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Christmas Tree Economics: Establishing and Producing Noble Fir Christmas Trees in Western Oregon

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Introduction

Nationwide, Christmas tree growers harvested 17.4 million trees in 2007, down from 20.8 million in 2002 (USDA Census of Agriculture, 2007). Oregon's share was 6.9 million trees in 2007, up from 6.5 million trees in 2002. Oregon led the nation in Christmas tree production accounting for 39 percent of the 2007 volume up from 31 percent from 2002.

In 2007 Oregon's Christmas tree production and sales were as follows: acres in Christmas tree production 61,850; number of trees harvested – 6.9 million; and value of sales - \$109 million. Trees are grown in several Oregon Counties, but four; Clackamas, Marion, Polk and Benton counties produce over 80% of the states total.

Two tree species, Douglas-fir and noble fir, account for over 90% of the tree sales among the various species grown. In 2007, as over the past three decades Douglas-fir accounted for the largest percentage of trees sold. In 2008, noble fir is expected to occupy that position for the first time. Noble fir is a popular Christmas tree commanding a higher market price. Over the last 10 years, noble fir planted acres have increased and recently, surpassed Douglas-fir and are beginning to be harvested.

Noble fir has a more restricted growing area than Douglas-fir. While most sites that grow noble well can also grow Douglas-fir, the reverse is not true. Good noble fir sites tend to be upland areas with 40-90 inches of rain yearly. In addition to high rainfall, the best sites are well-drained deep soils not prone to high summer temperatures. This is not to say that noble can not be grown in valley bottoms, but there tend to be more problems associated with growing this species in lowland sites.

Noble fir has excellent needle "keepability" and can ship well into other climate areas. The species is more challenging to grow than Douglas-fir and has a longer harvest rotation length. Also, generally speaking, noble has a higher planting mortality and fewer trees per acre will make the top grades as compared to Douglas-fir. Rotation lengths vary widely depending on the site, seed source used at planting, and desired market tree height and density. Major problems encountered in growing noble fir are root rots, aphids, mites and current season needle necrosis.

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This cost of production study provides growers with a tool for financial management and decision making. It was conducted in cooperation with growers, field representatives, researchers, and farm suppliers and provides typical costs and returns to a well managed noble fir

Christmas tree farm in the Willamette Valley of Oregon. Growers are encouraged to substitute their own costs to get an accurate accounting of their costs.

Assumptions

In the preparation of this publication, the following assumptions were made to provide a basis for Christmas tree production analysis.

1. Typical acreage for Christmas tree production in Oregon is 10 acres of non-irrigated land.
2. 1,500 trees are transplanted per acre (5.5' x 5.5' spacing)
3. Prices for 6 to 7 ft noble fir Christmas trees are \$20 for Grade #1 and \$15 for Grade #2 per tree. Prices based upon 2005 to 2007 average per tree prices listed by USDA National Agricultural Statistic Service (http://www.nass.usda.gov/Statistics_by_State/Oregon/Publications/Horticulture/09_12xt.pdf; (Table 2) accessed 9/09). Price per tree for study derived from listed average price by assuming average tree is 7ft. The price of Grade 2 trees are 25% of Grade 1 trees.
4. Noble fir Christmas tree harvest begins in year 7 and continues through year 10 with 90 percent of planted trees harvestable.
5. All labor is hired at a rate of \$14.00 per hour, which includes worker's compensation, unemployment insurance, and other labor overhead expenses, or is paid a piece rate for some operations.
6. The machinery and equipment used in the budget reflects the typical machinery complement of a 10 acre noble fir Christmas tree farm. A detailed breakdown of machinery values is shown in Table 1. Table 2 provides estimated machinery costs from the American Society of Agricultural Engineers. Table 3 lists the estimated cost of each operation.
7. Gasoline and diesel costs per gallon are \$2.00 and \$2.50, respectively.
8. The interest rate on operating funds is 8.5 percent and treated as a cash expense. One-half of the cash expenses are borrowed for a six-month period.
9. Machinery and land are owned by the operator and assessed 8.5 and 8 percent interest rates, respectively, as opportunity costs (a non-cash cost for the use of the asset). Land is valued at \$5,000 per acre.
10. Previous year's establishment costs are funded by the operator at a charge of 10 percent interest and are considered an opportunity cost.
11. Additional assumptions are listed for variable, fixed cash, and fixed non-cash costs in Table 4.
12. Price inflation for the time period of this study is ignored.
13. Owner management, family living, State and Federal income tax consequences are also ignored for this study

Table 1. Machinery Cost Assumptions, Noble Fir Christmas Tree Production

Machine	Size	Market Value	Hours or Miles of Annual Use	Expected Life (yrs)	Salvage Value
Tractor	2 WD 35hp, Older	\$12,000	300	20	\$1,540
Fertilizer Spreader	40' Broadcast	1,500	4	15	144
Airblast Sprayer	300 gal	15,000	100	15	1,440
Pickup*	3/4 Ton 4X4	8,000	4,000	10	3,025
Backpack Sprayer		150	N/A	7	0
Elevator		2,000	N/A	15	192
Tree Baler		3,000	N/A	15	288
Shop/Shed	25' x 50'	25,000	N/A	35	0

* Pickup for Christmas tree production is 1/3 of total cost.

Table 2. Machinery Cost Calculations, Noble Fir Christmas Tree Production

Machine	Size	--- Variable Costs ---		--- Fixed Costs ---		Total Cost
		Fuel & Lube	Repairs & Maint.	Depr. & Interest	Insurance	
----- Costs per Hour -----						
Tractor	2 WD 35hp, Older	\$14.38	\$0.50	\$3.66	\$0.20	\$18.74
Fertilizer Spreader	40' Broadcast	0.00	0.26	40.07	1.23	41.56
Airblast Sprayer	300 gal	0.00	6.95	16.03	0.49	23.47
----- Costs per Mile -----						
Pickup*	3/4 Ton 4X4	\$0.19	\$0.15	\$0.24	\$0.08	\$0.66
----- Costs per Acre -----						
Backpack Sprayer		\$0.00	\$2.14	\$2.78	\$0.00	\$4.92
Elevator		0.00	12.05	21.83	0.00	33.89
Tree Baler		0.00	18.08	32.75	0.00	50.83
Shop/Shed	25' x 50'	0.00	71.43	177.68	0.00	249.11

* Pickup for Christmas tree production is 1/3 of total cost.

Table 3. Estimated Cost of Each Operation with Power-Unit, Noble Fir Christmas Tree Production

Operation	Tractor	Miles per Hr	Acres per Hr	----- Machine Costs -----			
				Labor Cost per Acre	Variable Cost per Acre	Fixed Cost per Acre	Total Cost per Acre
Fertilizer Spreader	2WD 35hp	6.0	3.00	\$4.67	\$5.05	\$15.05	\$24.77
Airblast Sprayer	2WD 35hp	6.0	3.00	\$4.67	\$7.27	\$6.79	\$18.73

Table 4. Noble Fir Christmas Tree Production Input Assumptions for Variable, Harvest, and Fixed Costs.

	Year 1	Year 2	Year 3	Year 4	Year 5
Prices per 6-7' Grade #1 Tree, (\$/Tree)	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00
Prices per 6-7' Grade #2 Tree, (\$/Tree)	\$15.00	\$15.00	\$15.00	\$15.00	\$15.00
Trees Harvested (Grade #1), per Acre	0.00	0.00	0.00	0.00	0.00
Trees Harvested (Grade #2), per Acre	0.00	0.00	0.00	0.00	0.00
Cost of Labor, per Hour	\$14.00	\$14.00	\$14.00	\$14.00	\$14.00
Cost to Plant Trees, per Tree	\$0.40	\$0.60	\$0.00	\$0.00	\$0.00
Cost of Foliar Testing	\$0.00	\$0.00	\$0.00	\$5.00	\$5.00
Cost of Culturing/Top Working, per Tree	\$0.00	\$0.00	\$0.00	\$0.25	\$0.30
Cost of Basal Pruning, per Tree	\$0.00	\$0.00	\$0.25	\$0.25	\$0.00
Cost of Fertilizer, per Acre	\$0.00	\$0.00	\$0.00	\$0.00	\$200.00
Cost of Insecticide, per Acre	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cost of Fungicide, per Acre	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cost of Herbicide, per Acre	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00
Cost for Tagging Trees, per Tree	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cost for Shagging, per Tree	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cost for Shake & Baling Trees, per Tree	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cost for Loading Trees, per Tree	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cost to Cutting Trees, per Tree	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Time for IPM Scouting, Hours	0.50	0.50	0.50	0.50	0.50
Time to Fertilize, Hand Appl., Hours	0.00	0.00	0.00	0.00	0.00
Time for Spot Herbicide Sprays, Hours	1.60	1.60	1.60	1.60	1.60
	----- Fixed Input Costs -----				
Property Taxes	\$15.00	\$15.00	\$15.00	\$15.00	\$15.00
Property Insurance	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00
Land Values	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
Tree Cost	\$0.50	\$0.50	\$0.00	\$0.00	\$0.00
Gasoline Price	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Diesel Fuel Price	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50
Operating Interest Rate	8.50%	8.50%	8.50%	8.50%	8.50%
Machinery Interest Rate	8.50%	8.50%	8.50%	8.50%	8.50%
Land Interest Rate	8.00%	8.00%	8.00%	8.00%	8.00%
Establishment Interest Rate	10.00%	10.00%	10.00%	10.00%	10.00%
Overhead Charge	8.00%	8.00%	8.00%	8.00%	8.00%
% of Operating Capital Borrowed	50.00%	50.00%	50.00%	50.00%	50.00%
Months to Borrow Operating Capital	6.0	6.0	6.0	6.0	6.0
Planted Trees	1,500	225	0	0	0

Table 4. Noble Fir Christmas Tree Production Input Assumptions for Variable, Harvest, and Fixed Costs, (con't).

	Year 6	Year 7	Year 8	Year 9	Year 10
Prices per 6-7' Grade #1 Tree, (\$/Tree)	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00
Prices per 6-7' Grade #2 Tree, (\$/Tree)	\$15.00	\$15.00	\$15.00	\$15.00	\$15.00
Trees Harvested (Grade #1), per Acre	0.00	60.00	420.00	190.00	80.00
Trees Harvested (Grade #2), per Acre	0.00	40.00	280.00	135.00	70.00
Cost of Labor, per Hour	\$14.00	\$14.00	\$14.00	\$14.00	\$14.00
Cost to Plant Trees, per Tree	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cost of Foliar Testing	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00
Cost of Culturing/Top Working, per Tree	\$0.35	\$0.40	\$0.45	\$0.50	\$0.55
Cost of Basal Pruning, per Tree	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cost of Fertilizer, per Acre	\$200.00	\$200.00	\$200.00	\$100.00	\$50.00
Cost of Insecticide, per Acre	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00
Cost of Fungicide, per Acre	\$25.00	\$25.00	\$25.00	\$25.00	\$0.00
Cost of Herbicide, per Acre	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00
Cost for Tagging Trees, per Tree	\$0.00	\$0.30	\$0.30	\$0.30	\$0.30
Cost for Shagging, per Tree	\$0.00	\$0.90	\$0.90	\$0.90	\$0.90
Cost for Shake & Baling Trees, per Tree	\$0.00	\$0.85	\$0.85	\$0.85	\$0.85
Cost for Loading Trees, per Tree	\$0.00	\$0.65	\$0.65	\$0.65	\$0.65
Cost to Cutting Trees, per Tree	\$0.00	\$0.40	\$0.40	\$0.40	\$0.40
Time for IPM Scouting, Hours	0.50	0.50	0.50	0.50	0.50
Time to Fertilize, Hand Appl., Hours	0.00	0.00	2.00	1.50	1.00
Time for Spot Herbicide Sprays, Hours	1.60	1.60	1.60	1.60	1.60
	----- Fixed Input Costs -----				
Property taxes	\$15.00	\$15.00	\$15.00	\$15.00	\$15.00
Property insurance	\$25.00	\$25.00	\$25.00	\$25.00	\$25.00
Land values	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000
Tree cost	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Gasoline price	\$2.00	\$2.00	\$2.00	\$2.00	\$2.00
Diesel fuel price	\$2.50	\$2.50	\$2.50	\$2.50	\$2.50
Operating interest rate	8.50%	8.50%	8.50%	8.50%	8.50%
Machinery interest rate	8.50%	8.50%	8.50%	8.50%	8.50%
Land interest rate	8.00%	8.00%	8.00%	8.00%	8.00%
Establishment interest rate	10.00%	10.00%	10.00%	10.00%	10.00%
Overhead charge	8.00%	8.00%	8.00%	8.00%	8.00%
% of Operating capital borrowed	50.00%	50.00%	50.00%	50.00%	50.00%
Months to borrow operating capital	6.0	6.0	6.0	6.0	6.0
Planted trees	0	0	0	0	0

Results of establishing and producing Noble Fir Christmas trees in Western Oregon

Cash flow analysis

Table 5 contains a cash flow analysis for a 10 acre noble fir Christmas tree farm. A cash flow analysis shows the cash costs required to produce noble fir Christmas trees. Cash costs include labor, trees, fertilizer, chemicals, machinery repairs, fuel, lube, and oil, operating (short-term) interest, machinery and property taxes. The income, variable costs and cash fixed costs are shown for each of the four establishment years and at full production. Harvest begins in year 7 with 100 trees (60 Grade 1 and 40 Grade 2) and increases to 750 trees (420 Grade 1 and 280 Grade 2) in year 8. In year 9, 325 trees (190 Grade 1 and 135 Grade 2) are harvested with a final harvest of 150 trees (80 Grade 1 and 70 Grade 2) in year 10. Total variable costs are \$2,154 in the first year with an additional \$47 of cash fixed costs for a total cash cost of \$2,201 per acre.

The farm projects a positive cash flow beginning in year 7 with gross income exceeding total cash costs by \$60 per acre. In year 8, the farm returns sufficient gross income to pay all previous years' cash costs with a surplus \$2,281 over prior costs.

Figure 1 shows the major cost components in relation to total cash costs. Hired labor costs are the largest cash expense representing 29 percent of the total cash costs followed by harvest costs with 26 percent. Machine costs, which include fuel, oil, and repairs, are next with 11 percent. Fertilizer and chemicals, overhead expenses and Christmas trees accounted for 9, 7 and 6 percent for total cash costs respectively. The remaining cost items account for 12 percent of the total cash costs.

Economic costs and returns

Table 6 details the economic costs and returns for a Christmas tree farm. Economic costs include all the cash costs listed in Table 5. The ownership costs that are either an opportunity cost to the owner or dollars borrowed from a financial institution are also included in Table 6. These ownership costs include the principal and interest payments or a return on investment to the grower, or both, for machinery, and land, and funds to pay for previous year's costs.

Gross income exceeds variable and fixed costs in Year 8 with a \$6,473 per acre return to the grower. Gross income also exceeds costs in years 9 and 10 by \$2,054 and \$71 respectively. However, this Christmas tree farm does not generate enough revenue to cover cumulative production costs and at the end of the production cycle has a deficit of \$7,320 per acre.

Figure 2 shows the cost components in relation to total economic costs. When all economic costs are included, interest costs are the largest component at 27 percent of total costs. Hired labor costs are the next largest item at 15 percent of total costs. This is followed by harvest and land costs, each accounting for 13 percent of the total. Machine costs (fuel, oil, repairs, depreciation, and interest charges) and Chemical and fertilizer costs represent 9 and 5 percent of the total costs, respectively. The remaining cost items account for 18 percent of the total economic costs.

The net projected economic returns for a 10 acre noble fir Christmas tree farm are shown in Figure 3. Both the cumulative cash and economic cost and returns are represented. The projected returns for this Christmas tree farm will cover all cash costs of establishment in 8 years. With the assumptions in this study, this farm will not, however, generate sufficient gross income to

cover all economic costs. However, if the owner is willing to accept a 5.4% rate of return on invested capital, this farm breaks even at the end of the production cycle, covering all previous costs (Figure 4). A sensitivity analysis of the change in price necessary to make this Christmas tree farm a

prudent business investment indicates profitability, under assumed interest rates, could be achieved by increasing the Christmas tree prices by 28 percent from \$20.00 and \$15.00 to \$25.60 and \$19.20 for grade 1 and 2 trees, respectfully (Figure 4).

Table 5. Cash Flow Analysis for Producing Noble Fir Christmas Trees in Western Oregon

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Income:										
Trees Harvested (Grade #1), per Acre	0.00	0.00	0.00	0.00	0.00	0.00	60.00	420.00	190.00	80.00
Trees Harvested (Grade #2), per Acre	0.00	0.00	0.00	0.00	0.00	0.00	40.00	280.00	135.00	70.00
Prices per 6-7' Grade #1 Tree, (\$/Tree)	0.00	0.00	0.00	0.00	0.00	0.00	20.00	20.00	20.00	20.00
Prices per 6-7' Grade #2 Tree, (\$/Tree)	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>15.00</u>	<u>15.00</u>	<u>15.00</u>	<u>15.00</u>
Gross Income(\$ per Acre)	0.00	0.00	0.00	0.00	0.00	0.00	1800.00	12600.00	5825.00	2650.00
Variable Costs:										
Field Preparation	352.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trees	750.00	112.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chemicals	8.25	8.25	8.25	8.25	8.25	53.25	103.25	103.25	103.25	8.25
Fertilizer	0.00	0.00	0.00	0.00	200.00	200.00	200.00	200.00	100.00	50.00
Hired Labor (non-harvest)	643.40	164.40	216.90	591.90	484.07	568.40	643.40	696.73	409.73	242.65
Harvest Cost	0.00	0.00	0.00	0.00	0.00	0.00	310.00	2170.00	1007.50	465.00
Equipment	138.81	138.81	138.81	138.81	143.86	158.40	202.13	197.08	197.08	168.94
Shop	71.43	71.43	71.43	71.43	71.43	71.43	71.43	71.43	71.43	71.43
Miscellaneous and Overhead	145.11	39.63	34.83	70.23	78.01	89.52	127.82	280.48	156.52	85.90
Interest: Operating Capital	<u>44.82</u>	<u>11.37</u>	<u>9.99</u>	<u>18.71</u>	<u>20.94</u>	<u>24.25</u>	<u>35.23</u>	<u>79.03</u>	<u>43.47</u>	<u>23.21</u>
Total Variable Costs	2153.82	546.39	480.21	899.33	1006.55	1165.25	1693.25	3798.00	2088.98	1115.38
Gross Income minus VC	(2153.82)	(546.39)	(480.21)	(899.33)	(1006.55)	(1165.25)	106.75	8802.00	3736.02	1534.62
Fixed Cash Costs										
Insurance	31.97	31.97	31.97	31.97	31.97	31.97	31.97	31.97	31.97	31.97
Property Taxes	<u>15.00</u>	<u>15.00</u>	<u>15.00</u>	<u>15.00</u>	<u>15.00</u>	<u>15.00</u>	<u>15.00</u>	<u>15.00</u>	<u>15.00</u>	<u>15.00</u>
Total Fixed Cash Costs	46.97	46.97	46.97	46.97	46.97	46.97	46.97	46.97	46.97	46.97
Total Cash Cost	2200.79	593.36	527.18	946.31	1053.53	1212.22	1740.23	3844.97	2135.95	1162.35
Annual Cash Flow	(2200.79)	(593.36)	(527.18)	(946.31)	(1053.53)	(1212.22)	59.77	8755.03	3689.05	1487.65
Cumulative Cash Flow	(2200.79)	(2794.15)	(3321.33)	(4267.64)	(5321.17)	(6533.39)	(6473.61)	2281.42	5970.47	7458.11

Table 6. Economic Costs and Returns of Producing Noble Fir Christmas Trees in Western Oregon										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Income:										
Trees Harvested (Grade #1), per Acre	0.00	0.00	0.00	0.00	0.00	0.00	60.00	420.00	190.00	80.00
Trees Harvested (Grade #2), per Acre	0.00	0.00	0.00	0.00	0.00	0.00	40.00	280.00	135.00	70.00
Prices per 6-7' Grade #1 Tree, (\$/Tree)	0.00	0.00	0.00	0.00	0.00	0.00	20.00	20.00	20.00	20.00
Prices per 6-7' Grade #2 Tree, (\$/Tree)	0.00	0.00	0.00	0.00	0.00	0.00	<u>15.00</u>	<u>15.00</u>	<u>15.00</u>	<u>15.00</u>
Gross Income(\$ per Acre)	0.00	0.00	0.00	0.00	0.00	0.00	1,800.00	12,600.00	5,825.00	2,650.00
Variable Costs:										
Field Preparation	352.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trees	750.00	112.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chemicals	8.25	8.25	8.25	8.25	8.25	53.25	103.25	103.25	103.25	8.25
Fertilizer	0.00	0.00	0.00	0.00	200.00	200.00	200.00	200.00	100.00	50.00
Hired Labor (non-harvest)	643.40	164.40	216.90	591.90	484.07	568.40	643.40	696.73	409.73	242.65
Harvest Cost	0.00	0.00	0.00	0.00	0.00	0.00	310.00	2,170.00	1,007.50	465.00
Equipment	138.81	138.81	138.81	138.81	143.86	158.40	202.13	197.08	197.08	168.94
Shop	71.43	71.43	71.43	71.43	71.43	71.43	71.43	71.43	71.43	71.43
Miscellaneous and Overhead	145.11	39.63	34.83	70.23	78.01	89.52	127.82	280.48	156.52	85.90
Interest: Operating Capital	<u>44.82</u>	<u>11.37</u>	<u>9.99</u>	<u>18.71</u>	<u>20.94</u>	<u>24.25</u>	<u>35.23</u>	<u>79.03</u>	<u>43.47</u>	<u>23.21</u>
Total Variable Costs	2,153.82	546.39	480.21	899.33	1,006.55	1,165.25	1,693.25	3,798.00	2,088.98	1,115.38
Gross Income minus VC	(2,153.82)	(546.39)	(480.21)	(899.33)	(1,006.55)	(1,165.25)	106.75	8,802.00	3,736.02	1,534.62
Fixed Costs:										
Insurance	31.97	31.97	31.97	31.97	31.97	31.97	31.97	31.97	31.97	31.97
Property Taxes	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Machine Costs	99.39	99.39	99.39	99.39	99.39	128.03	128.03	112.97	112.97	99.39
Shop	177.68	177.68	177.68	177.68	177.68	177.68	177.68	177.68	177.68	177.68
Land Interest Cost	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00	400.00
Interest on Estab. Costs	<u>0.00</u>	<u>287.79</u>	<u>443.61</u>	<u>608.39</u>	<u>831.57</u>	<u>1,087.78</u>	<u>1,388.35</u>	<u>1,591.78</u>	<u>944.52</u>	<u>739.14</u>
Total Fixed Cost	724.04	1,011.82	1,167.64	1,332.43	1,555.60	1,840.46	2,141.03	2,329.41	1,682.15	1,463.17
Total Cost	2,877.85	1,558.21	1,647.85	2,231.76	2,562.16	3,005.71	3,834.28	6,127.40	3,771.12	2,578.55
Net Projected Returns	(2,877.85)	(1,558.21)	(1,647.85)	(2,231.76)	(2,562.16)	(3,005.71)	(2,034.28)	6,472.60	2,053.88	71.45
Cumulative Returns	(2,877.85)	(4,436.06)	(6,083.92)	(8,315.68)	(10,877.84)	(13,883.55)	(15,917.83)	(9,445.23)	(7,391.36)	(7,319.91)

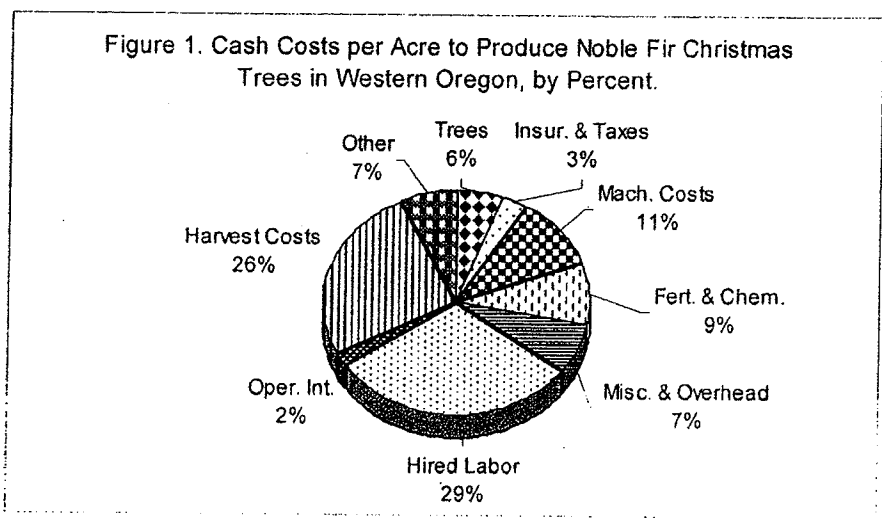


Figure 2. Economic Costs per Acre to Produce Noble Fir Christmas Trees in Western Oregon, by Percent.

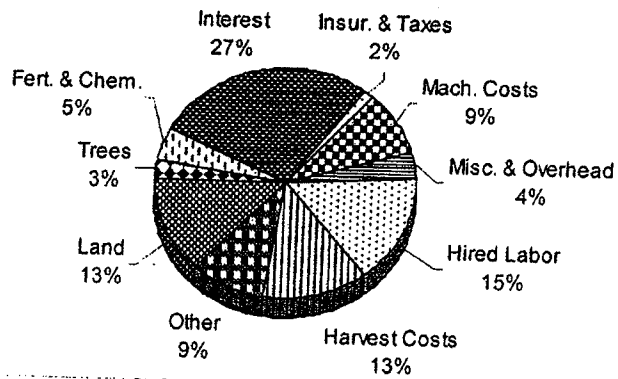
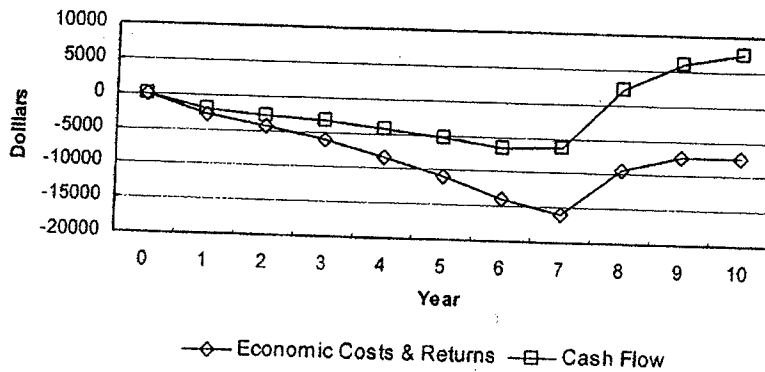
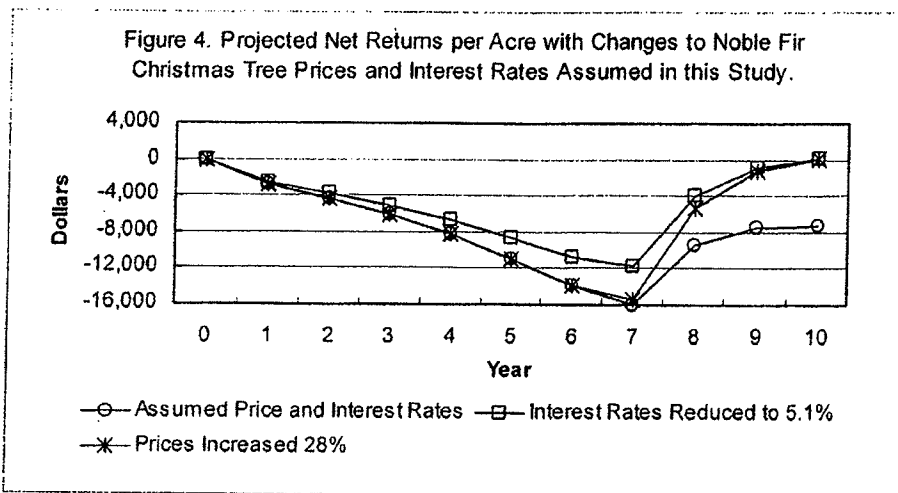


Figure 3. Comparing Cash and Economic Net Returns per Acre to Produce Noble Fir Christmas Trees in Western Oregon





Discussion

The Christmas tree markets tend to move through wide cycles in production and supply that influence price and demand for trees. Grower planting surveys may help better inform perspective growers about these cycles and adjust planting to meet the static or declining product demand.

Since the majority of Christmas trees produced in Oregon are destined for markets outside the state, regulations and restrictions can influence potential market size. For example, restrictions on pests in certain domestic and international markets require producers to carefully monitor their fields and submit to inspections which can cause disruptions. However, without these procedures growers would lose access to important markets.

During the time required to grow a noble fir, there are inevitably a number of unplanned and unknown events that will come along. These can have significant impacts on the planned costs and returns of your enterprise. New diseases, a severe

frost event, export restrictions and so on can influence your production plans through no fault of your own. No doubt growers can and will make a number of "mistakes" during a production cycle that may not be reflected in this cost budget.

Many agricultural products have a value added component which increases profitability to the producer. If Christmas tree growers are able to share in the value-added processes such as U-Cut production or sales of ancillary products or services they may be more likely to profit financially.

This cost of establishment study is meant to provide useful information to Christmas tree producers and investors who are considering planting Christmas trees. However, as with all enterprise budgets, putting your own current costs in the budget will make it more meaningful. Many tools are available to assist in budgeting such as templates from university farm management specialists and computer software programs such as "Agricultures Profitability

Tool" (*AgProfit*TM). This program is free for download at the *Agtools*TM website www.agtools.org. Talk with your local Extension agent to find the latest in Christmas tree production tools and budget information.

Growers must not forget the importance that a particular enterprise such as a Christmas tree farm can have in the overall financial stability of the farm business. Financial managers can recommend planting Christmas trees to improve profitability, but

the financial requirements to complete the planting could jeopardize cash flows, increase the debt-to-asset ratio and diminish the solvency of the farm. There are many economic and financial considerations to review before such decisions are made. Seeking advice from university Extension and research faculty, industry representatives, or consultants can help in those decisions and keep your farm profitable.

APPENDIX A

Enterprise Budgets for Noble Fir Christmas Tree Production in Western Oregon

<u>Table 7. Nobel Fir Christmas Tree Production, Year 1, Economic Costs and Returns, \$/Acre</u>					
<u>VARIABLE CASH COSTS</u>	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>
Field Preparation, Custom		0.00	0.00	150.00	150.00
Stump Removal, Custom		0.00	0.00	200.00	200.00
Soil Test		0.00	0.00	2.00	2.00
Field Layout	1.0 hour	14.00	0.00	0.00	14.00
Plant Trees		600.00	0.00	750.00	1,350.00
IPM Scouting	0.5 hours	7.00	0.00	0.00	7.00
Spot Spraying, Herbicide, 1/3 Acre	1.6 hour	22.40	2.14	8.25	32.79
Pickup		0.00	136.67	0.00	136.67
Shop		0.00	0.00	71.43	71.43
Miscellaneous and Overhead		0.00	0.00	145.11	145.11
Interest: Operating Capital	6.0 mons	0.00	0.00	44.82	44.82
Total VARIABLE COSTS		643.40	138.81	1,371.61	2,153.82
<u>FIXED COSTS</u>				<u>Unit</u>	<u>Total</u>
CASH Costs					
Pickup Insurance				acre	31.97
Property Taxes				acre	15.00
Total CASH Fixed Costs					46.97
NON-CASH Costs					
Machinery and Equip - Dep., Int., & Ins.				acre	2.78
Pickup - Depreciation & Interest				acre	96.60
Shop				acre	177.68
Land Interest Charge				acre	400.00
Interest on Establishment Costs				acre	0.00
Total NON-CASH Fixed Costs					677.06
Total FIXED COSTS					724.04
Total of All Costs Per Acre					(2,877.85)

<u>Table 8. Nobel Fir Christmas Tree Production, Year 2, Economic Costs and Returns, \$/Acre</u>						
<u>VARIABLE CASH COSTS</u>		<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>
Replant Trees			135.00	0.00	112.50	247.50
IPM Scouting	0.5	hours	7.00	0.00	0.00	7.00
Spot Spraying, Herbicide, 1/3 Acre	1.6	hour	22.40	2.14	8.25	32.79
Pickup			0.00	136.67	0.00	136.67
Shop			0.00	0.00	71.43	71.43
Miscellaneous and Overhead			0.00	0.00	39.63	39.63
Interest: Operating Capital	6.0	mons	0.00	0.00	11.37	11.37
Total VARIABLE COSTS			164.40	138.81	243.18	546.39
 <u>FIXED COSTS</u>						
<u>CASH Costs</u>						
Pickup Insurance				acre		31.97
Property Taxes				acre		15.00
Total CASH Fixed Costs						46.97
 <u>NON-CASH Costs</u>						
Machinery and Equip - Dep., Int., & Ins.				acre		2.78
Pickup - Depreciation & Interest				acre		96.60
Shop				acre		177.68
Land Interest Charge				acre		400.00
Interest on Establishment Costs				acre		287.79
Total NON-CASH Fixed Costs						964.85
 Total FIXED COSTS						1,011.82
 Total of All Costs Per Acre						(1,558.21)

<u>Table 9. Nobel Fir Christmas Tree Production, Year 3, Economic Costs and Returns, \$/Acre</u>					
<u>VARIABLE CASH COSTS</u>	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>
IPM Scouting	0.5 hours	7.00	0.00	0.00	7.00
Spot Spraying, Herbicide, 1/3 Acre	1.6 hour	22.40	2.14	8.25	32.79
Basal Pruning		187.50	0.00	0.00	187.50
Pickup		0.00	136.67	0.00	136.67
Shop		0.00	0.00	71.43	71.43
Miscellaneous and Overhead		0.00	0.00	34.83	34.83
Interest: Operating Capital	6.0 mons	0.00	0.00	9.99	9.99
Total VARIABLE COSTS		216.90	138.81	124.50	480.21
<u>FIXED COSTS</u>					
CASH Costs					<u>Unit</u>
Pickup Insurance				acre	31.97
Property Taxes				acre	15.00
Total CASH Fixed Costs					46.97
NON-CASH Costs					
Machinery and Equip - Dep., Int., & Ins.				acre	2.78
Pickup - Depreciation & Interest				acre	96.60
Shop				acre	177.68
Land Interest Charge				acre	400.00
Interest on Establishment Costs				acre	443.61
Total NON-CASH Fixed Costs					1,120.67
Total FIXED COSTS					1,167.64
Total of All Costs Per Acre					(1,647.85)

Table 10. Nobel Fir Christmas Tree Production, Year 4, Economic Costs and Returns, \$/Acre						
VARIABLE CASH COSTS						
Description		Labor	Machinery	Materials		Total
IPM Scouting	0.5 hours	7.00	0.00	0.00		7.00
Foliar Testing		0.00	0.00	5.00		5.00
Basal Pruning		187.50	0.00	0.00		187.50
Spot Spraying, Herbicide, 1/3 Acre	1.6 hour	22.40	2.14	8.25		32.79
Culturing & Top Working		375.00	0.00	0.00		375.00
Pickup		0.00	136.67	0.00		136.67
Shop		0.00	0.00	71.43		71.43
Miscellaneous and Overhead		0.00	0.00	65.23		65.23
Interest: Operating Capital	6.0 mons	0.00	0.00	18.71		18.71
Total VARIABLE COSTS		591.90	138.81	168.62		899.33
FIXED COSTS						
				<u>Unit</u>		<u>Total</u>
CASH Costs						
Pickup Insurance				acre		31.97
Property Taxes				acre		15.00
Total CASH Fixed Costs						46.97
NON-CASH Costs						
Machinery and Equip - Dep., Int., & Ins.				acre		2.78
Pickup - Depreciation & Interest				acre		96.60
Shop				acre		177.68
Land Interest Charge				acre		400.00
Interest on Establishment Costs				acre		608.39
Total NON-CASH Fixed Costs						1,285.46
Total FIXED COSTS						1,332.43
Total of All Costs Per Acre						(2,231.76)

Table 11. Nobel Fir Christmas Tree Production, Year 5, Economic Costs and Returns, \$/Acre

<u>VARIABLE CASH COSTS</u>		<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>
IPM Scouting	0.5 hours		7.00	0.00	0.00	7.00
Foliar Testing			0.00	0.00	5.00	5.00
Fertilize with Spreader	1.0 appl.		4.67	5.05	200.00	209.71
Spot Spraying, Herbicide, 1/3 Acre	1.6 hour		22.40	2.14	8.25	32.79
Culturing & Top Working			450.00	0.00	0.00	450.00
Pickup			0.00	136.67	0.00	136.67
Shop			0.00	0.00	71.43	71.43
Miscellaneous and Overhead			0.00	0.00	73.01	73.01
Interest: Operating Capital	6.0 mons		0.00	0.00	20.94	20.94
Total VARIABLE COSTS			484.07	143.86	378.63	1,006.55
<u>FIXED COSTS</u>						
CASH Costs						
				<u>Unit</u>	<u>Total</u>	
Pickup Insurance				acre	31.97	
Property Taxes				acre	15.00	
Total CASH Fixed Costs						46.97
NON-CASH Costs						
Machinery and Equip - Dep., Int., & Ins.				acre	2.78	
Pickup - Depreciation & Interest				acre	96.60	
Shop				acre	177.68	
Land Interest Charge				acre	400.00	
Interest on Establishment Costs				acre	831.57	
Total NON-CASH Fixed Costs						1,508.63
Total FIXED COSTS						1,555.60
Total of all costs per acre						(2,562.16)

Table 12. Nobel Fir Christmas Tree Production, Year 6, Economic Costs and Returns, \$/Acre

<u>VARIABLE CASH COSTS</u>	<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>
IPM Scouting	0.5 hours	7.00	0.00	0.00	7.00
Foliar Testing		0.00	0.00	5.00	5.00
Fertilize with Spreader	1.0 appl.	4.67	5.05	200.00	209.71
Spot Spraying, Herbicide, 1/3 Acre	1.6 hour	22.40	2.14	8.25	32.79
Spray, Fungicide	1.0 appl.	4.67	7.27	\$25.00	36.94
Spray, Insecticide	1.0 appl.	4.67	7.27	\$20.00	31.94
Culturing & Top Working		525.00	0.00	0.00	525.00
Pickup		0.00	136.67	0.00	136.67
Shop		0.00	0.00	71.43	71.43
Miscellaneous and Overhead		0.00	0.00	84.52	84.52
Interest: Operating Capital	6.0 mons	0.00	0.00	24.25	24.25
Total VARIABLE COSTS		568.40	158.40	438.44	1,165.25
<u>FIXED COSTS</u>					
			<u>Unit</u>	<u>Total</u>	
CASH Costs					
Pickup Insurance			acre	31.97	
Property Taxes			acre	15.00	
Total CASH Fixed Costs				46.97	
NON-CASH Costs					
Machinery and Equip - Dep., Int., & Ins.			acre	\$31.42	
Pickup - Depreciation & Interest			acre	96.60	
Shop			acre	177.68	
Land Interest Charge			acre	400.00	
Interest on Establishment Costs			acre	1,087.78	
Total NON-CASH Fixed Costs				1,793.49	
Total FIXED COSTS				1,840.46	
Total of All Costs Per Acre				(3,005.71)	

Table 13. Nobel Fir Christmas Tree Production, Year 7, Economic Costs and Returns, \$/Acre

<u>GROSS INCOME</u>						
	<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Tree*</u>	
Nobel-fir Christmas trees, Grade #1	60	Trees	\$20.00	1,200.00	20.00	
Nobel-fir Christmas trees, Grade #2	40	Trees	\$15.00	600.00	15.00	
Total GROSS Income	100			1,800.00	18.00	
<u>VARIABLE CASH COSTS</u>						
<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Tree*</u>	
IPM Scouting 0.5 hours	7.00	0.00	0.00	7.00	0.07	
Foliar Testing	0.00	0.00	5.00	5.00	0.05	
Fertilize with Spreader 1.0 appl.	4.67	5.05	200.00	209.71	2.10	
Spot Spraying, Herbicide, 1/3 Acre 1.6 hour	22.40	2.14	8.25	32.79	0.33	
Spray, Fungicide 1.0 Appl.	4.67	14.07	\$45.00	63.73	0.64	
Spray, Insecticide 1.0 Appl.	4.67	14.07	\$50.00	68.73	0.69	
Culturing & Top Working	600.00	0.00	0.00	600.00	6.00	
Tagging	30.00	0.00	0.00	30.00	0.30	
Cut Trees	40.00	0.00	0.00	40.00	0.40	
Shagging	90.00	0.00	0.00	90.00	0.90	
Baling	85.00	12.05	0.00	97.05	0.97	
Loading	65.00	18.08	0.00	83.08	0.83	
Pickup	0.00	136.67	0.00	136.67	1.37	
Shop	0.00	0.00	71.43	71.43	0.71	
Miscellaneous and Overhead	0.00	0.00	122.82	122.82	1.23	
Interest: Operating Capital 6.0 mons	0.00	0.00	35.23	35.23	0.35	
Total VARIABLE COSTS	953.40	202.13	537.73	1,693.25	16.93	
<u>FIXED COSTS</u>						
<u>CASH Costs</u>				<u>Unit</u>	<u>Total</u>	<u>Cost/Tree*</u>
Pickup Insurance				acre	31.97	0.32
Property Taxes				acre	15.00	0.15
Total CASH Fixed Costs					46.97	0.47
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS					59.77	0.60
<u>NON-CASH Costs</u>						
Machinery and Equip - Dep., Int., & Ins.				acre	\$31.42	0.31
Pickup - Depreciation & Interest				acre	96.60	0.97
Shop				acre	177.68	1.78
Land Interest Charge				acre	400.00	4.00
Interest on Establishment Costs				acre	1,388.35	13.88
Total NON-CASH Fixed Costs					2,094.06	20.94
Total FIXED COSTS					2,141.03	21.41
Total of All Costs Per Acre					3,834.28	38.34
Net Projected Returns					(2,034.28)	(20.34)

Table 14. Nobel Fir Christmas Tree Production, Year 8, Economic Costs and Returns, \$/Acre

<u>GROSS INCOME</u>					
	<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Tree*</u>
Nobel-fir Christmas trees, Grade #1	420	Trees	\$20.00	8,400.00	20.00
Nobel-fir Christmas trees, Grade #2	280	Trees	\$15.00	4,200.00	15.00
Total GROSS Income	700			12,600.00	18.00
<u>VARIABLE CASH COSTS</u>					
<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Tree*</u>
IPM Scouting 0.5 hours	7.00	0.00	0.00	7.00	0.01
Foliar Testing	0.00	0.00	5.00	5.00	0.01
Fertilizer, Hand Application 2.0 hours	28.00	0.00	200.00	228.00	0.33
Spot Spraying, Herbicide, 1/3 Acre 1.6 hour	22.40	2.14	8.25	32.79	0.05
Spray, Fungicide 1.0 Appl.	4.67	14.07	\$45.00	63.73	0.09
Spray, Insecticide 1.0 Appl.	4.67	14.07	\$50.00	68.73	0.10
Culturing & Top Working	630.00	0.00	0.00	630.00	0.90
Tagging	210.00	0.00	0.00	210.00	0.30
Cut Trees	280.00	0.00	0.00	280.00	0.40
Shagging	630.00	0.00	0.00	630.00	0.90
Baling	595.00	12.05	0.00	607.05	0.87
Loading	455.00	18.08	0.00	473.08	0.68
Pickup	0.00	136.67	0.00	136.67	0.20
Shop	0.00	0.00	71.43	71.43	0.10
Miscellaneous and Overhead	0.00	0.00	275.48	275.48	0.39
Interest: Operating Capital 6.0 mons	0.00	0.00	79.03	79.03	0.11
Total VARIABLE COSTS	2,866.73	197.08	734.19	3,798.00	5.43
<u>FIXED COSTS</u>					
			<u>Unit</u>	<u>Total</u>	<u>Cost/Tree*</u>
<u>CASH Costs</u>					
Pickup Insurance			acre	31.97	0.05
Property Taxes			acre	15.00	0.02
Total CASH Fixed Costs				46.97	0.07
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS				8,755.03	12.51
<u>NON-CASH Costs</u>					
Machinery and Equip - Dep., Int., & Ins.			acre	\$16.37	0.02
Pickup - Depreciation & Interest			acre	96.60	0.14
Shop			acre	177.68	0.25
Land Interest Charge			acre	400.00	0.57
Interest on Establishment Costs			acre	1,591.78	2.27
Total NON-CASH Fixed Costs				2,282.43	3.26
Total FIXED COSTS				2,329.41	3.33
Total of All Costs Per Acre				6,127.40	8.75
<u>Net Projected Returns</u>				6,472.60	9.25

* Based on trees harvested

Table 15. Nobel Fir Christmas Tree Production, Year 9, Economic Costs and Returns, \$/Acre

<u>GROSS INCOME</u>		<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Tree*</u>	
Nobel-fir Christmas trees, Grade #1		190	Trees	\$20.00	3,800.00	20.00	
Nobel-fir Christmas trees, Grade #2		135	Trees	\$15.00	2,025.00	15.00	
Total GROSS Income		325			5,825.00	17.92	
<u>VARIABLE CASH COSTS</u>		<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Tree*</u>
IPM Scouting	0.5 hours	7.00	0.00	0.00	7.00	0.02	
Foliar Testing		0.00	0.00	5.00	5.00	0.02	
Fertilizer, Hand Application	1.5 hours	21.00	0.00	100.00	121.00	0.37	
Spot Spraying, Herbicide, 1/3 Acre	1.6 hour	22.40	2.14	8.25	32.79	0.10	
Spray, Fungicide	1.0 Appl.	4.67	14.07	\$45.00	63.73	0.20	
Spray, Insecticide	1.0 Appl.	4.67	14.07	\$50.00	68.73	0.21	
Culturing & Top Working		350.00	0.00	0.00	350.00	1.08	
Tagging		97.50	0.00	0.00	97.50	0.30	
Cut Trees		130.00	0.00	0.00	130.00	0.40	
Shagging		292.50	0.00	0.00	292.50	0.90	
Baling		276.25	12.05	0.00	288.30	0.89	
Loading		211.25	18.08	0.00	229.33	0.71	
Pickup		0.00	136.67	0.00	136.67	0.42	
Shop		0.00	0.00	71.43	71.43	0.22	
Miscellaneous and Overhead		0.00	0.00	151.52	151.52	0.47	
Interest: Operating Capital	6.0 mons	0.00	0.00	43.47	43.47	0.13	
Total VARIABLE COSTS		1,417.23	197.08	474.66	2,088.98	6.43	
<u>FIXED COSTS</u>			<u>Unit</u>	<u>Total</u>	<u>Cost/Tree*</u>		
CASH Costs							
Pickup Insurance			acre	31.97	0.10		
Property Taxes			acre	15.00	0.05		
Total CASH Fixed Costs				46.97	0.14		
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS				3,689.05	11.35		
NON-CASH Costs							
Machinery and Equip - Dep., Int., & Ins.			acre	\$16.37	0.05		
Pickup - Depreciation & Interest *			acre	96.60	0.30		
Shop			acre	177.68	0.55		
Land Interest Charge			acre	400.00	1.23		
Interest on Establishment Costs			acre	944.52	2.91		
Total NON-CASH Fixed Costs				1,635.18	5.03		
Total FIXED COSTS				1,682.15	5.18		
Total of All Costs Per Acre				3,771.12	11.60		
Net Projected Returns				2,053.88	6.32		

* Based on trees harvested

Table 16. Nobel Fir Christmas Tree Production, Year 10, Economic Costs and Returns, \$/Acre

<u>GROSS INCOME</u>		<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Total</u>	<u>Price/Tree*</u>	
Nobel-fir Christmas trees, Grade #1		80	Trees	20.00	1,600.00	20.00	
Nobel-fir Christmas trees, Grade #2		70	Trees	15.00	1,050.00	15.00	
Total GROSS Income		150			2,650.00	17.67	
<u>VARIABLE CASH COSTS</u>		<u>Description</u>	<u>Labor</u>	<u>Machinery</u>	<u>Materials</u>	<u>Total</u>	<u>Cost/Tree*</u>
Culturing & top working			206.25	0.00	0.00	206.25	1.38
Foliar Testing			0.00	0.00	5.00	5.00	0.03
Fertilizer, Hand Application		1.0 hours	14.00	0.00	50.00	64.00	0.43
Spot Spraying, Herbicide, 1/3 Acre		1.6 hour	22.40	2.14	8.25	32.79	0.22
Tagging			45.00	0.00	0.00	45.00	0.30
Cut trees			60.00	0.00	0.00	60.00	0.40
Shagging			135.00	0.00	0.00	135.00	0.90
Baling			127.50	12.05	0.00	139.55	0.93
Loading			97.50	18.08	0.00	115.58	0.77
Pickup			0.00	136.67	0.00	136.67	0.91
Shop			0.00	0.00	71.43	71.43	0.48
Miscellaneous and Overhead			0.00	0.00	80.90	80.90	0.54
Interest: Operating Capital		6.0 mons	0.00	0.00	23.21	23.21	0.15
Total VARIABLE COSTS			707.65	168.94	238.79	1,115.38	7.44
<u>FIXED COSTS</u>				<u>Unit</u>	<u>Total</u>	<u>Cost/Tree*</u>	
CASH Costs							
Pickup Insurance				acre	31.97	0.21	
Property Taxes				acre	15.00	0.10	
Total CASH Fixed Costs					46.97	0.31	
GROSS INCOME minus VARIABLE AND FIXED CASH COSTS					1,487.65	9.92	
NON-CASH Costs							
Machinery and Equip - Dep., Int., & Ins.				acre	\$2.78	0.02	
Pickup - Depreciation & Interest				acre	96.60	0.64	
Shop				acre	177.68	1.18	
Land Interest Charge				acre	400.00	2.67	
Interest on Establishment Costs				acre	739.14	4.93	
Total NON-CASH Fixed Costs					1,416.20	9.44	
Total FIXED COSTS					1,463.17	9.75	
Total of all costs per acre					2,578.55	17.19	
Net Projected Returns					71.45	0.48	

* Based on trees harvested

January 28, 2010

Planning Commissioners
Washington County, OR

Re: Amendment File No. 09-360-PA

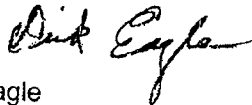
Dear Planning Commissioners,

I have lived near Scholls for well over 25 years. I farm my land for several uses to include hay, cows and equine breeding. I am familiar with pasturing of cows and horses and growing hay. I have known the Leahys for many years. I am writing this letter to support their request to change the District designation from AF-20 to AF-10.

Typically hay has three cuttings to realize its productive growth cycle and be cost effective. In our area, particularly up on Bald Peak, the summers are hot. Without irrigation, hay would grow for only one cutting. Usually the first cutting in our area often ends up wet at harvest and of little use other than for silage if it is alfalfa hay. The second cutting is the most beneficial and is sold for the best market prices. Without irrigation it would not be productive to grow hay on the subject parcel. You need around 80 acres of land with 3 cuttings to be profitable. One cutting on land half that size would be a waste of investment in time and money. Also, steep slopes can't grow hay and be harvested with today's equipment. The portion of land that could be in production on this parcel is reduced by the steepness of slope. I would estimate about 20 acres, leaving 38 acres for hay. That is not a profitable investment.

We have a successful horse breeding business and are very familiar with equine practices. Horses like cows require well drained pasture land. Horses unlike cows, can eat grasses to the ground and effectively overgraze a pasture if not fenced and rotated from one pasture to another. They also are selective in eating patches, leaving uneven stands. Typically one horse with foal to 2 acres is sufficient grazing land. After changing pastures, the grasses should be mowed, fertilized and watered to achieve maximum benefit of reseeding, new growth and to keep weeds out. This of course requires irrigation. If the soil is dry, and without irrigation the grazing of 58 acres would be of benefit to about 28 horses, for one rotation or 14 horses for two rotations. In two to three months, the pasture would be done until the rains arrived in the fall. After which the grasses would not recover until spring. During that dry period, without watering the land, invasive species and weeds can easily take over good pasture. Horses and cows both need water. Without access to water the use of the land for any type of animal husbandry is not practicable.

Thank you for your consideration,



Dick Eagle
P.O. Box 23294
Tigard, Or 97281

February 6, 2010

Washington County Planning Commission
C/O Dept of Land Use & Transportation
155 N. First Ave Suite 350-14
Hillsboro, OR 97124

Re: File No. 09-360-PA

Dear Chairman Marc San Soucie and County Planning Commissioners:

I am writing this letter in support of the Plan Amendment File No. 09-360 PA, KCL, Inc. I was asked to comment on the suitability of this site for wheat farming, for a profit. We have been farming land in Washington County for 3 generations. Our family farms over 1,600 acres of land in wheat and other crop seeds along with pumpkins, as good farming practices require that wheat be rotated with other crops. My farming skills go way back; in 1977 when I was named Farm Rancher of the Year, and earned the highest award you can achieve from the Future Farmers of America, the American Farm Degree. In addition I graduated from the University of Portland with a B.S. in Business.

I am familiar with the KCL, Inc. parcel. The site is not suitable for wheat farming as it has a considerable slope. Today, wheat farming requires special soil preparation and is maintained in a way that keeps the weeds from germinating, to maximize productivity. Wheat prices give little margin for error and in order to achieve a profit, the land has to be maintained at optimal levels. To keep the soil in prime production and eliminate competing weeds, the fields are plowed in the fall, with a practice called mold-board plowing. It is a technique that flips the soil over completely, burying the top grass and weeds. This prevents weed seeds from germinating and competing with the spring wheat germination. During this fallow period the soils are exposed to both wind and rain. Also, during this period of time the soils become saturated from the heavy rainfall and often the ground can freeze. During this period the soils remain in tack on fairly flat ground. During the fall, winter and spring this saturated and slightly frozen soil can start to thaw quickly from the morning sun. Heavy rain can occur during this freeze/thaw condition. It is during the winter and spring storm events that soils can be highly erodible. Sudden thaws, mixed with heavy rains can quickly and unpredictably erode the soil, much like a flash flood event, a flash mud event can take place on plowed vacant fields. Attached is a photo of a recent event that eroded a section of one of our parcels. It only has a 3% slope. The photo shows the deep ruts cut into the field, where rain washed the soil into the ditch. It was lucky for us, that the eroding soil ended up in a ditch alongside the County road. If it had run into a stream, there would have been immediate cause for action by a number of State agencies. Agricultural soil or any other agricultural material flowing into waters of the State can result in serious fines.

The reason I bring this to your attention is because the subject parcel is a steeply sloped parcel, with eastern morning sun exposure. This slope is highly erodible. If you were to use the current plowing technique on the subject parcel, it would be a disaster waiting to happen. There is creek on the bottom side of this parcel. It is part of the Tualatin River basin. The potential for erosion of soil from this parcel into that stream, given the plowing techniques used today, makes this site too risky to plant in grain and therefore, unsuitable for wheat production. In my professional opinion as a grain farmer, it would be impracticable to make an investment on this parcel growing grain.


Any crop that requires use of plowing techniques where the soil is tilled under and the top soil exposed would result in constant soil erosion. It would be costly to replace lost top soil and there would be added costs to replant the crop, all adding up to higher maintenance costs, while trying to maximize production. Hillside farming for grain is just not practicable, where flat land with optimal prime soils is at best, barely

profitable. In addition, hillsides typically have shallow soils, due to years of erosion. They are too shallow to retain the moisture needed to sustain a wheat crop through the dry summer months. The soils on this site will dry out too quickly, resulting in lower quality grain and reduced bushel/acre product. Again, this is a reason why farming this slope is just not suitable for wheat production.

Even if the parcel were fairly flat, the parcel would still not be profitable to farm. It has real issues with neighbor's homes being close to the property boundary lines. Today, pesticides and herbicides used to maximize productivity require efficiency in their application. The current level of development around the parcel has a direct impact on the amount of land that could be farmed with any efficiency. Avoidance of any potential overspray of chemicals or the same chemicals leaching off site is considerations for how much of the parcel could safely be put into production. There are risks associated with farm chemicals. People will sue with just a slight inference that chemicals are leaching into ground water aquifers, over spraying onto their property or leaching chemicals into their properties, especially if their land is on a lower elevation. Farmers are being scrutinized by many agencies to make sure they are careful in the application of chemicals and they are required by law to avoid agricultural runoff into streams. The risk of exposure, of being sued or fined is greater today than it was twenty years ago. As a farm business operator, from a risk management perspective, this parcel has all the makings of high risk exposure. This is due to the number of land owners that surround the parcel, each having ground wells, and the homes built close by. Not just one or two, but many parcels with homes built close to the boundary and on all sides of the property. The exposure and potential risk of being sued for damages from chemicals from not just one or two, but several owners can be expensive to defend; a risk not worth taking.

The best use of this land is to allow it to be divided for houses, like the rest of the neighborhood. This is not good farm land, not even marginal land suitable for profitable commercial farming. Tillage of this sloped parcel would create conditions that would make the land highly erodible, with a stream directly below the parcel; soils could easily wash into the stream. Costs associated with productivity, due to slope, erosion of the soils and potential impacts to the stream below, use of chemicals around a residential environment are all factors that make this parcel highly impracticable to farm. The most compelling argument is the fact that the site is just not suitable for wheat production as it would not be profitable.

Sincerely,

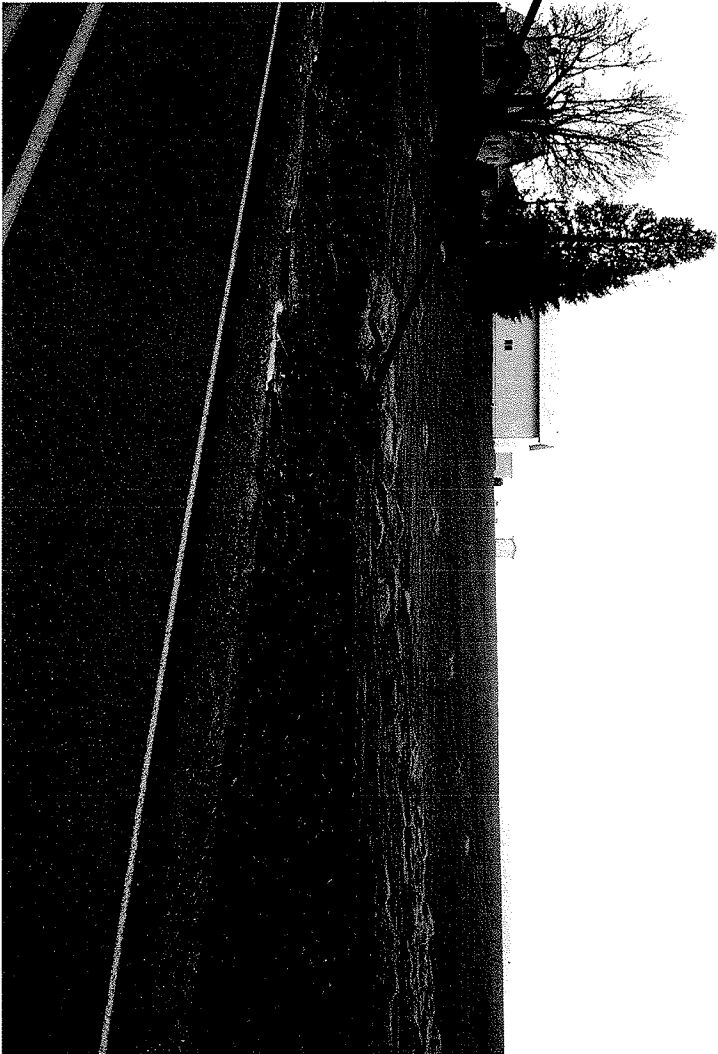


Mike Cropp
Lone Oak Farms
34059 N.W. Mountaindale Rd
N. Plains, OR 97133

CC: KCL, Inc. K Leahy President
Attachment: Photo Erosion 3% Slope

Erosion occurs even

- on Mr. Cropp's property where there is only a mild 3% slope.



January 25, 2010

Washington County Planning Commission
C/O Dept of Land Use & Transportation
155 N. First Ave Suite 350-14
Hillsboro OR 97124

Re: KCL, Inc. File No. 09-360-PA

Dear County Planning Commissioners:

I am a Hazelnut farmer. I am writing to support the proposed Plan Amendment to reclassify the old Regan land from AF-20 to AF-10. I am a 4th generation Hazelnut farmer. Our family farm, Four Ridge Orchards is located on a lower plateau on the south side of Bald Peak Rd at the approximate 300 foot elevation. We are commercial nut farmers, our market is international and our market is decreasing.

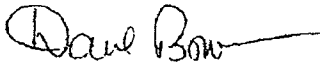
Having grown up here I have seen the area just above our farm increasingly become residential, prime farm land being developed for expansive homes. From our farm, to the northwest side of Bald Peak Rd. is the Regan land, it slopes into a canyon area at Larkins Mill Road. That site has never been considered prime farm land as evidenced by the Madrone trees that dot the hillside.

I was asked to comment on this site for suitability to grow Hazel nuts. Our farm is at about the 300 foot elevation. It takes at least 100 acres of Prime Class I soil to make a marginal profit. It takes seven years to harvest and 15 years to realize a profit. The old Regan land is somewhere above 400 feet up to around 800 feet in elevation. The soils are not Prime Class I soils. The site elevation is too high for our crop to produce well, especially without water rights on that site. Even if it were suitable elevation, the most eastern slope of that parcel makes it near impossible to use our modern day equipment to maintain and harvest a crop.

In addition to soil elevation, slope, the homes abutting this land have been built fairly close to the property lines. Nut trees are commonly sprayed using an aerial application. We have found that having at least 100 acres of ground works well for herbicide and pesticide aerial applications. The acreage size makes it cost effective and safer, avoiding potential drift and overspray. Actually we find that 100 acres next to another 100 acres is ideal. Aerial applications have risks. The difficulty of having homes built too close to the property lines on a 58 acres parcel increases the risk factor. Our market is increasingly difficult to find and today we ship internationally and our profit margin is very small. Increasing our risk makes no sense to remain profitable, sustainable for the next 5th generation.

I understand the term you use to make this decision is "practicable" meaning the farm use would be profitable. This site could not sustain a Hazelnut farm for the reasons stated and therefore, a nut farm would not be practicable.

Sincerely,



David Brown

Four Ridge Orchards
32490 Bald Peak Rd
Hillsboro, OR 97123

Cc: KCL, inc. Ken Leahy Pres.



Veronica Smith <vsmithland@gmail.com>

Irrigation of grapes

1 message

David_Weatherby@urscorp.com <David_Weatherby@urscorp.com>

Fri, Jan 15, 2010 at 10:46 AM

To: Veronica Smith <vsmithland@gmail.com>

Hi Veronica,

I spoke with Dr. Scott Burns at Portland State University. His understanding is that about 70% of grape growers in the Washington County Area irrigate grape crops for about the first three years after initial planting. Once the grapes have become established, irrigation typically ceases after three years. Drip irrigation is the preferred method.

D.

David Weatherby, RG
Sr. Geologist/Sr. Project Manager
URS Corporation
503.948.7219

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