost of \$4,126 per acre.

A positive cash flow begins in year 5, with gross income exceeding total cash costs by \$48 per acre. At full production or ten years after planting, the orchard cannot pay all previous years' cash costs with a deficit of \$2,005 per acre.

The major cost components as a percent of total cash costs are shown in Table 8DD, page 18. Labor is the largest cost item at 22 percent to total cash costs. Fertilizers and chemicals represent 21 percent, followed by tree and drain tile costs together at 20 percent. Machine costs are 12 percent of the total cash costs. The remaining three cost items comprise about 25 percent of the total cash costs.

### Economic costs and returns

The economic costs and returns for establishing a double-density hazelnut orchard are shown in Appendix C, Table 7DD, page 17. Economic costs include all cash costs and ownership costs, either an opportunity cost to the owner or money borrowed from a financial institution. These ownership costs include the principal and interest payments or a return on investment to the grower for machinery, facilities, land, and funds to pay previous years' establishment costs. The gross income and variable cash costs remain the same as in Table 6DD.

Net projected returns (gross income minus total costs) are negative for all 11 years of establishment; furthermore, there are \$28,639 per acre remaining to pay all previous establishment costs. This cost is amortized over 25 years as an annual payment of \$1,927 per acre, included as either principal and interest or opportunity costs to recover the capital investment of establishing the orchard. At full production and subsequent years, including the amortized cost of establishment results in a -\$2,175 net projected return each year; with these assumptions, the orchard system will never pay back the previous year's establishment costs.

The major cost components as a percent of total economic cost are shown in Table 8DD, page 18. When all expenses are included, the most significant cost item is interest charges at almost 47 percent for the first eleven years of establishment. Machine costs are 18 percent. The remaining six items comprise about 35 percent of the total economic costs.

## Summary of establishing a double-density orchard

Figure 1, page 18, shows the cumulative cash flow and economic costs of establishing a double-density orchard. The light and darker orange solid lines denote these results. The cumulative cash flow turns positive in year 13, with \$512 and the cumulative economic returns decrease each

year. This is due to the assumed price for hazelnuts and interest rates for land and establishment costs. A sensitivity analysis based on these three assumptions is discussed in the Conclusion section.

Appendix E, Tables 10DD-20DD, pages 32-42, contain the annual cost and return budgets for establishing this double-density hazelnut orchard.

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## Discussion

Double-density orchards can offer higher net returns earlier in the orchard's life. The trade-off, however, is a higher risk due to more up-front costs in trees, labor inputs, and higher management requirements and discipline to remove trees in year 10.

There are two key concepts to consider when planting an orchard: profitability and financial feasibility. Profitability determines if future revenues exceed expenses based on the time value of money. Financial feasibility establishes whether the grower has the equity or can borrow funds for the investment. The following are economic theory and financial concepts, focusing on the outcomes of this study, that growers should find valuable in determining management strategies for long-term business success.

### *Profit Maximization Theory and Measuring Profitability*

There are three critical factors to maximizing profits when planting and establishing perennial crops. They are in order of importance:

1. Prices received for the product.
2. Yields, not only how much produced annually but, more importantly, early yields in the life of an establishment period, and
3. Establishment costs.

What is often misunderstood is that there is an absolute either/or trade-off to

maximize profits. This misunderstanding results in growers concluding that the only way to increase profits is to avoid or cut costs. There are two flaws to this reasoning. First, it may be necessary to increase operating expenses to increase profits in some situations. This is possible if these increases in input costs result in a greater increase in revenues. The second flaw in this cost minimizing "penny-wise, pound-foolish" mental trap relates to attitudes about risks. Spending money on more costly inputs may increase perceived and/or actual risks. Hence, many producers are good at minimizing costs but cannot maximize profits because they are not investing in technology/genetics/quality products or scale (expansion). It is logical for producers to be risk averse. Still, if done in excess, it can impede the adoption of much-needed investments. The farm operation will not be able to compete with other producers who make the investments and associated changes. Therefore, the risk aversion may create more risk than otherwise would be. This can lead growers to focus on avoiding or reducing expenses when they should be seeking profit-maximizing strategies by investing dollars in:

1. Growing higher quality nuts.
2. Technologies and tree densities that achieve early and higher yields.

3. Techniques that result in increased efficiencies.

Economic theory suggests that dollars be invested if marginal revenues exceed marginal costs. A few examples would be investing in the following if the producer applies the profit maximization theory:

1. Higher quality nursery stock.
2. Additional detailed pruning.
3. Irrigation systems, as long as the profit maximization theory is met.

As the adage goes, sometimes it takes money to make money!

Another mental trap is thinking only about ongoing costs and concluding that all is well if there are profits, defined as gross income minus operating expenses. But this reasoning does not consider the profitability of the orchard. As with most perennial crop investments, there both are up-front investments and ongoing costs. The financial metric of net present value captures an investment's total up-front investments and stream of future net cash flows to measure profitability. While profit is an absolute measure of a positive gain from an investment, profitability is the profit relative to the size of the investment. For example, compare two investments when both earn \$1,000 in profits. One of these investments was for \$10,000, and the other was for \$100,000. The \$10,000 investment had better profitability, even though both investments generated equal profits. Profitability measures the efficiency of the investment to generate profit, as in an internal rate of return. Unlike profit, profitability is a relative measure of the rate of return expected on investments, or the size of the return, compared to what could have been obtained from an alternative investment (opportunity cost). Therefore, projecting the returns from a new planting can generate a profit but not necessarily provide long-term profitability.

### *Addition through Subtraction*

It is not uncommon for growers to remove and plant trees based on available annual cash flows, which runs counter to determining replacement based on the economic life of an orchard. This renewal strategy can lead to many unproductive orchards, which creates a challenge for the farm to survive in the long run.

There is a two-prong approach when evaluating orchards and renewal: addition through subtraction and applying financial management principles to existing resources to fund more planted acres. The addition through subtraction concept suggests removing orchards when revenues do not exceed cash variable costs, which could result in several acres without trees. However, this strategy allows growers to allocate resources to the more productive orchards, applying the profit maximization theory described above. Many times, this allocation of resources can increase overall net farm income.

The other strategy is to analyze the business's financial strength and set limits to key financial ratios and performance measures to determine the funds available to invest in more acres of nut trees. Over the long run, this strategy will create opportunities to replace orchards sooner, resulting in a higher orchard renewal rate by increasing net farm incomes.

### *Applying Theory to Hazelnut Study Results*

The results of this study reveal a couple of significant economic and financial impacts on hazelnut producers in the Willamette Valley. A sensitivity analysis will illustrate these impacts by modifying rates of return on investment (ROI) for Capital Expenditures (CapEx) and land ownership based on the higher percentage of interest charges related to the total costs of establishing an orchard. Also included is a scenario of increasing hazelnut price.

The following analyses are based on Figures 2 and 3 and Table 9 on page 19.

**Results of the study, cumulative cash flow, and net returns based on**

**assumptions:** Planting a standard- or double-density hazelnut orchard results in total cash flows of \$7,776 and \$9,321, generating a positive cash flow in years 14 and 13, respectively, to generate a profit. However, when considering profitability, neither orchard system generates a positive return at the end of the 20-year analysis to provide a reasonable return on investment (Figures 2 and 3 and Table 9).

**Scenario 1, cumulative cash flow and net returns based on a 0 percent ROI on land**

**ownership:** This scenario generates a profit for both systems. However, when considering profitability, neither orchard system generates a positive return at the end of the 20-year analysis to provide a reasonable return on investment, with net returns of -\$24,524 and -\$22,416. As a result, this scenario ranks last for both systems based on total dollars at the end of 20 years (Figures 2 and 3 and Table 9).

**Scenario 2, cumulative cash flow and net returns based on a 0 percent ROI for capital to establish an orchard:**

This scenario is much like Scenario #1 in that it does generate a profit for both systems. However, when considering profitability, neither orchard system generates a positive return at the end of the 20-year analysis to provide a reasonable return on investment, with net returns of -\$22,150 and -\$20,622. As a result, this scenario ranks third for both systems based on the total dollars at the end of 20 years (Figures 2 and 3 and Table 9).

**Scenario 3, cumulative cash flow and net returns based on a 0 percent ROI for land**

**ownership and capital to establish an orchard:** This scenario is like Scenarios #1

and #2 in that it does generate a profit for both systems. However, when considering profitability, neither orchard system generates a positive return at the end of the 20-year analysis to provide a reasonable return on investment, with net returns of -\$6,150 and -\$4,622. As a result, this scenario ranks first for the standard-density system and second for the double-density system (Figures 2 and 3 and Table 9).

**Scenario 4, cumulative cash flow and net returns based on a 100 percent increase in hazelnut price:**

This scenario results in significantly higher total cash flows of \$40,642 and \$46,692, generating a positive cash flow in years 10 and 8 for both systems, respectively, to create a profit. However, when considering profitability, neither orchard system generates a positive return at the end of the 20-year analysis to provide a reasonable return on investment, with net returns of -\$22,150 and -\$20,622. As a result, this scenario ranks second for the standard-density system and first for the double-density system (Figures 2 and 3 and Table 9).

**Conclusion**

Hazelnut growers understand the risks involved in farming tree crops, recognizing that they could make more money in alternative investments of similar risk. In addition, they could receive a much higher return on their investment.

The double-density orchard system in this study provides the most profit. But even as the average price doubled, as in Scenario #4, the net returns were insufficient to provide a reasonable return investment, rewarding the grower for the additional financial risk. As a result, there is a temptation for growers to maintain higher yields for as long as possible and not remove every other tree, as suggested in year 10, to prevent the crowding of trees and reduce future yields. This is where management and



discipline must come into play and follow extension and research faculty advice.

One main criticism of university cost studies is they do not reflect a specific grower's costs for their farm. In addition, they include too many economic costs and assumptions that some growers do not have.

The following section will discuss how growers can use the *AgBiz Logic* decision tool to modify the information from this study as their own.

### *Using AgBizLogic™ to Analyze Different Price and Yield Scenarios*

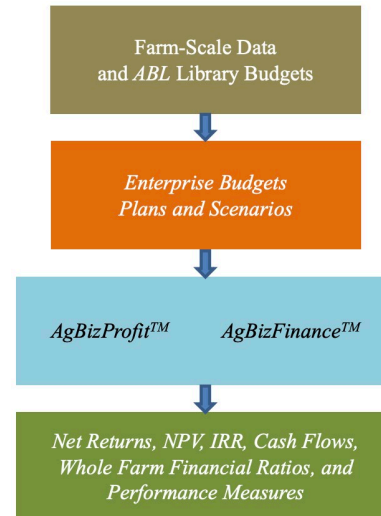
Different price and yield scenarios can give growers a greater appreciation of the financial risk involved in orchard establishment or renewal. In addition, numerous factors and unforeseen events (e.g., damage from a freeze, rain, hail, changes in market conditions) can impact yield and price, which are ignored in this study.

*AgBiz Logic™ (ABL)* is an online decision tool that considers economic and financial factors when analyzing investments. The following schematic shows the data flow and results from the ABL decision tool. Grower farm-level data is collected from the tax form Schedule F (Form 1040) to generate enterprise budgets. In addition, enterprise budgets from universities, industry and USDA-ERS are stored in the ABL Library for grower use when returns and inputs are unknown (brown). Enterprise budgets are sequenced in ABL plans and adjusted for inflation, discount rates, and beginning and ending investment values which provide the basis for a capital investment analysis (orange). Scenarios consist of several plans that can be compared and are required for the ABL tools (blue) to calculate the economic and financial outputs (green).

The *AgBizProfit™* module enables users to make capital investment decisions by measuring an investment's profitability

based on its Net Present Value, Internal Rate of Return, and cash flow breakeven.

The module *AgBizFinance™* empowers producers to make whole-farm investment decisions based on 20 financial ratios and performance measures. In addition, this program lets users input their current balance sheet information, loans, and capital leases.



*AgBizFinance* uses this information with plans and scenarios to generate up to 10 years of proforma cash flow statements, balance sheets, income statements, and financial ratios and performance measures. As a result, growers can evaluate how orchard renewal plans can impact their short- and long-term finances and how best to fund capital investments.

These *AgBizLogic* decision tools can currently be accessed at <https://www.agbizlogic.com> or <https://www.agbizlogic.oregonstate.edu> at no cost. Also, budgets from this study will be available in the ABL Library.

It is recommended that before investing in any long-run perennial crop, the potential investor use *AgBiz Logic* modules to thoroughly analyze the profitability and financial feasibility of potential investments under varying price and yield scenarios.

## APPENDIX A

### Machinery and Equipment Assumptions and Cost Calculations for a 100-acre Hazelnut Orchard in the Willamette Valley

Machine	Size	Market Value	Hours or Miles of Annual Use	Expected Life (Years)	Salvage Value
Tractor	4 Wheel Dr 75hp, New	\$80,000	247	10	\$23,631
Tractor and Loader	2 Wheel Dr 50hp, Older	20,000	135	10	5,908
Air-Blast Spray	500 Gallon Unit, w/ Spray Controlle	40,000	82	20	2,085
Flail Chopper	10' Unit	12,500	73	10	2,211
Weed Sprayer w/Boom	New, w/ Spray Controller	7,500	46	15	720
Fertilizer Spreader	1,000 Pound	3,000	6	15	288
Pruning Power Lift	Older	20,000	20	15	2,048
Filbert Harvester w/Cart	New	95,000	59	10	15,680
Sweeper	New	70,000	79	10	13,204
Brush Rake	Used	3,000	24	20	156
Pickup	3/4 Ton 4X4, New	85,000	12,000	10	32,143
Leveling Blade	New	7,500	32	7	1,913
5th Wheel Trailer	New	20,000	N/A	20	1,042
Drain Tile	Per Acre	1,500	N/A	25	0
Shop/Shed	40' x 80'	225,000	N/A	35	0

Machine	Size	----- Variable Costs -----		--- Fixed Costs ---		Total Cost
		Fuel & Lube	Repairs & Maintenance	Interest	Depreciation &	
----- Costs per Hour -----						
Tractor	4 Wheel Dr 75hp, New	\$23.00	\$0.59	\$35.47		\$59.07
Tractor and Loader	2 Wheel Dr 50hp, Older	17.25	0.19	16.19		33.63
Air-Blast Spray	500 Gallon Unit, w/ Spra	0.00	19.06	38.29		57.34
Flail Chopper	10' Unit	0.00	4.00	20.20		24.20
Weed Sprayer w/Boom	New, w/ Spray Controlle	0.00	2.75	15.24		17.99
Fertilizer Spreader	1,000 Pound	0.00	0.92	46.07		46.99
Pruning Power Lift		11.50	1.94	92.91		106.35
Filbert Harvester w/Cart		0.00	10.37	190.97		201.35
Sweeper		17.25	12.18	103.08		132.51
Brush Rake		0.00	0.38	9.76		10.15
----- Costs per Mile -----						
Pickup	3/4 Ton 4X4, New	\$0.48	\$0.05	\$0.73		\$1.26
----- Costs per Acre -----						
Leveling Blade		\$0.00	\$0.25	\$10.80		\$11.05
5th Wheel Trailer		0.00	1.40	16.00		17.40
Drain Tile	Per Acre	0.00	0.00	90.00		90.00
Shop/Shed	40' x 80'	0.00	6.92	109.29		116.20

Operation	Tractor	Miles/ Hour	Acres/ Hour	-- Machine Costs --			Total Cost/ Acre
				Labor Cost/ Acre	Variable Cost/ Acre	Fixed Cost/ Acre	
Filbert Harvester w/Cart	4WD 75hp	1.50	2.55	\$11.61	\$11.54	\$97.98	\$121.13
Sweeper	Self-Propelled	2.0	1.89	15.63	13.74	60.05	89.42
Brush Rake	2WD 50hp	2.0	4.12	7.17	3.49	7.08	17.74
Air-Blast Spray	4WD 75hp	3.0	3.64	8.13	10.46	22.84	41.43
Pruning Power Lift	Self-Propelled	NA	1.00	5.91	2.23	20.79	28.93
Flail Chopper	4WD 75hp	4.0	4.12	7.17	5.58	15.02	27.77
Weed Sprayer w/Boom	2WD 50hp	6.0	10.91	2.71	1.53	3.22	7.46
Fertilizer Spreader	2WD 50hp	8.0	16.49	1.79	0.90	4.22	6.92

## APPENDIX B

### Input Assumptions for Establishing a Standard-Density and Double-Density Hazelnut Orchard in the Willamette Valley

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Full Prod.
Prices per Pound	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85
Pounds per Acre	0	0	75	285	440	600	1,100	1,200	1,600	2,000	2,300	3,200
Cost of Labor - Machine	\$22.00	\$22.66	\$23.34	\$24.04	\$24.76	\$25.50	\$26.27	\$27.06	\$27.87	\$28.71	\$29.57	\$30.45
Cost of Labor - Manual	29.70	30.59	31.51	32.45	33.43	34.43	35.46	36.53	37.62	38.75	39.91	41.11
	Hours per Acre											
Production Pruning Labor	0.00	3.60	3.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.20
Maint. Pruning Labor	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
Hand Fertilizing Labor	0.50	0.50	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
IPM Scouting	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	Times per Acre											
Herbicide Strip Spray	5.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Sucker Control	0.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Boron Spray	0.00	0.00	0.00	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Filbertworm Spray	0.00	0.00	0.00	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EFB Spray	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fall Copper Spray	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Flailing Orchard	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Aphid/Leafroller Spray	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
	Dollars per Acre											
Fertilizer - Urea	\$3.38	\$13.50	\$40.50	\$63.75	\$63.75	\$131.25	\$131.25	\$131.25	\$131.25	\$131.25	\$131.25	\$175.00
Fertilizer - Potash	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
Fertilizer - Lime	200.00	0.00	200.00	0.00	200.00	0.00	200.00	0.00	200.00	0.00	200.00	200.00
Fertilizer - Foliar, micronutrients	13.95	15.50	17.22	19.13	21.26	23.62	26.24	29.16	32.40	36.00	40.00	40.00
Fungicide - Fall Copper Spray	3.35	6.70	13.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herbicide Strip Sprays	100.00	75.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Sucker Control	0.00	12.53	12.53	12.53	12.53	12.53	12.53	12.53	12.53	12.53	12.53	12.53
Filbertworm Spray	0.00	0.00	11.07	12.30	13.67	15.19	16.88	18.75	18.75	18.75	18.75	18.75
EFB Spray	8.00	8.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aphid/Leafroller & Leaf-tier Spray	0.47	0.93	1.86	3.72	0.00	0.00	20.00	0.00	0.00	0.00	20.00	20.00
Rodent Materials	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
IPM Traps	0.00	0.00	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Nutrient Analysis	6.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Washing & Drying Costs/Pound	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055
Planted Trees	108	10	0	0	0	0	0	0	0	0	0	0

Table 4DD, Dryland. Assumptions for Prices Received, Yields by Year, Labor, Fertilizer, Chemical and other Production Inputs for a Double Density Hazelnut Orchard.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Full Prod
Prices per Pound	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85
Pounds per Acre	0	0	150	570	880	1,200	2,300	2,300	2,400	2,000	3,200
Cost of Labor - Orchard	\$22.00	\$22.66	\$23.34	\$24.04	\$24.76	\$25.50	\$26.27	\$27.06	\$27.87	\$28.71	\$29.57
Cost of Labor - Machine	29.70	30.59	31.51	32.45	33.43	34.43	35.46	36.53	37.62	38.75	39.91
	----- Hours per Acre -----										
Production Pruning Labor	0.00	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	1.20
Maint. Pruning Labor	0.00	0.00	0.00	0.00	0.00	0.00	4.00	4.00	4.00	2.00	2.00
Hand Fertilizing Labor	0.00	6.00	6.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
IPM Scouting	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	----- Times per Acre -----										
Herbicide Strip Spray	5.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Sucker Control	0.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Boron Spray	0.00	0.00	0.00	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Filbertworm Spray	0.00	0.00	0.00	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
EFB Spray	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fall Copper Spray	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Failing Orchard	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Aphid/Leafroller Spray	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25
	----- Dollars per Acre -----										
Fertilizer - Urea	\$6.75	\$27.00	\$54.00	\$85.00	\$85.00	\$175.00	\$175.00	\$175.00	\$175.00	\$175.00	\$175.00
Fertilizer - Potash	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00	90.00
Fertilizer - Lime	200.00	0.00	200.00	0.00	200.00	0.00	200.00	0.00	200.00	0.00	200.00
Fertilizer - Foliar, micronutrients	13.95	15.50	17.22	19.13	21.26	23.62	26.24	29.16	32.40	36.00	40.00
Fungicide - Fall Copper Spray	3.35	6.70	13.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herbicide Strip Sprays	100.00	75.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Sucker Control	0.00	12.53	12.53	12.53	12.53	12.53	12.53	12.53	12.53	12.53	12.53
Filbertworm Spray	0.00	0.00	11.07	12.30	13.67	15.19	16.88	18.75	18.75	18.75	18.75
EFB Spray	8.00	8.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aphid/Leafroller & Leaflier Spray	0.47	0.93	1.86	3.72	0.00	0.00	20.00	0.00	0.00	0.00	20.00
Rodent Materials	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
IPM Traps	0.00	0.00	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Nutrient Analysis	6.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Washing & Drying Costs/Pound	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055
Planted Trees	216	10	0	0	0	0	0	0	0	0	0

Table 5. Fixed cost input assumptions for establishing both a standard- and double-density Hazelnut orchard.

Property insurance, per acre	\$13.00
Property taxes, per acre	\$43.75
Land values, per acre	\$20,000
Tree cost	\$6.50
Drain Tile, per acre	\$1,500
Gasoline price, per gallon	\$4.00
Diesel fuel price, per gallon	\$4.00
Operating interest rate	8.0%
Machinery interest rate	8.0%
Land interest rate	4.0%
Establishment interest rate	6.0%
Miscellaneous and overhead charge	5.0%
Percent of operating capital borrowed	50.0%
Months to borrow operating capital	6.0

## APPENDIX C

### Cash Costs and Economic Returns and Costs to Establish a Standard-Density and Double-Density Hazelnut Orchard.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Full Prod
Table 6SD. Cash flow analysis for establishing a standard density hazelnut orchard in the Willamette Valley.												
Income:												
Yield (Lbs per Acre)	0	0	75	285	440	600	1,100	1,200	1,600	2,000	2,300	3,200
Price (\$ per Lb)	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85
Gross Income(\$ per Acre)	\$0.00	\$0.00	\$63.75	\$242.25	\$374.00	\$510.00	\$935.00	\$1,020.00	\$1,360.00	\$1,700.00	\$1,955.00	\$2,720.00
Variable Costs (VC):												
Field Preparation	\$57.94	\$0.73	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Trees	702.00	65.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drain Tile	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sawdust Mulch	33.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paint Trees	26.60	26.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	298.00	13.50	40.50	63.75	63.75	131.25	131.25	131.25	131.25	131.25	331.25	465.00
Chemicals	111.82	103.16	85.80	97.69	97.46	101.34	125.65	110.44	113.68	117.28	141.28	141.28
IPM Scouting	0.00	0.00	0.00	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Nutrient Analysis	0.00	0.00	0.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Rodent Materials	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Hired Labor	161.45	312.32	245.75	159.79	155.16	156.92	229.65	233.64	237.75	241.99	246.35	304.00
Harvest Wash & Dry Nuts	0.00	0.00	4.13	15.68	24.20	33.00	60.50	66.00	88.00	110.00	126.50	176.00
Shop	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Machine Costs	157.31	118.26	157.33	163.46	153.91	153.91	153.91	153.91	153.91	153.91	153.91	170.80
Misc. & Overhead	154.87	34.43	29.12	28.04	27.75	31.85	38.07	37.79	39.25	40.75	52.99	65.88
Operating Interest	65.04	14.46	12.23	11.78	11.65	13.38	15.99	15.87	16.49	17.11	22.26	27.67
Total Variable Costs	\$3,317.28	\$737.46	\$623.86	\$600.69	\$594.37	\$682.13	\$815.52	\$809.39	\$840.83	\$872.78	\$1,135.03	\$1,411.12
Gross Income minus VC	-\$3,317.28	-\$737.46	-\$560.11	-\$358.44	-\$220.37	-\$172.13	\$119.48	\$210.61	\$519.17	\$827.22	\$819.97	\$1,308.88
Cash Fixed Costs:												
Insurance	\$13.00	\$13.00	\$13.00	\$13.00	\$13.00	\$13.00	\$13.00	\$13.00	\$13.00	\$13.00	\$13.00	\$13.00
Property Taxes	43.75	43.75	43.75	43.75	43.75	43.75	43.75	43.75	43.75	43.75	43.75	43.75
Total Cash Fixed Cost	\$56.75	\$56.75	\$56.75	\$56.75	\$56.75	\$56.75	\$56.75	\$56.75	\$56.75	\$56.75	\$56.75	\$56.75
Total Cash Cost	\$3,374.03	\$794.21	\$680.61	\$657.44	\$651.12	\$738.88	\$872.27	\$866.14	\$897.58	\$929.53	\$1,191.78	\$1,467.87
Annual Cash Flow	-\$3,374.03	-\$794.21	-\$616.86	-\$415.19	-\$277.12	-\$228.88	\$62.73	\$153.86	\$462.42	\$770.47	\$763.22	\$1,252.13
Cumulative Cash Flow	-\$3,374.03	-\$4,168.23	-\$4,785.09	-\$5,200.28	-\$5,477.40	-\$5,706.28	-\$5,643.55	-\$5,489.69	-\$5,027.27	-\$4,256.80	-\$3,493.58	-\$2,241.45

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Full Prod
<b>Table 7SD. Economic costs and returns of establishing a standard density hazelnut orchard in the Willamette Valley.</b>												
<b>Income:</b>												
Yield (Lbs per Acre)	0.00	0.00	75	285	440	600	1,100	1,200	1,600	2,000	2,300	3,200
Price (\$ per Lb)	<u>\$0.85</u>	<u>\$0.85</u>	<u>\$0.85</u>	<u>\$0.85</u>	<u>\$0.85</u>	<u>\$0.85</u>	<u>\$0.85</u>	<u>\$0.85</u>	<u>\$0.85</u>	<u>\$0.85</u>	<u>\$0.85</u>	<u>\$0.85</u>
Gross Income(\$ per Acre)	\$0.00	\$0.00	\$63.75	\$242.25	\$374.00	\$510.00	\$935.00	\$1,020.00	\$1,360.00	\$1,700.00	\$1,955.00	\$2,720.00
<b>Variable Costs (VC):</b>												
Field Preparation	\$57.94	\$0.73	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Trees	702.00	65.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drain Tile	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sawdust/Mulch	33.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paint Trees	26.60	26.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	298.00	13.50	40.50	63.75	63.75	131.25	131.25	131.25	131.25	131.25	331.25	465.00
Chemicals	111.82	103.16	85.80	97.69	97.46	101.34	125.65	110.44	113.68	117.28	141.28	141.28
IPM Scouting	0.00	0.00	0.00	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Nutrient Analysis	0.00	0.00	0.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Rodent Materials	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Hired Labor	161.45	312.32	245.75	159.79	155.16	156.92	229.65	233.64	237.75	241.99	246.35	304.00
Harvest/Wash & Dry Nuts	0.00	0.00	4.13	15.68	24.20	33.00	60.50	66.00	88.00	110.00	126.50	176.00
Shop	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Machine Costs	157.31	118.26	157.33	163.46	153.91	153.91	153.91	153.91	153.91	153.91	153.91	170.80
Misc. & Overhead	154.87	34.43	29.12	28.04	27.75	31.85	38.07	37.79	39.25	40.75	52.99	65.88
Operating Interest	65.04	14.46	12.23	11.78	11.65	13.38	15.99	15.87	16.49	17.11	22.26	27.67
Total Variable Costs	<u>\$3,317.28</u>	<u>\$737.46</u>	<u>\$623.86</u>	<u>\$600.69</u>	<u>\$594.37</u>	<u>\$682.13</u>	<u>\$815.52</u>	<u>\$809.39</u>	<u>\$840.83</u>	<u>\$872.78</u>	<u>\$1,135.03</u>	<u>\$1,411.12</u>
Gross Income minus VC	<u>-\$3,317.28</u>	<u>-\$737.46</u>	<u>-\$560.11</u>	<u>-\$338.44</u>	<u>-\$220.37</u>	<u>-\$172.13</u>	<u>\$119.48</u>	<u>\$210.61</u>	<u>\$519.17</u>	<u>\$827.22</u>	<u>\$819.97</u>	<u>\$1,308.88</u>
<b>Fixed Costs:</b>												
Insurance	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00
Property Taxes	43.75	43.75	43.75	43.75	43.75	43.75	43.75	43.75	43.75	43.75	43.75	43.75
Machine Costs	534.06	534.06	534.06	534.06	534.06	534.06	534.06	534.06	534.06	534.06	534.06	551.67
Shop	154.29	154.29	154.29	154.29	154.29	154.29	154.29	154.29	154.29	154.29	154.29	154.29
Land Interest Cost	800.00	800.00	800.00	800.00	800.00	800.00	800.00	800.00	800.00	800.00	800.00	800.00
Interest on Estab. Costs	<u>0.00</u>	<u>291.74</u>	<u>446.20</u>	<u>599.29</u>	<u>749.45</u>	<u>900.35</u>	<u>1,057.40</u>	<u>1,206.39</u>	<u>1,358.84</u>	<u>1,501.93</u>	<u>1,635.11</u>	<u>2,142.81</u>
Total Fixed Cost	<u>\$1,545.10</u>	<u>\$1,836.84</u>	<u>\$1,991.30</u>	<u>\$2,144.38</u>	<u>\$2,294.55</u>	<u>\$2,445.45</u>	<u>\$2,602.50</u>	<u>\$2,751.49</u>	<u>\$2,903.94</u>	<u>\$3,047.02</u>	<u>\$3,180.21</u>	<u>\$3,705.52</u>
Total Cost	<u>\$4,862.38</u>	<u>\$2,574.30</u>	<u>\$2,615.16</u>	<u>\$2,745.07</u>	<u>\$2,888.93</u>	<u>\$3,127.58</u>	<u>\$3,418.02</u>	<u>\$3,560.88</u>	<u>\$3,744.77</u>	<u>\$3,919.81</u>	<u>\$4,315.24</u>	<u>\$5,116.64</u>
Net Projected Returns	<u>-\$4,862.38</u>	<u>-\$2,574.30</u>	<u>-\$2,551.41</u>	<u>-\$2,502.82</u>	<u>-\$2,514.93</u>	<u>-\$2,617.58</u>	<u>-\$2,483.02</u>	<u>-\$2,540.88</u>	<u>-\$2,384.77</u>	<u>-\$2,219.81</u>	<u>-\$2,360.24</u>	<u>-\$2,396.64</u>
Cumulative Returns	<u>-\$4,862.38</u>	<u>-\$7,436.68</u>	<u>-\$9,988.08</u>	<u>-\$12,490.91</u>	<u>-\$15,005.83</u>	<u>-\$17,623.41</u>	<u>-\$20,106.44</u>	<u>-\$22,647.32</u>	<u>-\$25,032.08</u>	<u>-\$27,251.89</u>	<u>-\$29,612.13</u>	<u>-\$32,008.77</u>



Table 6DD. Cash flow analysis for establishing a double density hazelnut orchard in the Willamette Valley.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Full Prod
<b>Income:</b>											
Yield (Lbs per Acre)	0	0	150	570	880	1,200	2,200	2,300	2,400	2,000	3,200
Price (\$ per Lb)	<u>\$0.85</u>	<u>\$0.85</u>	<u>\$0.85</u>	<u>\$0.85</u>	<u>\$0.85</u>	<u>\$0.85</u>	<u>\$0.85</u>	<u>\$0.85</u>	<u>\$0.85</u>	<u>\$0.85</u>	<u>\$0.85</u>
Gross Income(\$ per Acre)	\$0.00	\$0.00	\$127.50	\$484.50	\$748.00	\$1,020.00	\$1,870.00	\$1,955.00	\$2,040.00	\$1,700.00	\$2,720.00
<b>Variable Costs (VC):</b>											
Field Preparation	\$57.94	\$0.73	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Trees	1,404.00	65.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drain Tile	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sawdust Mulch	33.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paint Trees	26.60	26.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	298.00	27.00	54.00	85.00	85.00	175.00	175.00	175.00	175.00	175.00	465.00
Chemicals	111.82	103.16	85.80	97.69	97.46	101.34	125.65	110.44	113.68	117.28	141.28
IPM Scouting	0.00	0.00	0.00	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Nutrient Analysis	0.00	0.00	0.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Rodent Materials	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Hired Labor	161.45	523.39	463.16	208.47	155.16	156.92	300.58	306.70	313.00	358.24	298.07
Harvest,Wash & Dry Nuts	0.00	0.00	8.25	31.35	48.40	66.00	121.00	126.50	132.00	110.00	176.00
Shop	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Machine Costs	157.31	118.26	157.33	163.46	153.91	153.91	153.91	153.91	153.91	173.91	170.80
Misc. & Overhead	189.97	45.66	40.88	32.32	30.02	35.68	46.83	46.65	47.40	574.75	65.58
Operating Interest	<u>79.79</u>	<u>19.18</u>	<u>17.17</u>	<u>13.58</u>	<u>12.61</u>	<u>14.99</u>	<u>19.67</u>	<u>19.59</u>	<u>19.91</u>	<u>31.39</u>	<u>27.54</u>
Total Variable Costs	\$4,069.12	\$977.98	\$875.58	\$692.37	\$643.05	\$764.33	\$1,003.13	\$999.29	\$1,015.40	\$1,601.07	\$1,404.77
Gross Income minus VC	-\$4,069.12	-\$977.98	-\$748.08	-\$207.87	\$104.95	\$255.67	\$866.87	\$955.71	\$1,024.60	\$98.93	\$1,315.23
<b>Cash Fixed Costs:</b>											
Insurance	\$13.00	\$13.00	\$13.00	\$13.00	\$13.00	\$13.00	\$13.00	\$13.00	\$13.00	\$13.00	\$13.00
Property Taxes	<u>43.75</u>	<u>43.75</u>	<u>43.75</u>	<u>43.75</u>	<u>43.75</u>	<u>43.75</u>	<u>43.75</u>	<u>43.75</u>	<u>43.75</u>	<u>43.75</u>	<u>43.75</u>
Total Cash Fixed Cost	\$56.75	\$56.75	\$56.75	\$56.75	\$56.75	\$56.75	\$56.75	\$56.75	\$56.75	\$56.75	\$56.75
Total Cash Cost	\$4,125.87	\$1,034.73	\$932.33	\$749.12	\$699.80	\$821.08	\$1,059.88	\$1,056.04	\$1,072.15	\$1,657.82	\$1,461.52
Annual Cash Flow	-\$4,125.87	-\$1,034.73	-\$804.83	-\$264.62	\$48.20	\$198.92	\$810.12	\$898.96	\$967.85	\$42.18	\$1,258.48
Cumulative Cash Flow	-\$4,125.87	-\$5,160.60	-\$5,965.43	-\$6,230.05	-\$6,181.85	-\$5,982.93	-\$5,172.81	-\$4,273.85	-\$3,306.00	-\$3,263.81	-\$2,005.34

Table 7DD. Economic costs and returns of establishing a double density hazelnut orchard in the Willamette Valley.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Full Prod
<b>Income:</b>											
Yield (Lbs per Acre)	0.00	0.00	150	570	880	1,200	2,200	2,300	2,400	2,000	3,200
Price (\$ per Lb)	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85	\$0.85
Gross Income(\$ per Acre)	\$0.00	\$0.00	\$127.50	\$484.50	\$748.00	\$1,020.00	\$1,870.00	\$1,955.00	\$2,040.00	\$1,700.00	\$2,720.00
<b>Variable Costs (VC):</b>											
Field Preparation	\$57.94	\$0.73	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Trees	1,404.00	65.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drain Tile	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sawdust/Mulch	33.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paint Trees	26.60	26.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fertilizer	298.00	27.00	54.00	85.00	85.00	175.00	175.00	175.00	175.00	175.00	465.00
Chemicals	111.82	103.16	85.80	97.69	97.46	101.34	125.65	110.44	113.68	117.28	141.28
IPM Scouting	0.00	0.00	0.00	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Nutrient Analysis	0.00	0.00	0.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Rodent Materials	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Hired Labor	161.45	523.39	463.16	208.47	155.16	156.92	300.58	306.70	313.00	358.24	298.07
Harvest/Wash & Dry Nuts	0.00	0.00	8.25	31.35	48.40	66.00	121.00	126.50	132.00	110.00	176.00
Shop	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Machine Costs	157.31	118.26	157.33	163.46	153.91	153.91	153.91	153.91	153.91	173.91	170.80
Misc. & Overhead	189.97	45.66	40.88	32.32	30.02	35.68	46.83	46.65	47.40	574.75	65.58
Operating Interest	79.79	19.18	17.17	13.58	12.61	14.99	19.67	19.59	19.91	31.39	27.54
Total Variable Costs	\$4,069.12	\$977.98	\$875.58	\$692.37	\$643.05	\$764.33	\$1,003.13	\$999.29	\$1,015.40	\$1,601.07	\$1,404.77
Gross Income minus VC	-\$4,069.12	-\$977.98	-\$748.08	-\$207.87	\$104.95	\$255.67	\$866.87	\$955.71	\$1,024.60	\$98.93	\$1,315.23
<b>Fixed Costs:</b>											
Insurance	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00	13.00
Property Taxes	43.75	43.75	43.75	43.75	43.75	43.75	43.75	43.75	43.75	43.75	43.75
Machine Costs	534.06	534.06	534.06	534.06	534.06	534.06	534.06	534.06	534.06	534.06	531.67
Shop	154.29	154.29	154.29	154.29	154.29	154.29	154.29	154.29	154.29	154.29	154.29
Land Interest Cost	800.00	800.00	800.00	800.00	800.00	800.00	800.00	800.00	800.00	800.00	800.00
Interest on Estab. Costs	0.00	336.85	508.45	676.55	822.32	958.07	1,092.92	1,199.18	1,306.50	1,416.12	1,927.29
Total Fixed Cost	\$1,545.10	\$1,881.95	\$2,053.55	\$2,221.65	\$2,367.42	\$2,503.17	\$2,638.02	\$2,744.28	\$2,851.60	\$2,961.22	\$3,490.00
Total Cost	\$5,614.22	\$2,859.93	\$2,929.13	\$2,914.02	\$3,010.47	\$3,267.49	\$3,641.15	\$3,743.57	\$3,867.00	\$4,562.28	\$4,894.77
Net Projected Returns	-\$5,614.22	-\$2,859.93	-\$2,801.63	-\$2,429.52	-\$2,262.47	-\$2,247.49	-\$1,771.15	-\$1,788.57	-\$1,827.00	-\$2,862.28	-\$2,174.77
Cumulative Returns	-\$5,614.22	-\$8,474.15	-\$11,275.78	-\$13,705.30	-\$15,967.77	-\$18,215.26	-\$19,986.41	-\$21,774.98	-\$23,601.98	-\$26,464.26	-\$28,639.03

**Table 8SD. Cash and Economic Costs per acre to Establish a Standard-Density Hazelnut Orchard for the First Twelve Years**

Cost Item	Cash Costs	% of Total	Economic	% of Total
Trees	\$767	5.85%	\$767	1.79%
Drain Tile	1,500	11.43%	1,500	3.50%
Fertilizer and Chemicals	3,279	24.99%	3,279	7.65%
All Labor	2,685	20.46%	2,685	6.26%
All Machine Costs	1,844	14.06%	8,271	19.28%
Harvest and Drying Nuts	704	5.37%	704	1.64%
Interest: Loans, Establishment & Land Costs	244	1.86%	21,733	50.67%
Other	<u>2,098</u>	15.99%	<u>3,950</u>	9.21%
Totals	\$13,121		\$42,889	

**Table 8DD. Cash and Economic Costs per acre to Establish a Double-Density Hazelnut Orchard for the First Eleven Years**

Cost Item	Cash Costs	% of Total	Economic	% of Total
Trees	\$1,469	10.01%	\$1,469	3.56%
Drain Tile	\$1,500	10.22%	1,500	3.63%
Fertilizer and Chemicals	3,095	21.09%	3,095	7.49%
All Labor	3,245	22.12%	3,245	7.86%
All Machine Costs	1,711	11.66%	7,603	18.41%
Harvest and Drying Nuts	820	5.59%	820	1.98%
Interest: Loans, Establishment & Land Costs	275	1.88%	19,320	46.77%
Other	<u>2,556</u>	17.42%	<u>4,253</u>	10.30%
Totals	\$14,670		\$41,304	

**Figure 1. Cumulative Cash Flow and Net Returns per acre for Standard-Density and Double-Density Hazelnut Orchard**

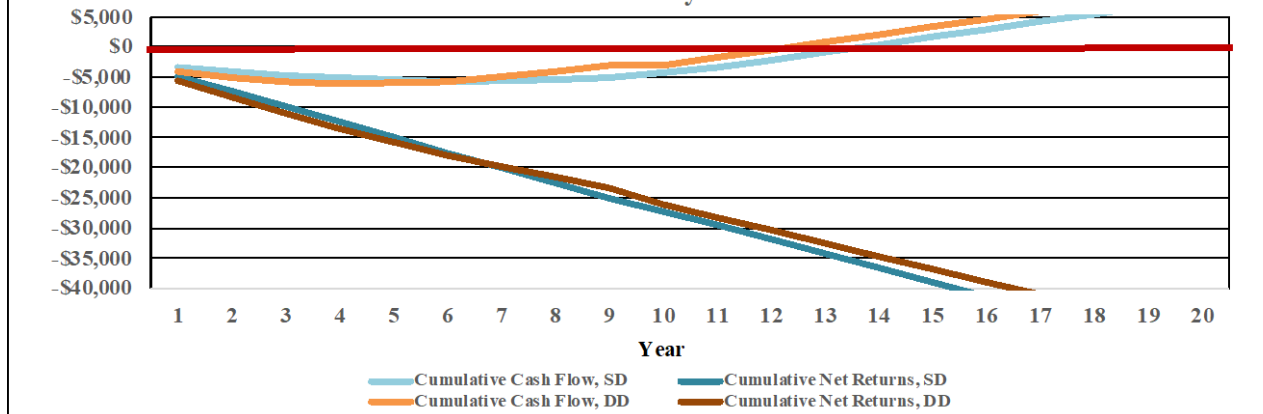


Figure 2. The Cumulative Net Returns per acre for Establishing a Standard-Density Hazelnut Orchard, with a Sensitivity Analysis Showing the Financial Impacts of a 0% ROI as an Opportunity Cost in Land Ownership, Capital to Establish an Orchard, both Land

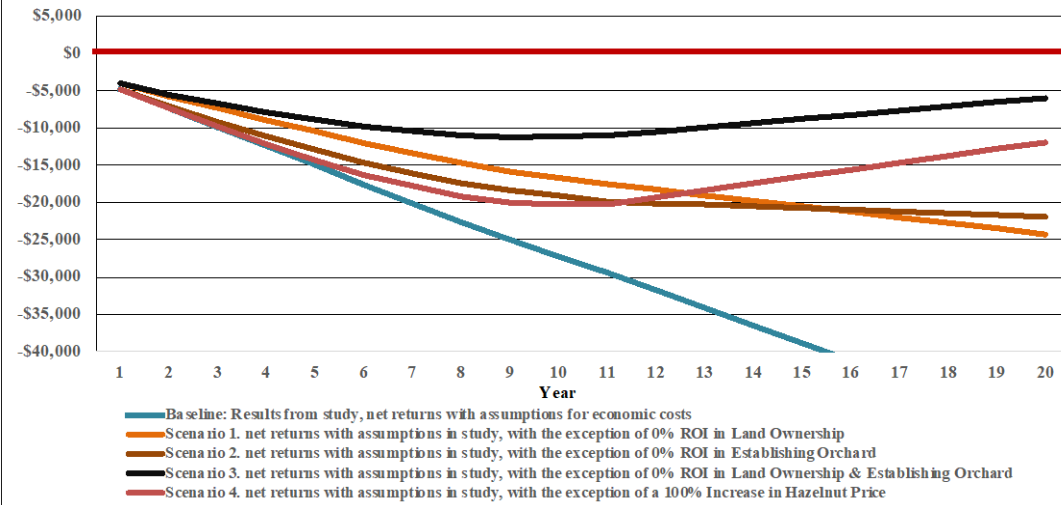


Figure 3. The Cumulative Net Returns per acre for Establishing a Double-Density Hazelnut Orchard, with a Sensitivity Analysis Showing the Financial Impacts of a 0% ROI as an Opportunity Cost in Land Ownership, Capital to Establish an Orchard, both Land Ow

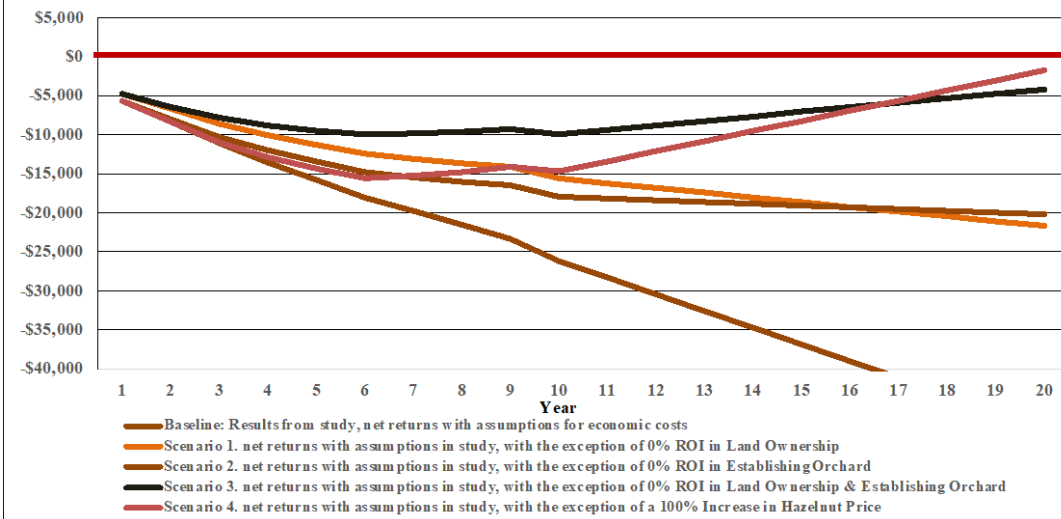


Table 9. Results of Sensitivity Analysis for Standard- and Double-Density Hazelnut Orchards, \$/acre.

Ranking of Scenarios, Based on Profitability from Total Dollars at the End of 20-Years*	Cash Flow Breakeven Year	**Cash Flow Dollars at End of 20-Years	Economic Breakeven Year	*Total Dollars at End of 20-Years
<b>Standard-Density</b>				
1. Scenario #3: 0% ROI on Land and Establishment	14	\$7,776	>20	-\$6,150
2. Scenario #4: 100% Increase in Hazelnut Price	10	\$40,642	>20	-\$11,784
3. Scenario #2: 0% ROI on Establishment Costs	14	\$7,776	>20	-\$22,150
4. Scenario #1: 0% ROI on Land Ownership	14	\$7,776	>20	-\$24,524
<i>Baseline: Results from Study</i>	14	\$7,776	>20	-\$51,182
<b>Double-Density</b>				
1. Scenario #4: 100% Increase in Hazelnut Price	8	\$46,692	>20	-\$2,147
2. Scenario #3: 0% ROI on Land and Establishment	13	\$9,321	>20	-\$4,622
3. Scenario #2: 0% ROI on Establishment Costs	13	\$9,321	>20	-\$20,622
4. Scenario #1: 0% ROI on Land Ownership	13	\$9,321	>20	-\$22,416
<i>Baseline: Results from Study</i>	13	\$9,321	>20	-\$48,212

\*\*Return on Investment on Land and Establishment Costs are not included in Cash Flow Analysis.

## APPENDIX D

### Annual Enterprise Budgets to Establish a Standard-Density Hazelnut Orchard.

Table 10SD. Hazelnut Orchard Establishment, Year 1, Standard Density, \$/Acre Economic Costs and Returns.					
<u>VARIABLE CASH COSTS</u>	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>
Field Preparation		\$12.41	\$51.62	\$7.94	\$71.97
GPS Marking Fields, custom			0.00	50.00	50.00
Plant Trees	2.25 hours	66.83	9.62	702.00	778.44
Drain Tile		0.00	0.00	1,500.00	1,500.00
Sawdust Mulch, custom automated		0.00	0.00	33.25	33.25
Painting Trees	1.0 hour	29.70	0.00	26.60	56.30
Potash		1.79	0.90	90.00	92.70
Nutrient Analysis		0.00	0.00	8.00	8.00
Lime		0.00	0.00	200.00	200.00
Rodent Control		0.00	0.00	4.00	4.00
Disk	2.0 appl.	6.77	11.08	0.00	17.85
Leveling Orchard		4.80	3.32	0.00	8.12
Herbicide Strip Spray	5.0 appl.	13.55	7.67	100.00	121.22
EFB Spray	1.0 appl.	5.91	2.23	8.00	16.14
Spring Tooth	2.0 appl.	5.64	6.18	0.00	11.82
Aphid/Leafroller & Leaf-tier Spray	1.0 appl.	8.13	10.46	0.47	19.06
Fall Copper Spray	1.0 appl.	5.91	2.23	3.35	11.49
Pickup		0.00	52.00	0.00	52.00
Shop		0.00	45.00	0.00	45.00
Miscellaneous and Overhead		0.00	0.00	154.87	154.87
Interest: Operating Capital	6.0 mons	<u>0.00</u>	<u>0.00</u>	<u>65.04</u>	<u>65.04</u>
<b>Total VARIABLE COSTS</b>		<b>\$161.45</b>	<b>\$202.31</b>	<b>\$2,953.52</b>	<b>\$3,317.28</b>
<u>FIXED CASH COSTS</u>				<u>Unit</u>	<u>Total</u>
CASH Costs					
Property Insurance				acre	\$13.00
Property Taxes				acre	<u>43.75</u>
<b>Total CASH Costs</b>					<b>\$56.75</b>
<u>FIXED NON-CASH Costs</u>					
Machinery and Equip - Deprec. & Interest				acre	\$434.35
Pickup - Depreciation & Interest				acre	99.71
Shop				acre	154.29
Land Interest Charge				acre	800.00
Interest on Establishment Costs				acre	<u>0.00</u>
<b>Total NON-CASH Costs</b>					<b>\$1,488.35</b>
<b>Total FIXED COSTS</b>					<b>\$1,545.10</b>
<b>Total of All Costs Per Acre</b>					<b>\$4,862.38</b>

Table 11SD. Hazelnut Orchard Establishment, Year 2, Standard Density, \$/Acre Economic Costs and Returns

<u>VARIABLE CASH COSTS</u>	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>
Production Pruning	3.6 hours	\$110.13	\$0.00	\$0.00	\$110.13
Fertilize by Hand	0.5 hours	15.30	0.00	13.50	28.80
Painting Trees	3.0 hours	91.77	0.00	26.60	118.37
Replant Trees	0.8 hours	24.47	0.00	65.00	89.47
Stake Trees	0.1 hours	3.06	0.00	0.73	3.79
Rodent Control		0.00	0.00	4.00	4.00
Sucker Control	5.0 appl.	13.55	7.67	12.53	33.75
Flailing Orchard	2.0 times	14.35	11.16	0.00	25.50
Herbicide Strip Spray	2.0 appl.	16.26	20.92	75.00	112.18
EFB Spray	1.0 appl.	7.17	5.58	8.00	20.75
Fall Copper Spray	1.0 appl.	8.13	10.46	6.70	25.30
Aphid/Leafroller & Leaf-tier Spray	1.0 appl.	8.13	10.46	0.93	19.52
Pickup		0.00	52.00	0.00	52.00
Shop		0.00	45.00	0.00	45.00
Miscellaneous and Overhead		0.00	0.00	34.43	34.43
Interest: Operating Capital	6.0 mons	<u>0.00</u>	<u>0.00</u>	<u>14.46</u>	<u>14.46</u>
<b>Total VARIABLE COSTS</b>		<b>\$312.32</b>	<b>\$163.26</b>	<b>\$261.88</b>	<b>\$737.46</b>
<u>FIXED CASH COSTS</u>				<u>Unit</u>	<u>Total</u>
CASH Costs					
Property Insurance				acre	\$13.00
Property Taxes				acre	<u>43.75</u>
<b>Total CASH Costs</b>					<b>\$56.75</b>
<u>FIXED NON-CASH Costs</u>					
Machinery and Equip - Deprec. & Interest				acre	\$434.35
Pickup - Depreciation & Interest				acre	99.71
Shop				acre	154.29
Land Interest Charge				acre	800.00
Interest on Establishment Costs				acre	<u>291.74</u>
<b>Total NON-CASH Costs</b>					<b>\$1,780.09</b>
<b>Total FIXED COSTS</b>					<b>\$1,836.84</b>
<b>Total of All Costs Per Acre</b>					<b>\$2,574.30</b>

Table 12SD. Hazelnut Orchard Establishment, Year 3, Standard Density, \$/Acre Economic Costs and Returns.

<u>GROSS INCOME</u>						
	<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Lb</u>	
Hazelnuts	75	Pounds	\$0.85	\$63.75	\$0.85	
Total GROSS Income				\$63.75	0.85	
<u>VARIABLE CASH COSTS</u>						
	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Lb</u>
Production Pruning	3.6 hours	\$113.43	\$0.00	\$0.00	\$113.43	\$1.51
Fertilize by Hand/prune	0.5 hours	15.75	0.00	40.50	56.25	0.75
Herbicide Strip Spray	2.0 appl.	16.26	20.92	50.00	87.18	1.16
EFB Spray	1.0 appl.	5.24	7.81	8.00	21.05	0.28
Sucker Control	5.0 appl.	13.55	7.67	12.53	33.75	0.45
Fall Copper Spray	1.0 appl.	8.13	10.46	13.41	32.00	0.43
Flailing Orchard	2.0 times	14.35	11.16	0.00	25.50	0.34
Aphid/Leafroller & Leaf-tier Spray	1.0 appl.	8.13	10.46	1.86	20.45	0.27
Rodent Control		0.00	0.00	4.00	4.00	0.05
Leveling Orchard		5.10	3.32	0.00	8.42	0.11
Harvesting Costs						
Sweeping Floor		11.61	11.54	0.00	23.15	0.31
Harvesting Nut		15.63	13.74	0.00	29.37	0.39
Loading Totes		18.57	8.24	0.00	26.81	0.36
Wash & Dry Nuts	75 lbs	0.00	0.00	4.13	4.13	0.06
Pickup		0.00	52.00	0.00	52.00	0.69
Shop		0.00	45.00	0.00	45.00	0.60
Miscellaneous and Overhead		0.00	0.00	29.12	29.12	0.39
Interest: Operating Capital	6.0 mons	0.00	0.00	12.23	12.23	0.16
Total VARIABLE COSTS		\$245.75	\$202.33	\$175.78	\$623.86	\$8.32
<u>FIXED CASH COSTS</u>				<u>Unit</u>	<u>Total</u>	<u>Cost/Lb</u>
CASH Costs						
Property Insurance				acre	\$13.00	\$0.17
Property Taxes				acre	43.75	0.58
Total CASH Costs					\$56.75	\$0.76
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS					-\$616.86	-\$8.22
<u>FIXED NON-CASH Costs</u>						<u>Cost/Lb</u>
Machinery and Equip - Deprec. & Interest				acre	\$434.35	\$5.79
Pickup - Depreciation & Interest				acre	99.71	1.33
Shop				acre	154.29	2.06
Land Interest Charge				acre	800.00	10.67
Interest on Establishment Costs				acre	446.20	5.95
Total NON-CASH Costs					\$1,934.55	\$25.79
Total FIXED COSTS					\$1,991.30	\$26.55
Total of All Costs Per Acre					\$2,615.16	\$34.87
<b>Net Projected Returns</b>					<b>-\$2,551.41</b>	<b>-\$34.02</b>

Table 13SD Hazelnut Orchard Establishment, Year 4, Standard Density, \$/Acre Economic Costs and Returns.

<u>GROSS INCOME</u>						
	<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Lb</u>	
Hazelnuts	285	Pounds	\$0.85	\$242.25	\$0.85	
Total GROSS Income				\$242.25	\$0.85	
<u>VARIABLE CASH COSTS</u>						
	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Lb</u>
Brush Removal		\$7.17	\$3.49	\$0.00	\$10.66	\$0.04
Fertilize by Hand/prune	0.0 hours	0.00	0.00	63.75	63.75	0.22
Herbicide Strip Spray	2.0 appl.	16.26	20.92	50.00	87.18	0.31
IPM Scouting		32.45	0.00	3.50	35.95	0.13
Nutrient Analysis		0.00	0.00	8.00	8.00	0.03
Sucker Control	5.0 appl.	13.55	7.67	12.53	33.75	0.12
Boron Spray	0.5 appl.	4.06	5.23	19.13	28.43	0.10
Filbertworm Spray	1.5 appl.	12.19	15.69	12.30	40.19	0.14
Flailing Orchard	2.0 times	14.35	11.16	0.00	25.50	0.09
Aphid/Leafroller Spray	1.0 appl.	8.13	10.46	3.72	22.31	0.08
Rodent Control		0.00	0.00	4.00	4.00	0.01
Leveling Orchard		5.25	3.32	0.00	8.57	0.03
Harvesting Costs						
Sweeping Floor		11.61	11.54	0.00	23.15	0.08
Harvesting Nut		15.63	13.74	0.00	29.37	0.10
Loading Totes		19.12	8.24	0.00	27.36	0.10
Wash & Dry Nuts	285 lbs	0.00	0.00	15.68	15.68	0.06
Pickup		0.00	52.00	0.00	52.00	0.18
Shop		0.00	45.00	0.00	45.00	0.16
Miscellaneous and Overhead		0.00	0.00	28.04	28.04	0.10
Interest: Operating Capital	6.0 mons	<u>0.00</u>	<u>0.00</u>	<u>11.78</u>	<u>11.78</u>	<u>0.04</u>
Total VARIABLE COSTS		\$159.79	\$208.46	\$232.43	\$600.69	\$2.11
<u>FIXED CASH COSTS</u>				<u>Unit</u>	<u>Total</u>	<u>Cost/Lb</u>
CASH Costs						
Property Insurance				acre	\$13.00	\$0.05
Property Taxes				acre	<u>43.75</u>	<u>0.15</u>
Total CASH Costs					\$56.75	\$0.20
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS					-\$415.19	-\$1.46
<u>FIXED NON-CASH Costs</u>						
Machinery and Equip - Deprec. & Interest				acre	\$434.35	\$1.52
Pickup - Depreciation & Interest				acre	99.71	0.35
Shop				acre	154.29	0.54
Land Interest Charge				acre	800.00	2.81
Interest on Establishment Costs				acre	<u>599.29</u>	<u>2.10</u>
Total NON-CASH Costs					\$2,087.63	\$7.33
Total FIXED COSTS					\$2,144.38	\$7.52
Total of All Costs Per Acre					\$2,745.07	\$9.63
<b>Net Projected Returns</b>					-\$2,502.82	-\$8.78



Table 14SD. Hazelnut Orchard Establishment, Year 5, Standard Density, \$/Acre Economic Costs and Returns.

<u>GROSS INCOME</u>						
	<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Lb</u>	
Hazelnuts	440	Pounds	\$0.85	\$374.00	\$0.85	
Total GROSS Income				\$374.00	\$0.85	
<u>VARIABLE CASH COSTS</u>						
	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Lb</u>
Brush Removal		\$7.17	\$3.49	\$0.00	\$10.66	\$0.02
Fertilizer		1.79	0.90	63.75	66.45	0.15
Herbicide Strip Spray	2.0 appl.	16.26	20.92	50.00	87.18	0.20
IPM Scouting		33.43	0.00	3.50	36.93	0.08
Nutrient Analysis		0.00	0.00	8.00	8.00	0.02
Sucker Control	5.0 appl.	13.55	7.67	12.53	33.75	0.08
Boron Spray	0.5 appl.	4.06	5.23	21.26	30.55	0.07
Filbertworm Spray	1.5 appl.	12.19	15.69	13.67	41.56	0.09
Flailing Orchard	2.0 times	14.35	11.16	0.00	25.50	0.06
Rodent Control		0.00	0.00	4.00	4.00	0.01
Leveling Orchard		5.41	3.32	0.00	8.73	0.02
Harvesting Costs						
Sweeping Floor		11.61	11.54	0.00	23.15	0.05
Harvesting Nut		15.63	13.74	0.00	29.37	0.07
Loading Totes		19.70	8.24	0.00	27.94	0.06
Wash & Dry Nuts	440 lbs	0.00	0.00	24.20	24.20	0.06
Pickup		0.00	52.00	0.00	52.00	0.12
Shop		0.00	45.00	0.00	45.00	0.10
Miscellaneous and Overhead		0.00	0.00	27.75	27.75	0.06
Interest: Operating Capital	6.0 mons	0.00	0.00	11.65	11.65	0.03
Total VARIABLE COSTS		\$155.16	\$198.91	\$240.31	\$594.37	\$1.35
<u>FIXED CASH COSTS</u>				<u>Unit</u>	<u>Total</u>	<u>Cost/Lb</u>
CASH Costs						
Property Insurance				acre	\$13.00	\$0.03
Property Taxes				acre	43.75	0.10
Total CASH Costs					\$56.75	\$0.13
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS					-\$277.12	-\$0.63
<u>FIXED NON-CASH Costs</u>						
Machinery and Equip - Deprec. & Interest				acre	\$434.35	\$0.99
Pickup - Depreciation & Interest				acre	99.71	0.23
Shop				acre	154.29	0.35
Land Interest Charge				acre	800.00	1.82
Interest on Establishment Costs				acre	749.45	1.70
Total NON-CASH Costs					\$2,237.80	\$5.09
Total FIXED COSTS					\$2,294.55	\$5.21
Total of All Costs Per Acre					\$2,888.93	\$6.57
<b>Net Projected Returns</b>					-\$2,514.93	-\$5.72

Table 15SD. Hazelnut Orchard Establishment, Year 6, Standard Density, \$/Acre Economic Costs and Returns.

<u>GROSS INCOME</u>						
	<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Lb</u>	
Hazelnuts	600	Pounds	\$0.85	\$510.00	\$0.85	
Total GROSS Income				\$510.00	\$0.85	
<u>VARIABLE CASH COSTS</u>						
	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Lb</u>
Brush Removal		\$7.17	\$3.49	\$0.00	\$10.66	\$0.02
Fertilizer		1.79	0.90	131.25	133.95	0.22
Lime		0.00	0.00	0.00	0.00	0.00
Herbicide Strip Spray	2.0 appl.	16.26	20.92	50.00	87.18	0.15
IPM Scouting		34.43	0.00	3.50	37.93	0.06
Nutrient Analysis		0.00	0.00	8.00	8.00	0.01
Sucker Control	5.0 appl.	13.55	7.67	12.53	33.75	0.06
Boron Spray	0.5 appl.	4.06	5.23	23.62	32.92	0.05
Filbertworm Spray	1.5 appl.	12.19	15.69	15.19	43.08	0.07
Flailing Orchard	2.0 times	14.35	11.16	0.00	25.50	0.04
Rodent Control		0.00	0.00	4.00	4.00	0.01
Leveling Orchard		5.57	3.32	0.00	8.89	0.01
Harvesting Costs						
Sweeping Floor		11.61	11.54	0.00	23.15	0.04
Harvesting Nut		15.63	13.74	0.00	29.37	0.05
Loading Totes		20.29	8.24	0.00	28.53	0.05
Wash & Dry Nuts	600 Lbs	0.00	0.00	33.00	33.00	0.06
Pickup		0.00	52.00	0.00	52.00	0.09
Shop		0.00	45.00	0.00	45.00	0.08
Miscellaneous and Overhead		0.00	0.00	31.85	31.85	0.05
Interest: Operating Capital	6.0 mons	<u>0.00</u>	<u>0.00</u>	<u>13.38</u>	<u>13.38</u>	<u>0.02</u>
Total VARIABLE COSTS		\$156.92	\$198.91	\$326.31	\$682.13	\$1.14
<u>FIXED CASH COSTS</u>						
				<u>Unit</u>	<u>Total</u>	<u>Cost/Lb</u>
CASH Costs						
Property Insurance				acre	\$13.00	\$0.02
Property Taxes				acre	<u>43.75</u>	<u>0.07</u>
Total CASH Costs					\$56.75	\$0.09
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS					-\$228.88	-\$0.38
<u>FIXED NON-CASH Costs</u>						
Machinery and Equip - Deprec. & Interest				acre	\$434.35	\$0.72
Pickup - Depreciation & Interest				acre	99.71	0.17
Shop				acre	154.29	0.26
Land Interest Charge				acre	800.00	1.33
Interest on Establishment Costs				acre	<u>900.35</u>	<u>1.50</u>
Total NON-CASH Costs					\$2,388.70	\$3.98
Total FIXED COSTS					\$2,445.45	\$4.08
Total of All Costs Per Acre					\$3,127.58	\$5.21
<b>Net Projected Returns</b>					-\$2,617.58	-\$4.36

Table 16SD. Hazelnut Orchard Establishment, Year 7, Standard Density, \$/Acre Economic Costs and Returns.

<u>GROSS INCOME</u>		<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Lb</u>	
Hazelnuts		1,100	Pounds	\$0.85	\$935.00	\$0.85	
Total GROSS Income					\$935.00	\$0.85	
<u>VARIABLE CASH COSTS</u>		<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Lb</u>
Maintainance Pruning		2.0 hours	\$70.93	\$0.00	\$0.00	\$70.93	\$0.06
Brush Removal			7.17	3.49	0.00	10.66	0.01
Fertilizer			1.79	0.90	131.25	133.95	0.12
Herbicide Strip Spray		2.0 appl.	16.26	20.92	50.00	87.18	0.08
IPM Scouting			35.46	0.00	3.50	38.96	0.04
Nutrient Analysis			0.00	0.00	8.00	8.00	0.01
Sucker Control		5.0 appl.	13.55	7.67	12.53	33.75	0.03
Boron Spray		0.5 appl.	4.06	5.23	26.24	35.54	0.03
Filbertworm Spray		1.5 appl.	12.19	15.69	16.88	44.76	0.04
Flailing Orchard		2.0 times	14.35	11.16	0.00	25.50	0.02
Rodent Control			0.00	0.00	4.00	4.00	0.00
Leveling Orchard			5.74	3.32	0.00	9.06	0.01
Harvesting Costs							
Sweeping Floor			11.61	11.54	0.00	23.15	0.02
Harvesting Nut			15.63	13.74	0.00	29.37	0.03
Loading Totes			20.90	8.24	0.00	29.14	0.03
Wash & Dry Nuts		1,100 Lbs	0.00	0.00	60.50	60.50	0.06
Pickup			0.00	52.00	0.00	52.00	0.05
Shop			0.00	45.00	0.00	45.00	0.04
Miscellaneous and Overhead			0.00	0.00	38.07	38.07	0.03
Interest: Operating Capital		6.0 mons	<u>0.00</u>	<u>0.00</u>	<u>15.99</u>	<u>15.99</u>	<u>0.01</u>
Total VARIABLE COSTS			\$229.65	\$198.91	\$386.96	\$815.52	\$0.74
<u>FIXED CASH COSTS</u>					<u>Unit</u>	<u>Total</u>	<u>Cost/Lb</u>
CASH Costs							
Property Insurance					acre	\$13.00	\$0.01
Property Taxes					acre	<u>43.75</u>	<u>0.04</u>
Total CASH Costs						\$56.75	\$0.05
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS						\$62.73	\$0.06
<u>FIXED NON-CASH Costs</u>							
Machinery and Equip - Deprec. & Interest					acre	\$434.35	\$0.39
Pickup - Depreciation & Interest					acre	99.71	0.09
Shop					acre	154.29	0.14
Land Interest Charge					acre	800.00	0.73
Interest on Establishment Costs					acre	<u>1,057.40</u>	<u>0.96</u>
Total NON-CASH Costs						\$2,545.75	\$2.31
Total FIXED COSTS						\$2,602.50	\$2.37
Total of All Costs Per Acre						\$3,418.02	\$3.11
<b>Net Projected Returns</b>						<b>-\$2,483.02</b>	<b>-\$2.26</b>

Table 17SD. Hazelnut Orchard Establishment, Year 8, Standard Density, \$/Acre Economic Costs and Returns.

<u>GROSS INCOME</u>						
	<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Lb</u>	
Hazelnuts	1,200	Pounds	\$0.85	\$1,020.00	\$0.85	
Total GROSS Income				\$1,020.00	\$0.85	
<u>VARIABLE CASH COSTS</u>						
	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Lb</u>
Maintainance Pruning	2.0 hours	\$73.05	\$0.00	\$0.00	\$73.05	\$0.06
Brush Removal		7.17	3.49	0.00	10.66	0.01
Fertilizer		1.79	0.90	131.25	133.95	0.11
Herbicide Strip Spray	2.0 appl.	16.26	20.92	50.00	87.18	0.07
IPM Scouting		36.53	0.00	3.50	40.03	0.03
Sucker Control	5.0 appl.	13.55	7.67	12.53	33.75	0.03
Boron Spray	0.5 appl.	4.06	5.23	29.16	38.46	0.03
Filbertworm Spray	1.5 appl.	12.19	15.69	18.75	46.64	0.04
Flailing Orchard	2.0 times	14.35	11.16	0.00	25.50	0.02
Rodent Control		0.00	0.00	4.00	4.00	0.00
Leveling Orchard		5.91	3.32	0.00	9.23	0.01
Harvesting Costs						
Sweeping Floor		11.61	11.54	0.00	23.15	0.02
Harvesting Nut		15.63	13.74	0.00	29.37	0.02
Loading Totes		21.52	8.24	0.00	29.76	0.02
Wash & Dry Nuts	1,200 Lbs	0.00	0.00	66.00	66.00	0.06
Pickup		0.00	52.00	0.00	52.00	0.04
Shop		0.00	45.00	0.00	45.00	0.04
Miscellaneous and Overhead		0.00	0.00	37.79	37.79	0.03
Interest: Operating Capital	6.0 mons	0.00	0.00	15.87	15.87	0.01
Total VARIABLE COSTS		\$233.64	\$198.91	\$376.85	\$809.39	\$0.67
<u>FIXED CASH COSTS</u>						
CASH Costs						
Property Insurance				acre	\$13.00	\$0.01
Property Taxes				acre	43.75	0.04
Total CASH Costs					\$56.75	\$0.05
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS					\$153.86	\$0.13
<u>FIXED NON-CASH Costs</u>						
Machinery and Equip - Deprec. & Interest				acre	\$434.35	\$0.36
Pickup - Depreciation & Interest				acre	99.71	0.08
Shop				acre	154.29	0.13
Land Interest Charge				acre	800.00	0.67
Interest on Establishment Costs				acre	1,206.39	1.01
Total NON-CASH Costs					\$2,694.74	\$2.25
Total FIXED COSTS					\$2,751.49	\$2.29
Total of All Costs Per Acre					\$3,560.88	\$2.97
<b>Net Projected Returns</b>					<b>-\$2,540.88</b>	<b>-\$2.12</b>

Table 18SD. Hazelnut Orchard Establishment, Year 9, Standard Density, \$/Acre Economic Costs and Returns.

<u>GROSS INCOME</u>		<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Lb</u>	
Hazelnuts		1,600	Pounds	\$0.85	\$1,360.00	\$0.85	
Total GROSS Income					\$1,360.00	\$0.85	
<u>VARIABLE CASH COSTS</u>		<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Lb</u>
Maintainance Pruning		2.0 hours	\$75.25	\$0.00	\$0.00	\$75.25	\$0.05
Brush Removal			7.17	3.49	0.00	10.66	0.01
Fertilizer			1.79	0.90	131.25	133.95	0.08
Herbicide Strip Spray		2.0 appl.	16.26	20.92	50.00	87.18	0.05
IPM Scouting			37.62	0.00	3.50	41.12	0.03
Nutrient Analysis			0.00	0.00	8.00	8.00	0.01
Sucker Control		5.0 appl.	13.55	7.67	12.53	33.75	0.02
Boron Spray		0.5 appl.	4.06	5.23	32.40	41.70	0.03
Filbertworm Spray		1.5 appl.	12.19	15.69	18.75	46.64	0.03
Flailing Orchard		2.0 times	14.35	11.16	0.00	25.50	0.02
Rodent Control			0.00	0.00	4.00	4.00	0.00
Leveling Orchard			6.09	3.32	0.00	9.41	0.01
Harvesting Costs							
Sweeping Floor			11.61	11.54	0.00	23.15	0.01
Harvesting Nut			15.63	13.74	0.00	29.37	0.02
Loading Totes			22.17	8.24	0.00	30.41	0.02
Wash & Dry Nuts		1,600 Lbs	0.00	0.00	88.00	88.00	0.06
Pickup			0.00	52.00	0.00	52.00	0.03
Shop			0.00	45.00	0.00	45.00	0.03
Miscellaneous and Overhead			0.00	0.00	39.25	39.25	0.02
Interest: Operating Capital		6.0 mons	<u>0.00</u>	<u>0.00</u>	<u>16.49</u>	<u>16.49</u>	<u>0.01</u>
Total VARIABLE COSTS			\$237.75	\$198.91	\$404.17	\$840.83	\$0.53
<u>FIXED CASH COSTS</u>					<u>Unit</u>	<u>Total</u>	<u>Cost/Lb</u>
CASH Costs							
Property Insurance					acre	\$13.00	\$0.01
Property Taxes					acre	<u>43.75</u>	<u>0.03</u>
Total CASH Costs						\$56.75	\$0.04
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS						\$462.42	\$0.29
<u>FIXED NON-CASH Costs</u>							
Machinery and Equip - Deprec. & Interest					acre	\$434.35	\$0.27
Pickup - Depreciation & Interest					acre	99.71	0.06
Shop					acre	154.29	0.10
Land Interest Charge					acre	800.00	0.50
Interest on Establishment Costs					acre	<u>1,358.84</u>	<u>0.85</u>
Total NON-CASH Costs						\$2,847.19	\$1.78
Total FIXED COSTS						\$2,903.94	\$1.81
Total of All Costs Per Acre						\$3,744.77	\$2.34
<b>Net Projected Returns</b>						<b>-\$2,384.77</b>	<b>-\$1.49</b>

Table 19SD. Hazelnut Orchard Establishment, Year 10, Standard Density, \$/Acre Economic Costs and Returns.

<u>GROSS INCOME</u>						
	<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Lb</u>	
Hazelnuts	2,000	Pounds	\$0.85	\$1,700.00	\$0.85	
Total GROSS Income				\$1,700.00	\$0.85	
<u>VARIABLE CASH COSTS</u>						
	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Lb</u>
Maintainance Pruning	2.0 hours	\$77.50	\$0.00	\$0.00	\$77.50	\$0.04
Brush Removal		7.17	3.49	0.00	10.66	0.01
Fertilizer		1.79	0.90	131.25	133.95	0.07
Lime		0.00	0.00	0.00	0.00	0.00
Herbicide Strip Spray	2.0 appl.	16.26	20.92	50.00	87.18	0.04
IPM Scouting		38.75	0.00	3.50	42.25	0.02
Nutrient Analysis		0.00	0.00	8.00	8.00	0.00
Sucker Control	5.0 appl.	13.55	7.67	12.53	33.75	0.02
Boron Spray	0.5 appl.	4.06	5.23	36.00	45.30	0.02
Filbertworm Spray	1.5 appl.	12.19	15.69	18.75	46.64	0.02
Flailing Orchard	2.0 times	14.35	11.16	0.00	25.50	0.01
Rodent Control		0.00	0.00	4.00	4.00	0.00
Leveling Orchard		6.27	3.32	0.00	9.59	0.00
<u>Harvesting Costs</u>						
Sweeping Floor		11.61	11.54	0.00	23.15	0.01
Harvesting Nut		15.63	13.74	0.00	29.37	0.01
Loading Totes		22.83	8.24	0.00	31.08	0.02
Wash & Dry Nuts	2,000 Lbs	0.00	0.00	110.00	110.00	0.06
Pickup		0.00	52.00	0.00	52.00	0.03
Shop		0.00	45.00	0.00	45.00	0.02
Miscellaneous and Overhead		0.00	0.00	40.75	40.75	0.02
Interest: Operating Capital	6.0 mons	<u>0.00</u>	<u>0.00</u>	<u>17.11</u>	<u>17.11</u>	<u>0.01</u>
Total VARIABLE COSTS		\$241.99	\$198.91	\$431.89	\$872.78	\$0.44
<u>FIXED CASH COSTS</u>						
CASH Costs				<u>Unit</u>	<u>Total</u>	<u>Cost/Lb</u>
Property Insurance				acre	\$13.00	\$0.01
Property Taxes				acre	<u>43.75</u>	<u>0.02</u>
Total CASH Costs					\$56.75	\$0.03
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS					\$770.47	\$0.39
<u>FIXED NON-CASH Costs</u>						
Machinery and Equip - Deprec. & Interest				acre	\$434.35	\$0.22
Pickup - Depreciation & Interest				acre	99.71	0.05
Shop				acre	154.29	0.08
Land Interest Charge				acre	800.00	0.40
Interest on Establishment Costs				acre	<u>1,501.93</u>	<u>0.75</u>
Total NON-CASH Costs					\$2,990.27	\$1.50
Total FIXED COSTS					\$3,047.02	\$1.52
Total of All Costs Per Acre					\$3,919.81	\$1.96
<b>Net Projected Returns</b>					-\$2,219.81	-\$1.11

Table 20SD. Hazelnut Orchard Establishment, Year 11, Standard Density, \$/Acre Economic Costs and Returns.

<u>GROSS INCOME</u>						
	<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Lb</u>	
Hazelnuts	2,300	Pounds	\$0.85	\$1,955.00	\$0.85	
Total GROSS Income				\$1,955.00	\$0.85	
<u>VARIABLE CASH COSTS</u>						
	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Lb</u>
Maintainance Pruning	2.0 hours	\$79.83	\$0.00	\$0.00	\$79.83	\$0.03
Brush Removal		7.17	3.49	0.00	10.66	0.00
Fertilizer		1.79	0.90	131.25	133.95	0.06
Lime		0.00	0.00	200.00	200.00	0.09
Herbicide Strip Spray	2.0 appl.	16.26	20.92	50.00	87.18	0.04
IPM Scouting		39.91	0.00	3.50	43.41	0.02
Nutrient Analysis		0.00	0.00	8.00	8.00	0.00
Sucker Control	5.0 appl.	13.55	7.67	12.53	33.75	0.01
Boron Spray	0.5 appl.	4.06	5.23	40.00	49.30	0.02
Filbertworm Spray	1.5 appl.	12.19	15.69	18.75	46.64	0.02
Flailing Orchard	2.0 times	14.35	11.16	0.00	25.50	0.01
Rodent Control		0.00	0.00	4.00	4.00	0.00
Leveling Orchard		6.46	3.32	0.00	9.78	0.00
<u>Harvesting Costs</u>						
Sweeping Floor		11.61	11.54	0.00	23.15	0.01
Harvesting Nut		15.63	13.74	0.00	29.37	0.01
Loading Totes		23.52	8.24	0.00	31.76	0.01
Wash & Dry Nuts	2,300 Lbs	0.00	0.00	126.50	126.50	0.06
Pickup		0.00	52.00	0.00	52.00	0.02
Shop		0.00	45.00	0.00	45.00	0.02
Miscellaneous and Overhead		0.00	0.00	52.99	52.99	0.02
Interest: Operating Capital	6.0 mons	<u>0.00</u>	<u>0.00</u>	<u>22.26</u>	<u>22.26</u>	<u>0.01</u>
Total VARIABLE COSTS		\$246.35	\$198.91	\$689.77	\$1,135.03	\$0.49
<u>FIXED CASH COSTS</u>						
<u>CASH Costs</u>						
Property Insurance				acre	\$13.00	\$0.01
Property Taxes				acre	<u>43.75</u>	<u>0.02</u>
Total CASH Costs					\$56.75	\$0.02
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS					\$763.22	\$0.33
<u>FIXED NON-CASH Costs</u>						
Machinery and Equip - Deprec. & Interest				acre	\$434.35	\$0.19
Pickup - Depreciation & Interest				acre	99.71	0.04
Shop				acre	154.29	0.07
Land Interest Charge				acre	800.00	0.35
Interest on Establishment Costs				acre	<u>1,635.11</u>	<u>0.71</u>
Total NON-CASH Costs					\$3,123.46	\$1.36
Total FIXED COSTS					\$3,180.21	\$1.38
Total of All Costs Per Acre					\$4,315.24	\$1.88
<b>Net Projected Returns</b>					-\$2,360.24	-\$1.03

Table 21SD. Hazelnut Orchard, Full Production Years, Standard Density, \$/Acre Economic Costs and Returns.

<u>GROSS INCOME</u>								
	<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Lb</u>			
Hazelnuts	3,200	Pounds	\$0.85	\$2,720.00	\$0.85			
Total GROSS Income				\$2,720.00	\$0.85			
<u>VARIABLE CASH COSTS</u>								
	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Lb</u>		
Production Pruning	1.2 hours	\$49.33	\$13.37	\$0.00	\$62.70	\$0.02		
Maintainance Pruning	2.0 hours	82.22	0.00	0.00	82.22	0.03		
Brush Removal		7.17	3.49	0.00	10.66	0.00		
Fertilizer		1.79	0.90	175.00	177.70	0.06		
Potash		1.79	0.90	90.00	92.70	0.03		
Lime		0.00	0.00	200.00	200.00	0.06		
Herbicide Strip Spray	2.0 appl.	16.26	20.92	50.00	87.18	0.03		
IPM Scouting		41.11	0.00	3.50	44.61	0.01		
Nutrient Analysis		0.00	0.00	8.00	8.00	0.00		
Sucker Control	5.0 appl.	13.55	7.67	12.53	33.75	0.01		
Boron Spray	0.5 appl.	4.06	5.23	40.00	49.30	0.02		
Filbertworm Spray	1.5 appl.	12.19	15.69	18.75	46.64	0.01		
Flailing Orchard	2.0 times	14.35	11.16	0.00	25.50	0.01		
Aphid/Leafroller Spray	0.25 appl.	2.03	2.62	20.00	24.65	0.01		
Rodent Control		0.00	0.00	4.00	4.00	0.00		
Leveling Orchard		6.65	3.32	0.00	9.97	0.00		
Harvesting Costs								
Sweeping Floor		11.61	11.54	0.00	23.15	0.01		
Harvesting Nut		15.63	13.74	0.00	29.37	0.01		
Loading Totes		24.22	8.24	0.00	32.47	0.01		
Wash & Dry Nuts	3,200 Lbs	0.00	0.00	176.00	176.00	0.06		
Pickup		0.00	52.00	0.00	52.00	0.02		
Shop		0.00	45.00	0.00	45.00	0.01		
Miscellaneous and Overhead		0.00	0.00	65.88	65.88	0.02		
Interest: Operating Capital	6.0 mons	<u>0.00</u>	<u>0.00</u>	<u>27.67</u>	<u>27.67</u>	<u>0.01</u>		
Total VARIABLE COSTS				\$304.00	\$215.80	\$891.33	\$1,411.12	\$0.44
GROSS INCOME minus VARIABLE COSTS							\$1,308.88	\$0.41
<u>FIXED CASH COSTS</u>								
CASH Costs				<u>Unit</u>	<u>Total</u>	<u>Cost/Lb</u>		
Property Insurance				acre	\$13.00	\$0.00		
Property Taxes				acre	43.75	0.01		
Total CASH Costs					\$56.75	\$0.02		
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS							\$1,252.13	\$0.39
<u>FIXED NON-CASH Costs</u>								
Machinery and Equip - Deprec. & Interest				acre	\$451.96	\$0.14		
Pickup - Depreciation & Interest				acre	99.71	0.03		
Shop				acre	154.29	0.05		
Land Interest Charge				acre	800.00	0.25		
Amortized Establishment Costs				acre	<u>2,142.81</u>	<u>0.67</u>		
Total NON-CASH Costs					\$3,648.77	\$1.14		
Total FIXED COSTS					\$3,705.52	\$1.16		
Total of All Costs Per Acre					\$5,116.64	\$1.60		
<b>Net Projected Returns</b>							-\$2,396.64	-\$0.75



## APPENDIX E

### Annual Enterprise Budgets to Establish a Double-Density Hazelnut Orchard

Table 10DD. Hazelnut Orchard Establishment, Year 1, Double Density, \$/Acre Economic Costs and Returns.					
<u>VARIABLE CASH COSTS</u>	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>
Field Preparation		\$12.41	\$51.62	\$7.94	\$71.97
GPS Marking Fields, custom			0.00	50.00	50.00
Plant Trees	2.25 hours	66.83	9.62	1,404.00	1,480.44
Drain Tile		0.00	0.00	1,500.00	1,500.00
Sawdust Mulch, custom automated		0.00	0.00	33.25	33.25
Painting Trees	1.0 hour	29.70	0.00	26.60	56.30
Potash		1.79	0.90	90.00	92.70
Nutrient Analysis		0.00	0.00	8.00	8.00
Lime		0.00	0.00	200.00	200.00
Rodent Control		0.00	0.00	4.00	4.00
Disk	2.0 appl.	6.77	11.08	0.00	17.85
Leveling Orchard		4.80	3.32	0.00	8.12
Herbicide Strip Spray	5.0 appl.	13.55	7.67	100.00	121.22
EFB Spray	1.0 appl.	5.91	2.23	8.00	16.14
Spring Tooth	2.0 appl.	5.64	6.18	0.00	11.82
Aphid/Leafroller & Leaf-tier Spray	1.0 appl.	8.13	10.46	0.47	19.06
Fall Copper Spray	1.0 appl.	5.91	2.23	3.35	11.49
Pickup		0.00	52.00	0.00	52.00
Shop		0.00	45.00	0.00	45.00
Miscellaneous and Overhead		0.00	0.00	189.97	189.97
Interest: Operating Capital	6.0 mons	<u>0.00</u>	<u>0.00</u>	<u>79.79</u>	<u>79.79</u>
Total VARIABLE COSTS		\$161.45	\$202.31	\$3,705.36	\$4,069.12
<u>FIXED CASH COSTS</u>				<u>Unit</u>	<u>Total</u>
CASH Costs					
Property Insurance				acre	\$13.00
Property Taxes				acre	<u>43.75</u>
Total CASH Costs					\$56.75
<u>FIXED NON-CASH Costs</u>					
Machinery and Equip - Deprec. & Interest				acre	\$434.35
Pickup - Depreciation & Interest				acre	99.71
Shop				acre	154.29
Land Interest Charge				acre	800.00
Interest on Establishment Costs				acre	<u>0.00</u>
Total NON-CASH Costs					\$1,488.35
Total FIXED COSTS					\$1,545.10
Total of All Costs Per Acre					\$5,614.22

Table 11DD. Hazelnut Orchard Establishment, Year 2, Double Density, \$/Acre Economic Costs and Returns.

<u>VARIABLE CASH COSTS</u>	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>
Production Pruning	5.0 hours	\$152.96	\$0.00	\$0.00	\$152.96
Fertilize by Hand	6.0 hours	183.55	0.00	27.00	210.55
Painting Trees	3.0 hours	91.77	0.00	26.60	118.37
Replant Trees	0.8 hours	24.47	0.00	65.00	89.47
Stake Trees	0.1 hours	3.06	0.00	0.73	3.79
Rodent Control		0.00	0.00	4.00	4.00
Sucker Control	5.0 appl.	13.55	7.67	12.53	33.75
Flailing Orchard	2.0 times	14.35	11.16	0.00	25.50
Herbicide Strip Spray	2.0 appl.	16.26	20.92	75.00	112.18
EFB Spray	1.0 appl.	7.17	5.58	8.00	20.75
Fall Copper Spray	1.0 appl.	8.13	10.46	6.70	25.30
Aphid/Leafroller & Leaf-tier Spray	1.0 appl.	8.13	10.46	0.93	19.52
Pickup		0.00	52.00	0.00	52.00
Shop		0.00	45.00	0.00	45.00
Miscellaneous and Overhead		0.00	0.00	45.66	45.66
Interest: Operating Capital	6.0 mons	<u>0.00</u>	<u>0.00</u>	<u>19.18</u>	<u>19.18</u>
<b>Total VARIABLE COSTS</b>		<b>\$523.39</b>	<b>\$163.26</b>	<b>\$291.33</b>	<b>\$977.98</b>
<u>FIXED CASH COSTS</u>				<u>Unit</u>	<u>Total</u>
CASH Costs					
Property Insurance				acre	\$13.00
Property Taxes				acre	<u>43.75</u>
<b>Total CASH Costs</b>					<b>\$56.75</b>
<u>FIXED NON-CASH Costs</u>					
Machinery and Equip - Deprec. & Interest				acre	\$434.35
Pickup - Depreciation & Interest				acre	99.71
Shop				acre	154.29
Land Interest Charge				acre	800.00
Interest on Establishment Costs				acre	<u>336.85</u>
<b>Total NON-CASH Costs</b>					<b>\$1,825.20</b>
<b>Total FIXED COSTS</b>					<b>\$1,881.95</b>
<b>Total of All Costs Per Acre</b>					<b>\$2,859.93</b>

Table 12DD. Hazelnut Orchard Establishment, Year 3, Double Density, \$/Acre Economic Costs and Returns.

<u>GROSS INCOME</u>		<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Lb</u>	
Hazelnuts		150	Pounds	\$0.85	\$127.50	\$0.85	
Total GROSS Income					\$127.50	0.85	
<u>VARIABLE CASH COSTS</u>		<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Lb</u>
Production Pruning		5.0 hours	\$157.54	\$0.00	\$0.00	\$157.54	\$1.05
Fertilize by Hand/prune		6.0 hours	189.05	0.00	54.00	243.05	1.62
Herbicide Strip Spray		2.0 appl.	16.26	20.92	50.00	87.18	0.58
EFB Spray		1.0 appl.	5.24	7.81	8.00	21.05	0.14
Sucker Control		5.0 appl.	13.55	7.67	12.53	33.75	0.22
Fall Copper Spray		1.0 appl.	8.13	10.46	13.41	32.00	0.21
Flailing Orchard		2.0 times	14.35	11.16	0.00	25.50	0.17
Aphid/Leafroller & Leaftier Spray		1.0 appl.	8.13	10.46	1.86	20.45	0.14
Rodent Control			0.00	0.00	4.00	4.00	0.03
Leveling Orchard			5.10	3.32	0.00	8.42	0.06
Harvesting Costs							
Sweeping Floor			11.61	11.54	0.00	23.15	0.15
Harvesting Nut			15.63	13.74	0.00	29.37	0.20
Loading Totes			18.57	8.24	0.00	26.81	0.18
Wash & Dry Nuts	150 lbs		0.00	0.00	8.25	8.25	0.06
Pickup			0.00	52.00	0.00	52.00	0.35
Shop			0.00	45.00	0.00	45.00	0.30
Miscellaneous and Overhead			0.00	0.00	40.88	40.88	0.27
Interest: Operating Capital	6.0 mons		<u>0.00</u>	<u>0.00</u>	<u>17.17</u>	<u>17.17</u>	<u>0.11</u>
Total VARIABLE COSTS			\$463.16	\$202.33	\$210.09	\$875.58	\$5.84
<u>FIXED CASH COSTS</u>					<u>Unit</u>	<u>Total</u>	<u>Cost/Lb</u>
CASH Costs							
Property Insurance					acre	\$13.00	\$0.09
Property Taxes					acre	<u>43.75</u>	<u>0.29</u>
Total CASH Costs						\$56.75	\$0.38
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS						-\$804.83	-\$5.37
<u>FIXED NON-CASH Costs</u>							<u>Cost/Lb</u>
Machinery and Equip - Deprec. & Interest					acre	\$434.35	\$2.90
Pickup - Depreciation & Interest					acre	99.71	0.66
Shop					acre	154.29	1.03
Land Interest Charge					acre	800.00	5.33
Interest on Establishment Costs					acre	<u>508.45</u>	<u>3.39</u>
Total NON-CASH Costs						\$1,996.80	\$13.31
Total FIXED COSTS						\$2,053.55	\$13.69
Total of All Costs Per Acre						\$2,929.13	\$19.53
<b>Net Projected Returns</b>						-\$2,801.63	-\$18.68

Table 13DD. Hazelnut Orchard Establishment, Year 4, Double Density, \$/Acre Economic Costs and Returns.

<u>GROSS INCOME</u>		<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Lb</u>	
Hazelnuts		570	Pounds	\$0.85	\$484.50	\$0.85	
Total GROSS Income					\$484.50	\$0.85	
<u>VARIABLE CASH COSTS</u>		<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Lb</u>
Brush Removal			\$7.17	\$3.49	\$0.00	\$10.66	\$0.02
Fertilize by Hand/prune	1.5 hours		48.68	0.00	85.00	133.68	0.23
Herbicide Strip Spray	2.0 appl.		16.26	20.92	50.00	87.18	0.15
IPM Scouting			32.45	0.00	3.50	35.95	0.06
Nutrient Analysis			0.00	0.00	8.00	8.00	0.01
Sucker Control	5.0 appl.		13.55	7.67	12.53	33.75	0.06
Boron Spray	0.5 appl.		4.06	5.23	19.13	28.43	0.05
Filbertworm Spray	1.5 appl.		12.19	15.69	12.30	40.19	0.07
Flailing Orchard	2.0 times		14.35	11.16	0.00	25.50	0.04
Aphid/Leafroller Spray	1.0 appl.		8.13	10.46	3.72	22.31	0.04
Rodent Control			0.00	0.00	4.00	4.00	0.01
Leveling Orchard			5.25	3.32	0.00	8.57	0.02
Harvesting Costs							
Sweeping Floor			11.61	11.54	0.00	23.15	0.04
Harvesting Nut			15.63	13.74	0.00	29.37	0.05
Loading Totes			19.12	8.24	0.00	27.36	0.05
Wash & Dry Nuts	570 lbs		0.00	0.00	31.35	31.35	0.06
Pickup			0.00	52.00	0.00	52.00	0.09
Shop			0.00	45.00	0.00	45.00	0.08
Miscellaneous and Overhead			0.00	0.00	32.32	32.32	0.06
Interest: Operating Capital	6.0 mons		0.00	0.00	13.58	13.58	0.02
Total VARIABLE COSTS			\$208.47	\$208.46	\$275.43	\$692.37	\$1.21
<u>FIXED CASH COSTS</u>					<u>Unit</u>	<u>Total</u>	<u>Cost/Lb</u>
CASH Costs							
Property Insurance					acre	\$13.00	\$0.02
Property Taxes					acre	43.75	0.08
Total CASH Costs						\$56.75	\$0.10
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS						-\$264.62	-\$0.46
<u>FIXED NON-CASH Costs</u>							
Machinery and Equip - Deprec. & Interest					acre	\$434.35	\$0.76
Pickup - Depreciation & Interest					acre	99.71	0.17
Shop					acre	154.29	0.27
Land Interest Charge					acre	800.00	1.40
Interest on Establishment Costs					acre	676.55	1.19
Total NON-CASH Costs						\$2,164.90	\$3.80
Total FIXED COSTS						\$2,221.65	\$3.90
Total of All Costs Per Acre						\$2,914.02	\$5.11
<b>Net Projected Returns</b>						<b>-\$2,429.52</b>	<b>-\$4.26</b>

Table 14DD. Hazelnut Orchard Establishment, Year 5, Double Density, \$/Acre Economic Costs and Returns.

<u>GROSS INCOME</u>						
	<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Lb</u>	
Hazelnuts	880	Pounds	\$0.85	\$748.00	\$0.85	
Total GROSS Income				\$748.00	\$0.85	
<u>VARIABLE CASH COSTS</u>						
	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Lb</u>
Brush Removal		\$7.17	\$3.49	\$0.00	\$10.66	\$0.01
Fertilizer		1.79	0.90	85.00	87.70	0.10
Herbicide Strip Spray	2.0 appl.	16.26	20.92	50.00	87.18	0.10
IPM Scouting		33.43	0.00	3.50	36.93	0.04
Nutrient Analysis		0.00	0.00	8.00	8.00	0.01
Sucker Control	5.0 appl.	13.55	7.67	12.53	33.75	0.04
Boron Spray	0.5 appl.	4.06	5.23	21.26	30.55	0.03
Filbertworm Spray	1.5 appl.	12.19	15.69	13.67	41.56	0.05
Flailing Orchard	2.0 times	14.35	11.16	0.00	25.50	0.03
Rodent Control		0.00	0.00	4.00	4.00	0.00
Leveling Orchard		5.41	3.32	0.00	8.73	0.01
Harvesting Costs						
Sweeping Floor		11.61	11.54	0.00	23.15	0.03
Harvesting Nut		15.63	13.74	0.00	29.37	0.03
Loading Totes		19.70	8.24	0.00	27.94	0.03
Wash & Dry Nuts	880 lbs	0.00	0.00	48.40	48.40	0.06
Pickup		0.00	52.00	0.00	52.00	0.06
Shop		0.00	45.00	0.00	45.00	0.05
Miscellaneous and Overhead		0.00	0.00	30.02	30.02	0.03
Interest: Operating Capital	6.0 mons	0.00	0.00	12.61	12.61	0.01
Total VARIABLE COSTS		\$155.16	\$198.91	\$288.99	\$643.05	\$0.73
<u>FIXED CASH COSTS</u>				<u>Unit</u>	<u>Total</u>	<u>Cost/Lb</u>
CASH Costs						
Property Insurance				acre	\$13.00	\$0.01
Property Taxes				acre	43.75	0.05
Total CASH Costs					\$56.75	\$0.06
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS					\$48.20	\$0.05
<u>FIXED NON-CASH Costs</u>						
Machinery and Equip - Deprec. & Interest				acre	\$434.35	\$0.49
Pickup - Depreciation & Interest				acre	99.71	0.11
Shop				acre	154.29	0.18
Land Interest Charge				acre	800.00	0.91
Interest on Establishment Costs				acre	822.32	0.93
Total NON-CASH Costs					\$2,310.67	\$2.63
Total FIXED COSTS					\$2,367.42	\$2.69
Total of All Costs Per Acre					\$3,010.47	\$3.42
<b>Net Projected Returns</b>					<b>-\$2,262.47</b>	<b>-\$2.57</b>

Table 15DD. Hazelnut Orchard Establishment, Year 6, Double Density, \$/Acre Economic Costs and Returns.

<u>GROSS INCOME</u>						
	<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Lb</u>	
Hazelnuts	1,200	Pounds	\$0.85	\$1,020.00	\$0.85	
Total GROSS Income				\$1,020.00	\$0.85	
<u>VARIABLE CASH COSTS</u>						
	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Lb</u>
Brush Removal		\$7.17	\$3.49	\$0.00	\$10.66	\$0.01
Fertilizer		1.79	0.90	175.00	177.70	0.15
Lime		0.00	0.00	0.00	0.00	0.00
Herbicide Strip Spray	2.0 appl.	16.26	20.92	50.00	87.18	0.07
IPM Scouting		34.43	0.00	3.50	37.93	0.03
Nutrient Analysis		0.00	0.00	8.00	8.00	0.01
Sucker Control	5.0 appl.	13.55	7.67	12.53	33.75	0.03
Boron Spray	0.5 appl.	4.06	5.23	23.62	32.92	0.03
Filbertworm Spray	1.5 appl.	12.19	15.69	15.19	43.08	0.04
Flailing Orchard	2.0 times	14.35	11.16	0.00	25.50	0.02
Rodent Control		0.00	0.00	4.00	4.00	0.00
Leveling Orchard		5.57	3.32	0.00	8.89	0.01
Harvesting Costs						
Sweeping Floor		11.61	11.54	0.00	23.15	0.02
Harvesting Nut		15.63	13.74	0.00	29.37	0.02
Loading Totes		20.29	8.24	0.00	28.53	0.02
Wash & Dry Nuts	1,200 Lbs	0.00	0.00	66.00	66.00	0.06
Pickup		0.00	52.00	0.00	52.00	0.04
Shop		0.00	45.00	0.00	45.00	0.04
Miscellaneous and Overhead		0.00	0.00	35.68	35.68	0.03
Interest: Operating Capital	6.0 mons	<u>0.00</u>	<u>0.00</u>	<u>14.99</u>	<u>14.99</u>	<u>0.01</u>
Total VARIABLE COSTS		\$156.92	\$198.91	\$408.51	\$764.33	\$0.64
<u>FIXED CASH COSTS</u>						
CASH Costs						
Property Insurance				acre	\$13.00	\$0.01
Property Taxes				acre	<u>43.75</u>	<u>0.04</u>
Total CASH Costs					\$56.75	\$0.05
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS					\$198.92	\$0.17
<u>FIXED NON-CASH Costs</u>						
Machinery and Equip - Deprec. & Interest				acre	\$434.35	\$0.36
Pickup - Depreciation & Interest				acre	99.71	0.08
Shop				acre	154.29	0.13
Land Interest Charge				acre	800.00	0.67
Interest on Establishment Costs				acre	<u>958.07</u>	<u>0.80</u>
Total NON-CASH Costs					\$2,446.42	\$2.04
Total FIXED COSTS					\$2,503.17	\$2.09
Total of All Costs Per Acre					\$3,267.49	\$2.72
<b>Net Projected Returns</b>					-\$2,247.49	-\$1.87

Table 16DD. Hazelnut Orchard Establishment, Year 7, Double Density, \$/Acre Economic Costs and Returns.

<u>GROSS INCOME</u>		<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Lb</u>	
Hazelnuts		2,200	Pounds	\$0.85	\$1,870.00	\$0.85	
Total GROSS Income					\$1,870.00	\$0.85	
<u>VARIABLE CASH COSTS</u>		<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Lb</u>
Maintainance Pruning		4.0 hours	\$141.85	\$0.00	\$0.00	\$141.85	\$0.06
Brush Removal			7.17	3.49	0.00	10.66	0.00
Fertilizer			1.79	0.90	175.00	177.70	0.08
Herbicide Strip Spray		2.0 appl.	16.26	20.92	50.00	87.18	0.04
IPM Scouting			35.46	0.00	3.50	38.96	0.02
Nutrient Analysis			0.00	0.00	8.00	8.00	0.00
Sucker Control		5.0 appl.	13.55	7.67	12.53	33.75	0.02
Boron Spray		0.5 appl.	4.06	5.23	26.24	35.54	0.02
Filbertworm Spray		1.5 appl.	12.19	15.69	16.88	44.76	0.02
Flailing Orchard		2.0 times	14.35	11.16	0.00	25.50	0.01
Rodent Control			0.00	0.00	4.00	4.00	0.00
Leveling Orchard			5.74	3.32	0.00	9.06	0.00
Harvesting Costs							
Sweeping Floor			11.61	11.54	0.00	23.15	0.01
Harvesting Nut			15.63	13.74	0.00	29.37	0.01
Loading Totes			20.90	8.24	0.00	29.14	0.01
Wash & Dry Nuts		2,200 Lbs	0.00	0.00	121.00	121.00	0.06
Pickup			0.00	52.00	0.00	52.00	0.02
Shop			0.00	45.00	0.00	45.00	0.02
Miscellaneous and Overhead			0.00	0.00	46.83	46.83	0.02
Interest: Operating Capital		6.0 mons	<u>0.00</u>	<u>0.00</u>	<u>19.67</u>	<u>19.67</u>	<u>0.01</u>
Total VARIABLE COSTS			\$300.58	\$198.91	\$503.65	\$1,003.13	\$0.46
<u>FIXED CASH COSTS</u>					<u>Unit</u>	<u>Total</u>	<u>Cost/Lb</u>
CASH Costs							
Property Insurance					acre	\$13.00	\$0.01
Property Taxes					acre	<u>43.75</u>	<u>0.02</u>
Total CASH Costs						\$56.75	\$0.03
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS						\$810.12	\$0.37
<u>FIXED NON-CASH Costs</u>							
Machinery and Equip - Deprec. & Interest					acre	\$434.35	\$0.20
Pickup - Depreciation & Interest					acre	99.71	0.05
Shop					acre	154.29	0.07
Land Interest Charge					acre	800.00	0.36
Interest on Establishment Costs					acre	<u>1,092.92</u>	<u>0.50</u>
Total NON-CASH Costs						\$2,581.27	\$1.17
Total FIXED COSTS						\$2,638.02	\$1.20
Total of All Costs Per Acre						\$3,641.15	\$1.66
<b>Net Projected Returns</b>						<b>-\$1,771.15</b>	<b>-\$0.81</b>

Table 17DD. Hazelnut Orchard Establishment, Year 8, Double Density, \$/Acre Economic Costs and Returns.

<u>GROSS INCOME</u>						
	<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Lb</u>	
Hazelnuts	2,300	Pounds	\$0.85	\$1,955.00	\$0.85	
Total GROSS Income				\$1,955.00	\$0.85	
<u>VARIABLE CASH COSTS</u>						
	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Lb</u>
Maintainance Pruning	4.0 hours	\$146.11	\$0.00	\$0.00	\$146.11	\$0.06
Brush Removal		7.17	3.49	0.00	10.66	0.00
Fertilizer		1.79	0.90	175.00	177.70	0.08
Herbicide Strip Spray	2.0 appl.	16.26	20.92	50.00	87.18	0.04
IPM Scouting		36.53	0.00	3.50	40.03	0.02
Sucker Control	5.0 appl.	13.55	7.67	12.53	33.75	0.01
Boron Spray	0.5 appl.	4.06	5.23	29.16	38.46	0.02
Filbertworm Spray	1.5 appl.	12.19	15.69	18.75	46.64	0.02
Flailing Orchard	2.0 times	14.35	11.16	0.00	25.50	0.01
Rodent Control		0.00	0.00	4.00	4.00	0.00
Leveling Orchard		5.91	3.32	0.00	9.23	0.00
Harvesting Costs						
Sweeping Floor		11.61	11.54	0.00	23.15	0.01
Harvesting Nut		15.63	13.74	0.00	29.37	0.01
Loading Totes		21.52	8.24	0.00	29.76	0.01
Wash & Dry Nuts	2,300 Lbs	0.00	0.00	126.50	126.50	0.06
Pickup		0.00	52.00	0.00	52.00	0.02
Shop		0.00	45.00	0.00	45.00	0.02
Miscellaneous and Overhead		0.00	0.00	46.65	46.65	0.02
Interest: Operating Capital	6.0 mons	0.00	0.00	19.59	19.59	0.01
Total VARIABLE COSTS		\$306.70	\$198.91	\$493.68	\$999.29	\$0.43
<u>FIXED CASH COSTS</u>				<u>Unit</u>	<u>Total</u>	<u>Cost/Lb</u>
CASH Costs						
Property Insurance				acre	\$13.00	\$0.01
Property Taxes				acre	43.75	0.02
Total CASH Costs					\$56.75	\$0.02
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS					\$898.96	\$0.39
<u>FIXED NON-CASH Costs</u>						
Machinery and Equip - Deprec. & Interest				acre	\$434.35	\$0.19
Pickup - Depreciation & Interest				acre	99.71	0.04
Shop				acre	154.29	0.07
Land Interest Charge				acre	800.00	0.35
Interest on Establishment Costs				acre	1,199.18	0.52
Total NON-CASH Costs					\$2,687.53	\$1.17
Total FIXED COSTS					\$2,744.28	\$1.19
Total of All Costs Per Acre					\$3,743.57	\$1.63
<b>Net Projected Returns</b>					-\$1,788.57	-\$0.78



Table 18DD. Hazelnut Orchard Establishment, Year 9, Double Density, \$/Acre Economic Costs and Returns.

<u>GROSS INCOME</u>		<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Lb</u>	
Hazelnuts		2,400	Pounds	\$0.85	\$2,040.00	\$0.85	
Total GROSS Income					\$2,040.00	\$0.85	
<u>VARIABLE CASH COSTS</u>		<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Lb</u>
Maintainance Pruning	4.0 hours		\$150.49	\$0.00	\$0.00	\$150.49	\$0.06
Brush Removal			7.17	3.49	0.00	10.66	0.00
Fertilizer			1.79	0.90	175.00	177.70	0.07
Herbicide Strip Spray	2.0 appl.		16.26	20.92	50.00	87.18	0.04
IPM Scouting			37.62	0.00	3.50	41.12	0.02
Nutrient Analysis			0.00	0.00	8.00	8.00	0.00
Sucker Control	5.0 appl.		13.55	7.67	12.53	33.75	0.01
Boron Spray	0.5 appl.		4.06	5.23	32.40	41.70	0.02
Filbertworm Spray	1.5 appl.		12.19	15.69	18.75	46.64	0.02
Flailing Orchard	2.0 times		14.35	11.16	0.00	25.50	0.01
Rodent Control			0.00	0.00	4.00	4.00	0.00
Leveling Orchard			6.09	3.32	0.00	9.41	0.00
Harvesting Costs							
Sweeping Floor			11.61	11.54	0.00	23.15	0.01
Harvesting Nut			15.63	13.74	0.00	29.37	0.01
Loading Totes			22.17	8.24	0.00	30.41	0.01
Wash & Dry Nuts	2,400 Lbs		0.00	0.00	132.00	132.00	0.06
Pickup			0.00	52.00	0.00	52.00	0.02
Shop			0.00	45.00	0.00	45.00	0.02
Miscellaneous and Overhead			0.00	0.00	47.40	47.40	0.02
Interest: Operating Capital	6.0 mons		0.00	0.00	19.91	19.91	0.01
Total VARIABLE COSTS			\$313.00	\$198.91	\$503.49	\$1,015.40	\$0.42
<u>FIXED CASH COSTS</u>					<u>Unit</u>	<u>Total</u>	<u>Cost/Lb</u>
CASH Costs							
Property Insurance					acre	\$13.00	\$0.01
Property Taxes					acre	43.75	0.02
Total CASH Costs						\$56.75	\$0.02
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS						\$967.85	\$0.40
<u>FIXED NON-CASH Costs</u>							
Machinery and Equip - Deprec. & Interest					acre	\$434.35	\$0.18
Pickup - Depreciation & Interest					acre	99.71	0.04
Shop					acre	154.29	0.06
Land Interest Charge					acre	800.00	0.33
Interest on Establishment Costs					acre	1,306.50	0.54
Total NON-CASH Costs						\$2,794.85	\$1.16
Total FIXED COSTS						\$2,851.60	\$1.19
Total of All Costs Per Acre						\$3,867.00	\$1.61
<b>Net Projected Returns</b>						<b>-\$1,827.00</b>	<b>-\$0.76</b>

Table 19DD. Hazelnut Orchard Establishment, Year 10, Double Density, \$/Acre Economic Costs and Returns.

<u>GROSS INCOME</u>						
	<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Lb</u>	
Hazelnuts	2,000	Pounds	\$0.85	\$1,700.00	\$0.85	
Total GROSS Income				\$1,700.00	\$0.85	
<u>VARIABLE CASH COSTS</u>						
	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Lb</u>
Maintainance Pruning	2.0 hours	\$77.50	\$0.00	\$0.00	\$77.50	\$0.04
Tree removal	3.0 hours	116.26	20.00	500.00	636.26	0.32
Brush Removal		7.17	3.49	0.00	10.66	0.01
Fertilizer		1.79	0.90	175.00	177.70	0.09
Lime		0.00	0.00	0.00	0.00	0.00
Herbicide Strip Spray	2.0 appl.	16.26	20.92	50.00	87.18	0.04
IPM Scouting		38.75	0.00	3.50	42.25	0.02
Nutrient Analysis		0.00	0.00	8.00	8.00	0.00
Sucker Control	5.0 appl.	13.55	7.67	12.53	33.75	0.02
Boron Spray	0.5 appl.	4.06	5.23	36.00	45.30	0.02
Filbertworm Spray	1.5 appl.	12.19	15.69	18.75	46.64	0.02
Flailing Orchard	2.0 times	14.35	11.16	0.00	25.50	0.01
Rodent Control		0.00	0.00	4.00	4.00	0.00
Leveling Orchard		6.27	3.32	0.00	9.59	0.00
Harvesting Costs						
Sweeping Floor		11.61	11.54	0.00	23.15	0.01
Harvesting Nut		15.63	13.74	0.00	29.37	0.01
Loading Totes		22.83	8.24	0.00	31.08	0.02
Wash & Dry Nuts	2,000 Lbs	0.00	0.00	110.00	110.00	0.06
Pickup		0.00	52.00	0.00	52.00	0.03
Shop		0.00	45.00	0.00	45.00	0.02
Miscellaneous and Overhead		0.00	0.00	74.75	74.75	0.04
Interest: Operating Capital	6.0 mons	0.00	0.00	31.39	31.39	0.02
Total VARIABLE COSTS		\$358.24	\$218.91	\$1,023.92	\$1,601.07	\$0.80
<u>FIXED CASH COSTS</u>				<u>Unit</u>	<u>Total</u>	<u>Cost/Lb</u>
CASH Costs						
Property Insurance				acre	\$13.00	\$0.01
Property Taxes				acre	43.75	0.02
Total CASH Costs					\$56.75	\$0.03
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS					\$42.18	\$0.02
<u>FIXED NON-CASH Costs</u>						
Machinery and Equip - Deprec. & Interest				acre	\$434.35	\$0.22
Pickup - Depreciation & Interest				acre	99.71	0.05
Shop				acre	154.29	0.08
Land Interest Charge				acre	800.00	0.40
Interest on Establishment Costs				acre	1,416.12	0.71
Total NON-CASH Costs					\$2,904.47	\$1.45
Total FIXED COSTS					\$2,961.22	\$1.48
Total of All Costs Per Acre					\$4,562.28	\$2.28
<b>Net Projected Returns</b>					-\$2,862.28	-\$1.43

Table 20DD. Hazelnut Orchard, Full Production Years, Double Density, \$/Acre Economic Costs and Returns

<u>GROSS INCOME</u>		<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Lb</u>	
Hazelnuts		3,200	Pounds	\$0.85	\$2,720.00	\$0.85	
Total GROSS Income					\$2,720.00	\$0.85	
<u>VARIABLE CASH COSTS</u>		<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Lb</u>
Production Pruning	1.2 hours		\$47.90	\$13.37	\$0.00	\$61.27	\$0.02
Maintainance Pruning	2.0 hours		79.83	0.00	0.00	79.83	0.02
Brush Removal			7.17	3.49	0.00	10.66	0.00
Fertilizer			1.79	0.90	175.00	177.70	0.06
Potash			1.79	0.90	90.00	92.70	0.03
Lime			0.00	0.00	200.00	200.00	0.06
Herbicide Strip Spray	2.0 appl.		16.26	20.92	50.00	87.18	0.03
IPM Scouting			39.91	0.00	3.50	43.41	0.01
Nutrient Analysis			0.00	0.00	8.00	8.00	0.00
Sucker Control	5.0 appl.		13.55	7.67	12.53	33.75	0.01
Boron Spray	0.5 appl.		4.06	5.23	40.00	49.30	0.02
Filbertworm Spray	1.5 appl.		12.19	15.69	18.75	46.64	0.01
Flailing Orchard	2.0 times		14.35	11.16	0.00	25.50	0.01
Aphid/Leafroller Spray	0.25 appl.		2.03	2.62	20.00	24.65	0.01
Rodent Control			0.00	0.00	4.00	4.00	0.00
Leveling Orchard			6.46	3.32	0.00	9.78	0.00
Harvesting Costs							
Sweeping Floor			11.61	11.54	0.00	23.15	0.01
Harvesting Nut			15.63	13.74	0.00	29.37	0.01
Loading Totes			23.52	8.24	0.00	31.76	0.01
Wash & Dry Nuts	3,200 Lbs		0.00	0.00	176.00	176.00	0.06
Pickup			0.00	52.00	0.00	52.00	0.02
Shop			0.00	45.00	0.00	45.00	0.01
Miscellaneous and Overhead			0.00	0.00	65.58	65.58	0.02
Interest: Operating Capital	6.0 mons		0.00	0.00	27.54	27.54	0.01
Total VARIABLE COSTS			\$298.07	\$215.80	\$890.91	\$1,404.77	\$0.44
GROSS INCOME minus VARIABLE COSTS					\$1,315.23	\$0.41	
<u>FIXED CASH COSTS</u>				<u>Unit</u>	<u>Total</u>	<u>Cost/Lb</u>	
CASH Costs							
Property Insurance				acre	\$13.00	\$0.00	
Property Taxes				acre	43.75	0.01	
Total CASH Costs					\$56.75	\$0.02	
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS					\$1,258.48	\$0.39	
<u>FIXED NON-CASH Costs</u>							
Machinery and Equip - Deprec. & Interest				acre	\$451.96	\$0.14	
Pickup - Depreciation & Interest				acre	99.71	0.03	
Shop				acre	154.29	0.05	
Land Interest Charge				acre	800.00	0.25	
Amortized Establishment Costs				acre	1,927.29	0.60	
Total NON-CASH Costs					\$3,433.25	\$1.07	
Total FIXED COSTS					\$3,490.00	\$1.09	
Total of All Costs Per Acre					\$4,894.77	\$1.53	
<b>Net Projected Returns</b>					<b>-\$2,174.77</b>	<b>-\$0.68</b>	