Economic Feasibility of Growing Red Delicious Apples

in Southwestern Idaho

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Robert Smathers, Corby Garrett, & Michael Colt



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Introduction

Commercial apple production is a relatively minor agricultural crop in Idaho in comparison to commodities like potatoes, sugarbeets, and grain, but is a significant crop in the southwestern region of the state. Approximately 90 percent of the 110 million pounds of apples produced in Idaho in 1997 (Idaho Agricultural Statistics, 1998) were grown in a three-county area that included Canyon, Gem, and Payette counties. Cultivars of apples commonly grown in these counties include Red Delicious, Jonathans, and Romes. Newer cultivars such as Fuji and Gala are also becoming more common as markets for these varieties continue to grow.

For many Americans, there is only one apple cultivar that is synonymous with the word "apple" - the Red Delicious. Many consumers like this attractive, all-red apple with its sweet flavor. Growers like it because they are familiar with this variety and its problems. Packers, shippers, and sales people like it because its tough red skin hides bruises and stands up well in shipment and because its appearance is usually "as advertised." However, poor market returns in recent years due to a variety of reasons has encouraged the planting of newer and different cultivars such as Fuji and Gala. Some fruit industry leaders have even suggested that Red Delicious will not be a major cultivar at some point in the future. This is not to say that it won't continue its dominance in the foreseeable future.

There is no question that some Red Delicious blocks do not produce the type of product today's competitive markets demand, so these blocks should be removed and replaced. However, due to the high initial costs of planting, growers should be careful to assess the economics of keeping existing blocks of apples versus replanting to newer or traditional varieties.

The objective of this study is to estimate the cost of replanting a 10-acre block of existing trees to a medium to low-density Red Delicious stand. While the acreage and cultural practices may not fit all situations, they are consistent with growers' practices in southwestern Idaho.

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Assumptions

The assumptions used in this study were based upon information from Idaho growers and extension specialists, and information published by other Northwest universities. The cultural practices and inputs used are representative of typical operations. The inputs and levels of inputs specified in this publication are not University of Idaho recommendations.

Due to variations in individual orchards (site characteristics, size, degree of technology, tree densities, age of equipment, varietal selection, etc.) the costs associated with establishment and production of apples will differ. The costs and returns for producing apples in this study are based on the following specific assumptions.

- The size of orchard is 100 acres, with 50 acres in existing Red Delicious apples, 15 acres in Jonathans, 25 acres in Romes, and 10 acres to be replanted to Red Delicious.
- Based on traditional Red Delicious orchards, a medium-density stand was used. A rootstock adaptable to the soil, site, and climatic conditions prevalent in southwest Idaho is planted in 11 X 16 foot spaces, resulting in 250 trees per planted acre. Twenty-two pollinizing trees are also planted on each acre. Since the new trees will be planted into old orchard ground, it will be necessary to fumigate, remove old trees and roots, and cleanup.
- All hourly labor in the operation is valued at \$7.20 per hour and includes a base wage plus 20 percent for Social Security, Medicare, unemployment insurance, and other labor overhead expenses. A charge for management is not included in this study.

The orchard will use migrant labor, but will not supply housing.

 Table 1 lists the machinery and equipment used in the orchard operation. All items are valued at new replacement cost. Fuel costs are based on a diesel price of \$.88 per gallon and an unleaded gasoline price of \$1.38. A miscellaneous category includes tools, bins, buildings, and other equipment.

- 5. Interest on operating capital is charged at 9.5 percent from the time inputs are used until the month that capital is recovered. Interest on investment capital is calculated at a rate of 9 percent. Interest on carryover in the cost and return tables (Tables B2 through B6, Appendix B) is interest on accumulated investment in establishing the orchard. This interest is incurred as an expense from the beginning of year 2 until the first year of full production. It is then added to other establishment costs and allocated over the full production years (15 years). This prorated cost is labeled amortized establishment cost in the full-production budget, Table B7.
- An opportunity cost for land is included in the costs and returns estimates, based on an interest rate of 9 percent and a land value of \$2,000 per acre. A cost is also included for land taxes.
- Red Delicious apples in this study are valued at \$95.00 per bin. This is based on average bin returns reported by several local packing sheds.
- Herbicides for strip maintenance are applied on one third of each acre and formulations reflect this coverage.
- 9. An underground solid set irrigation system is installed the planting year and capital recovery is used to calculate depreciation and interest (Appendix A). The system has a 25-year useful life with no salvage value at the end. Labor to install the system is included in its cost.

Description 1997 P	urchase Price (\$)	Expected Years Life	Annual Use
Machinery	25 1 1 1 1 1 1 2 C	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Service States
30 HP 2wd tractor	22,000	15	700 hours
65 HP 2wd tractor (2 units)	29,200	15	550 hours
Blast sprayer 400 gallon (2 units)	11,000	10	200 hours
Weed sprayer w/boom - 100 gallon	2,100	15	150 hours
Fertilizer spreader	3,100	15	20 hours
Rotary mower, 6 ft	4,000	7	100 hours
Pickup, 1/2 ton	26,500	6	12,000 miles
Truck, 5 ton (used)	30,000	15	2,700 miles
Equipment and Buildings			
ATV	2,500	5	
Backfork	1,200	20	1
Bin trailer (2 units)	5,400	15	40 · 4
Bins (1,200 units)	48,600	20	이 가는 그는 것
Pole pruners (6 chainsaw units)	3,600	5	1 () # () <u>-</u> ()
Irrigation system (includes pumps)	140,000	25	
Ladders (15 - 6 ft, 15 - 8 ft, and 15 - 1	0 ft) 3,300	20	
Picking equipment (25 bags)	600	5	
Machine shed and shop	30,000	25	
Tools	10,000	15	-
Miscellaneous	2,000	20	
Wind machines (3 units)	50,000	25	125
Land	200,000	SE_1	Kale and the second

Table 1. Equipment and Building Investment for a 100-Acre Apple Operation

Sources for equipment and building information include growers and extension specialists.

10. Three wind machines, including smudge pots for frost protection, are included and valued at \$50,000.

Labor Requirements

An adequate labor supply is essential for pruning and training branches, and thinning apples. Pruning and training are generally performed during the winter and spring months. Thinning can start as early as June and end in October, depending on the variety of apple.

Pruning and training costs vary with the age of the tree. In the early years, it is crucial that time is spent training and pruning for a certain tree shape. This is needed to achieve optimum light penetration, which leads to higher quality and quantity of fruit. The shape of the tree should be complete when full bearing is reached, requiring only a maintenance program for pruning. See Table 2 for labor requirements.

As trees come into bearing, growers must thin apples for optimum size and quality standards. In the past, chemical thinners worked effectively in thinning clusters of apples to singles or doubles which resulted in large-size, higherquality fruit in the marketplace. However, the Environmental Protection Agency has limited the use of certain chemical thinners, and growers must now rely on hand labor to thin apple clusters that the current chemical thinners do not thin. The size of the crop determines the amount of labor required to thin the apples.

Harvest labor requirements also increase with the size of the crop. Pickers are usually paid by the bin to remove apples from the tree and place them into a bin. This study uses a piece rate of \$12 per bin. Occasionally, pickers are paid by the hour to reduce fruit bruising when placing the apples into a bin or to slow down harvest so that apples can be picked for color to maximize profits to the grower. Additional harvest labor includes tractor drivers to move bins to and from the field, workers to load bins onto trucks, and supervisors. These laborers are paid by the hour. Hourly paid labor also increases with the size of the crop.

There are also labor requirements to apply chemicals, irrigate trees, mow the orchard floor, and fertilize. However, the largest amount of labor hours are spent to prune, train, thin, and harvest the apples. Typical of the tree fruit industry is the need for large amounts of labor for a short period of time: February and March for pruning; June and July for training; June and July for thinning apples; and August and September for harvesting.

Marketing

A packinghouse will market the fruit for the grower. They find brokers, buyers, and merchandisers to buy the fruit. The packinghouse charges the grower a fee to unload the trucks,

	Red Delicio	ous Apples ¹			No start and the second start and				
See See	Year I	Year 2	Year 3	Year 4	Year 5	Year 6	Years 7-21		
Tala N				(hours per acre))		and the second		
Pruning	0	0	0	0	20	22	28		
Training	12	17	39	31	0	0	0		
Thinning	0	0	0	8	23	26	40		
Other ²	48	28	22	30	32	35	43		
Total ³	60	45	61	69	75	83	III		

Table 2. Labor Requirements for Pruning, Training, and Thinning Medium-Density Red Delicious Apples¹

¹ Harvest labor costs are not included in this table because they are computed on a cost per-bin basis.

See Tables B2-B7 for a summary of all labor costs.

² Other labor includes labor to apply inputs, irrigate trees, mow orchard floor, etc.

³ Sources for labor information included growers and extension specialists.

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store, pack, and sell the apples. These fees are subtracted from F.O.B. prices received by the packinghouse, resulting in a grower return on a per box basis. The grower usually receives an advance to pay the pickers at delivery of the apples, and additional money is gradually dispersed to the growers when the apples are sold.

Costs and Returns Estimates

The costs and returns estimates developed in this study for Red Delicious apples are shown in Appendix B. These include separate budgets for six years of establishment and one budget representing full production, Tables B1-B7. The establishment years are characterized by high capital costs and zero-to-moderate yields. Red Delicious production is negligible until year 4, when 10 bins of apples are produced, but gradually increases until year 7, when it peaks at 40 bins per acre. Apple yields will average 40 bins per acre through year 21, given proper management. It is assumed that each bin yields about 15 boxes of fresh-packed apples and six boxes of process-grade apples.

The costs in Appendix B, Tables B1 - B7, are categorized as operating and ownership costs. Operating costs are the costs of the day-to-day maintenance and operations of the orchard. These costs include items such as fertilizer, chemicals, hired labor, fuel, training materials, and repair costs. Ownership costs pertain to capital investments lasting more than one year, such as machinery, equipment, buildings, land, and tools. These costs are depreciation, interest on investment, property taxes, and property insurance. Even if production does not take place, the costs associated with ownership are still incurred.

Returns above operating costs are necessary for the producer to stay in business in the short run. If returns do not equal or exceed operating costs, then producing apples is uneconomical in the short run.

In the long run, returns must meet or exceed both operating and ownership costs for the orchard to be economically viable. If returns are just equal to the sum of operating and ownership costs (total costs), which means the enterprise is at break-even, then the grower is recovering all out-of-pocket expenses and realizing a competitive return on his capital invested in land, equipment, trees, and buildings. If the breakeven is exceeded, the grower earns a residual to management and risk.

Year I

The 10-acre site to be planted was previously in apple production, so tree removal, burning, tillage, and fumigation are required to prepare the site.

Young Red Delicious trees are planted in 11 X 16 feet spaces, resulting in 250 trees per acre. In addition, 28 pollenizing trees are also planted on each acre of ground. Trees are planted with a rented planter and labor provided by the orchard. The planter cost is \$37.50 per acre and tree cost is \$1,496 per acre.

After planting trees, a solid set irrigation system is installed at a cost of \$1,400 per acre for materials and labor. Grass is seeded between the tree rows after the irrigation system is installed in 11 to 12 feet wide strips. Grass is not mowed in the establishment year, but will be in subsequent years with a tractor and rotary mower.

Weed spraying is necessary to maintain the strips under the trees where grass is not planted. The cash cost for each spray operation is \$14.06 per acre, including machinery, labor, and materials. The orchard is sprayed three times in year 1. See Appendix C, Tables C1-C6, for monthly cash expense summaries for orchard operations.

Fertilizer is applied in one operation during year 1. The quantities reported in this study are based on surveys with Idaho growers, but may differ given site-specific soil fertility. The cash cost in year 1 for application, labor, machinery, and materials, as shown in Table C1, is \$77.60 per acre.

Additional labor is required in year 1 to lay out and stake plantings, hoe around trees, install tree wraps, train trees, prune, irrigate, and control rodents. Total labor cost for the year is \$436 (Table B1).

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Total cost of establishing the orchard in year 1 is \$4,047 per acre as shown in Table B1.

Year 2

Table B2 shows the projected costs for establishment of Red Delicious apples in year 2. Orchard operations performed in year 2 include fertilization, spraying, and mowing. Fertilizer is applied in March at a cash cost of \$147 for machinery, labor, and materials (Table C2). Dormant spray is also applied in March with a blast sprayer and tractor at a cash cost of \$39.93 per acre.

Herbicide is sprayed on strips three times in year 2 for weed control. This is accomplished with a 100-gallon weed sprayer pulled by a 65horsepower tractor. The cash cost for the machinery, labor, and materials is about the same as year 1.

Micronutrients are applied two times in year 2 at a cost of \$18.67 per acre for each operation.

Mowing is done using the 65-horsepower tractor and a 6-foot rotary mower. Row centers are mowed two times in year 2 at a cost of \$5.98 per acre for each operation. Additional labor is used throughout year 2 for pruning, tree training, and controlling rodents.

Total operating and ownership costs per acre in year 2 are \$901 and \$966 respectively. Total costs per acre (the sum of operating and ownership costs) are \$1,867. Interest on the costs carried over from year 1 (\$364 per acre) is included in non-cash ownership costs.

Year 3

The number of orchard operations performed in year 3 and the costs per operation for fertilizing, spraying, and mowing are not significantly different from year 2. However, labor costs are slightly higher because of additional training. Total labor costs in year 3 are \$438, compared to \$326 in year 2.

Total operating and ownership costs in year 3 are \$1,034 and \$1,137 per acre, with a total cost of \$2,171. Interest on expenses carried over from years 1 and 2 is \$532 per acre.

Year 4

Ten bins of apples are produced in year 4 and sold at an average price of \$95 per bin for projected gross returns of \$950 per acre.

Most orchard operations remain unchanged from year 3, with the exception of one cover spray for insects. The machinery, labor, and material costs are \$27.37 per acre for each insect spray operation, as shown in Table C4.

Labor cost in year 4 is \$617 per acre with most of the difference from year 3 being additional harvest labor.

Total operating and ownership costs in year 4 are \$1,227 and \$1,370 respectively, resulting in a total cost of \$2,597 per acre. Interest on capital carried over from previous years is \$728.

Year 5

The yield in year 5, shown in Table B5, is now up to 15 bins per acre, with projected gross returns of \$1,425.

Orchard operations are unchanged from year 4, with the exception of additional cover and nutrient spray operations as shown in Table C5. Both of these operations use the 65horsepower tractor and blast sprayer.

Orchard labor is up \$100 per acre from year 4 to \$717 due to an increase in harvest and hand thinning costs.

Total operating and ownership costs in year 5 are \$1,186 and \$1,590 respectively, for a total cost of \$2,776 per acre. Interest on capital carried over from previous years is \$876.

Year 6

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Year 6 is the final year of establishing Red Delicious apples before full production is reached. The yield in year 6, shown in Table B6, is now up to 20 bins per acre, with projected gross returns of \$1,900.

Orchard operations are unchanged from year 5, with the exception of a chemical thinning operation to thin clusters of apples. This operation is performed in the spring with a tractor and blast sprayer. Orchard labor is up \$118 over year 5 to \$835 per acre, due again to an increase in harvest and hand-thinning costs.

Total operating and ownership costs in year 6 are \$1,324 and \$1,727 respectively, for a total cost of \$3,051 per acre. Interest on capital carried over is \$998 per acre.

Year 7

Year 7 is the first year of full production. The average yield for years 7 through 21 is 40 bins per acre (see Table B7). At \$95 per bin, the projected gross return is \$3,800 per acre. It is assumed that a yield of 40 bins will be maintained through the next 15 years of the orchard's life.

Pruning, thinning, fertilizer, and herbicide programs remain unchanged from year 6. The insecticide and thinning spray programs changed slightly and harvest costs increased due to the increase in orchard production.

Total net establishment cost for years 1 through 6 is \$12,235 per acre. This represents the total investment less crop income required to establish one acre of Red Delicious apples. The projected annualized cost of this investment in the orchard over 15 years of production is \$1,518 per acre and includes stand depreciation plus interest on investment. This is calculated using the capital recovery approach shown in Appendix A and labeled as amortized establishment cost in the full production budget (Table B7).

Total annual operating and ownership costs in years 7 through 21 are about \$1,913 and \$2,302 respectively, for a total annual cost of \$4,215 per acre. The average net return for Red Delicious apples over the 15 production years is projected at -\$415.04 per acre. (Note that this analysis does not take into account inflation.)

Economic Analysis

The analysis in Table 3, generated from Tables C1-C7, summarizes the first 10 years of cash flows for an acre of Red Delicious apples grown in southwestern Idaho. As shown in Table 3, the enterprise does not generate a positive annual cash flow until year 5. This is the first year during establishment that gross income exceeds total cash costs. It's not until year 10 that cumulative gross income exceeds cumulative cash costs. This is not to declare year 10 as the economic break-even point; it's simply the year that initial out-of-pocket expenses are fully recovered.

A cash flow analysis is a good indicator of the cash requirements needed to establish an acre of apples and when sufficient income will be available to recover initial cash investment. However, enterprise profit or the economic break-even point cannot be projected using a cash flow analysis because non-cash items such as depreciation and interest on owner equity are not included.

Table 4 is a summary of the economic costs presented in Tables B1-B6. It summarizes projected gross income, total costs, net projected returns, and cumulative net returns. Total costs to establish Red Delicious apples (the sum of cumulative operating and ownership costs, years 1-6) are \$16,510 per acre. Cumulative net returns are the sum of net projected returns and amount to the cumulative net cost of establishment. The economic breakeven point occurs in the year that cumulative net returns become positive. This is the year when total costs of establishing the orchard (\$16,510 per acre) are fully recovered.

In this analysis of Red Delicious apples, a net loss is projected to occur during the full production years as shown in table B7. This means that the economic breakeven point will not be reached, no matter how long the orchard is kept in production (See Figure 1). As stated earlier, returns must meet or exceed both operating and ownership costs (total costs) for the orchard to be economically viable in the long run. If crop returns are less than total costs, then the grower will not realize a competitive return on his capital invested in the

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Table 5. Cash Flow Analysis, Red Delicious Apples in Southwestern Idano"										
Item	Year I	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Gross income	0	0	0	950	1425	1900	3800	3800	3800	3800
Cash operating costs	3392	900	1034	1227	1186	1324	1913	1913	1913	1913
Cash ownership costs	174	112	115	123	127	132	149	149	149	149
Total cash costs	3566	1013	1149	1350	1313	1456	2062	2062	2062	2062
Annual cash flow	-3566	-1013	-1149	-400	112	444	1738	1738	1738	1738
Cumulative cash flow	-3566	-4579	-5728	-6128	-6016	-5572	-3834	-2096	-358	1379

* The total cost of the trees are included in this cash flow analysis.

Economic Costs and Returns of Establishing Red Delicious Apples in Table 4. Southwestern Idaho

ltem	Year I	Year 2	Year 3	Year 4	Year 5	Year 6	Total cumulative costs and returns
Gross income	\$0	\$0	\$0	\$950	\$1,425	\$1,900	\$4,275
Operating costs	3,392	901	1,034	1,227	1,186	1,324	9,064
Ownership costs	655	966	1,137	1,370	1,590	1,727	7,445
Total costs	4,047	1,867	2,171	2,598	2,776	3,051	16,510
Net projected returns	-4,047	-1,867	-2,171	-1,648	-1,351	-1,151	
Cumulative net returns	-4,047	-5,914	-8,085	-9,733	-11,084	-12,235	

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operation. In other words, a higher return might be realized by investing his capital elsewhere.

The pie charts in Figures 2 and 3 show the allocation of the establishment costs summarized in Table 4. Figure 2 summarizes accumulated operating costs and shows that hired labor and tree expenses were the two largest expenses, 37 and 17 percent respectively. All other items amount to about 46 percent of cumulative operating costs.

Figure 3 summarizes cumulative operating and ownership costs of establishment. Hired labor, trees, and interest costs represent 53 percent of the total, with interest being the largest single cost at 24 percent.

Sensitivity Analysis

Two of the greatest uncertainties facing growers are crop yields and prices. The yields and prices used in this study are considered average and achievable given experienced management, average weather, and market conditions. However, fluctuations will occur due to many factors beyond the grower's control, so it's imperative that growers evaluate the impacts that price and yield fluctuations will have on profits. In Table 5, yields and prices during years 1 through 6 are varied to monitor the impacts of income fluctuations on accumulated net establishment cost. The accumulated sixyear net cost is the amount of money net of crop income that the grower would have

	Charles and the first	Average Price of Red Delicious Apples (\$/bin)										
11111 51 3	\$55.00	\$75.00	\$95.00	\$115.00	\$135.00	\$155.00						
Percent of Base field (years 1-	e 6)	Accu	mulated 6 Year N	et Establishment	Cost (\$)							
60%	14,687	14,147	13,607	13,067	12,527	11,987						
80%	14,361	13,641	12,921	12,201	11,481	10,761						
100%	14,036	13,136	12,235	11,336	10,436	9,536						
120%	13,710	12,630	11,550	10,470	9,390	8,177						
140%	13,384	12,124	10,864	9,604	8,344	7,084						

Table 5. Six Year Accumulated Net Cost of Establishing Red Delicious Apples at Varying Price and Yield Levels

Table 6. Break-even Yields for Red Delicious Apples at Various Prices and Establishment Yield Levels

	Average Price of Red Delicious Apples (\$/bin)									
	\$55.00	\$75.00	\$95.00	\$115.00	\$135.00	\$155.00				
Percent of Base	115419	S & SPAN	Art and a start	States and the second		2. Frank 1. 1. 2				
Yield (years 1-6)		Break-ev	en Yield for Years	7 - 21 (bins per a	acre)					
60%	101	64	46	36	29	25				
80%	100	63	45	35	28	24				
100%	99	62	44	34	27	22				
120%	98	61	43	33	26	21				
140%	97	60	42	32	25	20				

invested in each acre of apples at the end of six years. This accumulated investment is then prorated over 15 years of production and included as a production cost (labeled amortized establishment cost) in the mature apple budget (Table B7).

The break-even yields in Table 6 are the yields necessary to cover all costs of production including orchard investment in full production years (years 7 - 21) at corresponding levels of net establishment cost shown in Table 5. Any production above this break-even yield is profit after subtracting additional harvest costs.

Tables 5 and 6 show how accumulated net establishment cost and break-even yields vary

with fluctuations in Red Delicious apple yields and price. For example, at \$95 average price per bin for apples and 100 percent of base yield in establishment years 1 through 6, the accumulated six-year net cost would be \$12,235 per acre. The corresponding breakeven yield during the production years would be 44 bins per acre. At \$135 per bin and 100 percent of base yield, the accumulated net establishment cost would be \$10,436, and only 27 bins would be required to cover economic costs during full production years. This information illustrates the influence that early yields and especially market conditions have on the profitability of growing apples.

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Conclusion

The production and financial risks associated with apple production are well known by those in the industry. Considerable time lags between planting trees and realization of profits make it difficult and risky to finance orchard renewal. The availability of new "quicker yielding apple varieties" and more diverse varieties has helped, but the capital needs are still considerable. Because of the expense and risk associated with orchard renewal, growers should be careful to assess the economics of keeping versus replacing older blocks of trees.

The costs and returns estimates generated in Tables B1-B7 are based on the assumptions outlined in this study. They should be revised to reflect any changes in the conditions that might influence the underlying assumptions. Changes in factor prices, market fluctuations, labor availability, cost of capital, and weather could have substantial influences on orchard profitability.



Figure 1. Cumulative Net Returns of Growing Red Delicious Apples in

Economic breakeven occurs in the year when cumulative net returns reaches zero. The economic breakeven point for the Red Delicious enterprise analyzed in this study is not reached as shown above.



Appendix A. Ownership Cost Calculations

Ownership costs for an asset lasting more than one year must be allocated over its useful life to derive an annual ownership cost. Ownership costs include both the decline in value over time based on expected use or obsolescence (depreciation) and the opportunity interest on the value of the asset. Ownership costs also include property tax and casualty insurance.

The following methods for calculating depreciation and interest and for calculating taxes and insurance are consistent with the recommendations of the National Task Force on Commodity Costs and Returns Measurement Methods sponsored by the American Agricultural Economics Association.

Depreciation and Interest

Depreciation and interest were calculated using the annual equivalent capital recovery technique. This method is recommended over the estimation technique using straight-line depreciation (repayment) plus return on the average investment.

Depreciation and Interest	=	$B(a'_{p}) - V(a'_{f})$
where: B		initial investment
v	=	salvage value
i	=	interest rate in decimal form
n	=	years of useful life
$(a'_p) = i(1 + i)^n / [(1 + i)^n - 1]$		uniform series end-of-period amount (a) equivalent to present sum (p); or capital recovery factor.
$\binom{n}{f} = i/[(1+i)^n - 1]$		uniform series end of period amount (a) equivalent to future sum (f); or sinking fund factor.
THE REPORT OF TH		

Source: Thuesen, H. G., W. J. Fabrycky, and G. J. Thuesen. 1971. Engineering Economy. New York: Prentice-Hall.

Taxes and Insurance

Insurance

The property tax and insurance cost calculations were made using rates of 1.0 and 0.6 percent respectively, applied to the average level of investment.

insurance :	₹	I[(B+V)/2]	Taxes	=	T[B+V/2]
where:B :	=	initial investment	where:B	=	initial investment
V :		salvage value	Ŷ	=	salvage value
$\mathbf{L}^{(1)}$:	=	insurance rate	T –	=	personal property tax rate

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Appendix B. Costs and Returns Estimate

Table B1. Costs And Returns Per Acre to Establish Red Delicious Apples - Year 1

	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
Gross Returns				L'ALENA CA	
Red Delicious Apples	0.00	bin	95.00	0.00	1.1.1.2
Total Gross Returns for Apples		S. P. Bar	The second second	0.00	
Operating Costs					121202200
Custom:			-	050.00	
Poot removal	1.00	acre	250.00	250.00	and the second
Ripping	1.00	acre	110.00	110.00	Provide Land
Plow	1.00	acre	21.50	21.50	
Disc	2.00	acre	8.00	16.00	Star Stran
Seed and harrow	1.00	acre	9.00	9.00	The second second
Fumigant:					
Vapam	90.00	gal	4.00	360.00	S
Nitrogen	100.00	lb	0.35	35.00	· 在于 130
Phosphate	60.00	lb	0.24	14.40	TRANSPORT
Potash	60.00	lb	0.14	8.40	and the state of the state
Sulfur	60.00	lb	0.15	9.00	The second
Tree:	Selection Astro		THE REAL		a State of the
Trees (Red Delicious)	250.00	tree	5.50	1375.00	10 MA 3
Pollenizer trees	22,00	tree	5.50	121.00	1. 3. 19
Rent:	1.00	2000	37.50	37 50	ST. Carlos
Tree aids:	1.00	acre	37.50	37.50	The state of the state
Tree wraps	250.00	tree	0.06	15.00	10200
Spreader sticks	1250.00	each	0.20	140.00	Later and the
Herbicide:				12:10 24	Contra La Colta
Gramoxone	1.89	qt	8.78	16.59	State States
Water:	telles in second		State State	3315 X 5 N	State State
Irrigation power	36.00	acre	0.69	24.84	
Assessments	1.00	acre	30.00	30.00	March Franking
Grass sood	20.00	lb (Th	1 55	31.00	4 T. M.
Rodenticide	20.00		1.00	51.00	A CONTRACTOR
Rodent control	1.00	acre	5.00	5.00	
Labor (machine)	8.79	hrs	7.20	63.30	a second
Labor (non-machine)	51.70	hrs	7.20	372.24	
Fuel - gas	20.00	gal	1.38	27.60	Constanting of the second
Fuel - diesel	8.55	gal	0.88	7.53	Card Street
Lube Mashingar Papair			和自己的意思。	5.20	
Interest on Operating Capital @ 950%		- A la la	10年 語を 3	220 11	- Tratile
Total Operating Costs/Acre				3392 14	
				0002.11	
Net Returns Above Operating Costs	<u> 220122000</u>		17 A 1 1 1	-3392.14	- <u></u>
Cash Ownership Costs	E Bank Bank		La set in	00.07	
Overhead				86.97	
Property taxes (machinery)			ST COMPANY	7 30	A CARLES
Investment renairs	16 M 2 M 2 2	的复数形式		44 50	
Total Cash Ownershin Costs/Acre		And the second		173.64	
	and the second sec	120 1 1 1 1 2 1 2		10.0	
Non-Cash Ownership Costs (Depreciation	n and Interest)	Pic Set	Taren de manach		LTO AST
Irrigation system	The state of the second			142.53	1
Miscellaneous tools and equipment		Star Star	the second	116.84	a start and the
Land	Service and the	and the second	A. C. S. Star	180.00	
Total Non Cash Ownership Costs (Acre			Charles and a second	41.90	1
/	10-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	473 Just 2005		401.35	
Total Costs/Acre		W. Santa		4047.13	
Returns to Risk and Management				-4047.13	- Andrew

Table B2. Costs And Returns Per Acre to Establish Red Delicious Apples - Year 2

STEP STAND	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
Gross Returns	IF the second second	12. The 1	Contract Sec	A AND A CONTRACT	T.
Red Delicious Apples	0.00	bin	95.00	0.00	
Total Gross Returns for Apples				0.00	Sector 17
Operating Costs	100000	11111	一世かったである		1.1.1.1
Fertilizer					
Nitrogen	200.00	lb	0.35	68.00	1000
Phosphate	120.00	Ib	0.24	28.20	TELASTIC
Potash	80.00	lb	0.14	11.20	The second second
Sulfur	120.00	lb	0.15	18.00	
Micro nutrients	2 00	acre	12.00	24 00	
Insecticide:		a dere			11 71
Lorshan 4E	2.00	at the	12 13	24.26	
Oil	3.00	nal	3.00	9.00	() · · · · · · · ·
Pollinate	0.00	gai	3.00	0.00	
Hive contal	1.00	arro	15.00	15.00	
Tree eide:	1.00	acie	15.00	15.00	11 - 12 - 12 - 12 - 12 - 12 - 12 - 12 -
Coreador elicka	2000.00	orah	0.00	190.00	
Spreader sucks	2000.00	each	0.09	100.00	
Iree:	0.00			44.00	
Trees (Red Delicious)	2.00	tree	5.50	11.00	1001100
Herbicide:		1212	0.70	10.00	
Gramoxone	1.89	qt	8.78	16.59	12 1412
Water:	11				
Irrigation power	36.00	acre	0.69	24.84	1.1.1
Assessments	1.00	acre	30.00	30.00	Mar There
Rodenticide:			En 11 (1-1,5) +		
Rodent control	1.00	acre	5.00	5.00	
Labor (machine)	8.87	hrs	7.20	63.87	1 5 Th
Labor (non-machine)	36.45	hrs	7.20	262.44	
Fuel - gas	20.00	gal	1.38	27.60	iter 5 The
Fuel - diesel	7.44	gal	0.88	6.55	
Lube				5.12	1000
Machinery Repair				19.02	
Interest on Operating Capital @ 9.50%				51.49	Service State
Total Operating Costs/Acre				901.16	1324
Net Returns Above Operating Costs	The Market	A. B. Car		-901.16	2 Sent
Cash Ownership Costs	A CONTRACT	12. 160	and the set now	- Alteria	
Overhead	Contraction in			24.69	
Property taxes (machinery)				35.10	8 2 1 S
Property insurance				7.55	AL CONTRACT
Investment repairs				44.50	No. Contraction
Total Cash Ownership Costs/Acre				111.84	State -
Non-Cash Ownership Costs (Depreciation a	nd Interest)	11- 11- 11- 11- 11- 11- 11- 11- 11- 11-	N	the state of the	
Irrigation system	ind interest)			142.53	
Miscellaneous tools and equipment				116.95	
Land			15 S	180.00	the second
Interest on carryover				364.00	2.2.2
Machinen	A Constant of the			504.00	1. 2.
Total Non-Cash Ownership Costs/Acro				853.00	
Total Total Other State Police Police Police	1	CAT S LATE		000.99	
Total Costs/Acre	1	Participation of the second	and a light deal	1866.98	12.24
Returns to Risk and Management				-1866.98	State Marks

Table B3. Costs And Returns Per Acre to Establish Red Delicious Apples - Year 3

Gross Returns Net Delicious Apples 0.00 bin 95.00 0.00 Operating Costs 0.00		Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
Red Delicious Apples 0.00 Total Gross Returns for Apples 0.00 Operating Costs	Gross Returns	and the		STAL AS	1 2 3 4 4 4	
Total Gross Returns for Apples 0.00 Operating Costs Fertilizer: Nitrogen 100.00 b 0.35 55.00 Phosphate 60.00 b 0.34 84.00 Postah 60.00 b 0.14 84.00 Suffur 40.00 b 0.15 6.00 Micro nutrients 2.00 acre 24.00 48.00 Insecticide:	Red Delicious Apples	0.00	bin	95.00	0.00	
Operating Costs Fertilizer: 55.00 Nitrogen 100.00 ib 0.35 35.00 Prosphate 60.00 ib 0.24 14.40 Potash 60.00 ib 0.14 8.40 Suffur 40.00 ib 0.15 6.00 Micro nurinents 2.00 acre 24.00 48.00 Insecticide:	Total Gross Returns for Apples	11月1日日日	19 - C		0.00	
Fertilizer:	Operating Costs	76,000	R. S. Martin	100 - 10 - 10 - 10 - 10 - 10 - 10 - 10	12 2 2 2 2 2	Cart Str
Nirogen 100.00 b 0.35 35.00 Phosphate 60.00 b 0.24 14.40 Polash 60.00 b 0.14 8.40 Sulfur 40.00 b 0.14 8.40 Micro nublents 2.00 acre 24.00 48.00 Insecticitie:	Fertilizer:					
Phosphate 60.00 b 0.24 14.40 Potash 60.00 b 0.14 8.40 Sufur 40.00 b 0.15 6.00 Micro nutrients 2.00 acre 24.00 48.00 Insecticide: 200 qt 12.13 24.26 24.00 Oll 3.00 gal 3.00 9.00 24.00 48.00 Pollinate: 100 acre 15.00 15.00 15.00 15.00 Tree: 100 tree 5.50 5.50 15.00	Nitrogen	100.00	lb	0.35	35.00	
Potash 60.00 b 0.14 8.40 Sulfur 40.00 b 0.15 6.00 Insecticide: 2.00 acre 24.00 48.00 Lorsban 4E 2.00 qt 12.13 24.26 0 Oil 3.00 gal 3.00 9.00 0 Oil 3.00 gal 3.00 9.00 0 Oil 3.00 gal 3.00 9.00 0 Polinate:	Phosphate	60.00	lb	0.24	14.40	ALC: NOT OF
Sultur 40.00 b 0.15 6.00 Micro nutrients 2.00 acre 24.00 48.00 Insecticide: 2.00 qt 12.13 24.26 Oil 3.00 gal 3.00 9.00 Polinate:	Potash	60.00	lb	0.14	8.40	To. Media
Micro nutrients 2.00 acre 24.00 48.00 Insecticide:	Sulfur	40.00	lb	0.15	6.00	- A-
Insecticide:	Micro nutrients	2.00	acre	24.00	48.00	1.27 9 2 107
Lorsban 4E 2.00 qt 12.13 24.26 Oli 3.00 gal 3.00 9.00 Pollinate: 3.00 gal 3.00 9.00 Tree: Trees (Red Delicious) 1.00 tree 5.50	Insecticide:				Call Call	20,000
Oli 3.00 gal 3.00 9.00 Hive rental 1.00 acre 15.00 15.00 Trees Trees (Red Delicious) 1.00 tree 5.50 5.50 Spreader slick 48" 800.00 each 0.30 240.00 Herbicide: 3.00 each 0.30 240.00 Gramoxone 1.89 qt 8.78 16.59 Water: Irrigation power 36.00 acre 0.69 24.84 Assessments 1.00 acre 30.00 30.00 200 Rodent control 1.00 acre 5.00 5.00 15.00 Labor (non-machine) 51.95 hrs 7.20 63.87 10.00 Labor (non-machine) 51.95 hrs 7.20 63.87 10.00 Labor (non-machine) 51.95 hrs 7.20 63.87 10.00 Labor (non-machine) 51.95 hrs 7.20 55.85 10.01 10.01 10.01 <td>Lorsban 4E</td> <td>2.00</td> <td>qt</td> <td>12.13</td> <td>24.26</td> <td></td>	Lorsban 4E	2.00	qt	12.13	24.26	
Pollinate:	Oil	3.00	gal	3.00	9.00	Charge State
Hive rental 1.00 acre 15.00 Trees (Red Delicious) 1.00 tree 5.50 5.50 Spreader stick 45" 800.00 each 0.30 240.00 Herbicide:	Pollinate:				All and the state	- Children -
Tree:	Hive rental	1.00	acre	15.00	15.00	1 to the state
Trees (Red Delicious) 1.00 tree 5.50 5.50 Spreader stick 48" 800.00 each 0.30 240.00	Tree:		Car and			
Tree aids: Spreader stick 48" 800.00 each 0.30 240.00 Herbicide: Gramoxone 1.89 qt 8.78 16.59 Organoxone 36.00 acre 0.69 24.84 Assessments 1.00 acre 30.00 30.00 Rodent control 1.00 acre 5.00 5.00 Labor (machine) 8.87 hrs 7.20 63.87 Labor (non-machine) 51.95 hrs 7.20 374.04 Fuel - gas 20.00 gal 1.38 27.60 Lube 7.44 gal 0.88 6.55 Lube 5.12 Machinery Repair 10.02 Interest on Operating Costs/Acre 1034.01 10 Cash Ownership Costs -1034.01 28.02 Overhead 7.55 5 5 Total Cash Ownership Costs (Acre 115.17 142.53 Non-Cash Ownership Costs (Acre 115.17 142.53 Non-Cash Ownership Costs (Acre 180.00 115.4 Interest on carryover 53.20 50.61<	Trees (Red Delicious)	1.00	tree	5.50	5.50	
Spreader stick 48" 800.00 each 0.30 240.00 Herbicide: Gramoxone 1.89 qt 8.78 16.59 Water: Irrigation power 36.00 acre 0.69 24.84 Assessments 1.00 acre 30.00 30.00	Tree aids:			A State of State of		A AN PAR
Herbicide: 1.89 qt 8.78 16.59 Water: 0 acre 0.69 24.84 Assessments 1.00 acre 30.00 30.00 Rodenticide: 0 acre 30.00 30.00 Rodent control 1.00 acre 50.0 5.00 Labor (machine) 8.87 hrs 7.20 63.87 Labor (mochine) 51.95 hrs 7.20 374.04 Fuel - gas 20.00 gal 1.38 27.60 Fuel - gas 20.00 gal 1.38 27.60 Lube 5.12 5.12 5.12 5.12 Machinery Repair 19.02 19.02 19.02 Interest on Operating Costs/Acre 1034.01 10 Cash Ownership Costs -1034.01 28.02 -1034.01 Cash Ownership Costs (Macrinery) 35.10 -7.55 -107.55 Investiment repairs 44.50 -1034.01 -108.00 Total Cash Ownership Costs (Depreciation and Interest) 116.84 -217.15 -1021.98 <t< td=""><td>Spreader stick 48"</td><td>800.00</td><td>each</td><td>0.30</td><td>240.00</td><td>- Salar</td></t<>	Spreader stick 48"	800.00	each	0.30	240.00	- Salar
Gramoxone 1.89 qt 8.78 16.59 Water: Irrigation power 36.00 acre 0.69 24.84 Assessments 1.00 acre 30.00 30.00 30.00 Rodenticide:	Herbicide:	a children and				SALE NOT
Water: Irigation power 36.00 acre 0.69 24.84 Assessments 1.00 acre 30.00 30.00 Rodentcicite:	Gramoxone	1.89	qt	8.78	16.59	
Irrigation power 36.00 acre 0.69 24.84 Assessments 1.00 acre 30.00 30.00 Rodenticide:	Water;				and the second se	
Assessments 1.00 acre 30.00 30.00 Rodenticotde:	Irrigation power	36.00	acre	0.69	24.84	Sum and
Rodenticide: 1.00 acre 5.00 5.00 Labor (machine) 8.87 hrs 7.20 63.87 Labor (non-machine) 51.95 hrs 7.20 374.04 Fuel - gas 20.00 gal 1.38 27.60 Fuel - gas 20.00 gal 1.38 27.60 Fuel - dissel 7.44 gal 0.88 6.55 Lube 5.12 10.88 6.55 Machinery Repair 19.02 10.34.01 10 Interest on Operating Costs/Acre 1034.01 10 10 Net Returns Above Operating Costs -1034.01 10 10 Cash Ownership Costs 0verhead 28.02 28.02 Property Insurance 7.55 10 115.17 115.17 Investment repairs 44.50 115.17 115.17 142.53 Non-Cash Ownership Costs (Depreciation and Interest) 116.84 12.44 12.44 12.53 142.53 142.53 142.53 160.00 142.53 </td <td>Assessments</td> <td>1.00</td> <td>acre</td> <td>30.00</td> <td>30.00</td> <td>a state</td>	Assessments	1.00	acre	30.00	30.00	a state
Kodent control 1.00 acre 5.00 5.00 Labor (machine) 8.87 hrs 7.20 63.87 Labor (non-machine) 51.95 hrs 7.20 374.04 Fuel - gas 20.00 gal 1.38 27.60 Fuel - diesel 7.44 gal 0.88 6.55 Lube 51.95 hrs 7.20 374.04 Machinery Repair 19.02 19.02 19.02 Interest on Operating Capital @ 9.50% 55.85 5 Total Operating Costs/Acre 1034.01 1034.01 Net Returns Above Operating Costs -1034.01 1034.01 Cash Ownership Costs -1034.01 10 Overhead 28.02 2 Property taxes (machinery) 35.10 - Property insurance 7.55 - Investment repairs 44.50 - Total Cash Ownership Costs (Depreciation and Interest) 142.53 Irrigation system 142.53 - Miscellaneous tools an	Rodenticide:	and the second second		- AVANTA SA		
Labor (machine) 8.87 hrs 7.20 63.87 Labor (non-machine) 51.95 hrs 7.20 374.04 Fuel - gas 20.00 gal 1.38 27.60 Fuel - gas 20.00 gal 1.38 27.60 Fuel - diesel 7.44 gal 0.88 6.55 Lube 5.12	Rodent control	1.00	acre	5.00	5.00	and which is
Labor (non-machine) 51.95 hrs 7.20 374.04 Fuel - gas 20.00 gal 1.38 27.60 Fuel - diesel 7.44 gal 0.88 6.55 Lube 7.44 gal 0.88 6.55 Lube 5.12 10.02 11.02 11.02 Interest on Operating Capital @ 9.50% 7034.01 1034.01 1034.01 Net Returns Above Operating Costs -1034.01 1034.01 1034.01 Cash Ownership Costs -1034.01 28.02 Property taxes (machinery) 35.10 Property taxes (machinery) 35.10 7.55 11.02 115.17 Novestment repairs 44.50 115.17 115.17 Non-Cash Ownership Costs (Depreciation and Interest) 142.53 Miscellaneous tools and equipment 116.84 Land 180.00 11 142.53 11021.98 Total Costs Acre 50.61 70.61 1021.98 Total Costs Acre 1021.98 1021.98 1021.98 Total Costs /Acre <td>Labor (machine)</td> <td>8.87</td> <td>hrs .</td> <td>7.20</td> <td>63.87</td> <td>a section of</td>	Labor (machine)	8.87	hrs .	7.20	63.87	a section of
Fuel - gas 20.00 gal 1.38 27.60 Fuel - diesel 7.44 gal 0.88 6.55 Lube 51.2 19.02 Machinery Repair 19.02 Interest on Operating Capital @ 9.50% 55.85 Total Operating Costs/Acre 1034.01 Net Returns Above Operating Costs -1034.01 Cash Ownership Costs -1034.01 Overhead 28.02 Property taxes (machinery) 35.10 Property taxes (machinery) 35.10 Property insurance 7.55 Investment repairs 44.50 Total Cash Ownership Costs (Depreciation and Interest) 115.17 Non-Cash Ownership Costs (Depreciation and Interest) 116.84 Land 180.00 Interest on carryover 50.61 Machinery 50.61 Total Costs/Acre 1021.98 Total Costs/Acre 2171.16	Labor (non-machine)	51.95	hrs	7.20	374.04	123734
Fuel - diesel7.44gal0.886.55Lube5.12	Fuel - gas	20.00	gal	1.38	27.60	Land And
Lube5.12Machinery Repair19.02Interest on Operating Capital @ 9.50%55.85Total Operating Costs/Acre1034.01Net Returns Above Operating Costs-1034.01Cash Ownership Costs-1034.01Cash Ownership Costs28.02Property taxes (machinery)35.10Property insurance7.55Investment repairs44.50Total Cash Ownership Costs (Depreciation and Interest)115.17Irrigation system142.53Miscellaneous tools and equipment116.84Land180.00Interest on carryover50.61Total Costs/Acre1021.98Total Costs/Acre2171.16	Fuel - diesel	7.44	gal	0.88	6.55	10 10 (1. S. 1)
Machinery Repair 19.02 Interest on Operating Capital @ 9.50% 55.85 Total Operating Costs/Acre 1034.01 Net Returns Above Operating Costs -1034.01 Cash Ownership Costs -1034.01 Overhead 28.02 Property taxes (machinery) 35.10 Property insurance 7.55 Investment repairs 44.50 Total Cash Ownership Costs (Depreciation and Interest) 115.17 Irrigation system 142.53 Miscellaneous tools and equipment 116.84 Land 180.00 Interest on carryover 50.61 Total Costs/Acre 1021.98 Total Costs/Acre 2171.16	Lube Machinese Descie				5.12	-
Interest on Operating Capital @ 9.50% 55.85 Total Operating Costs/Acre 1034.01 Net Returns Above Operating Costs -1034.01 Cash Ownership Costs Overhead 28.02 Property taxes (machinery) 35.10 Property insurance 7.55 Investment repairs 44.50 Total Cash Ownership Costs/Acre 115.17 Non-Cash Ownership Costs (Depreciation and Interest) Irrigation system 142.53 Miscellaneous tools and equipment 116.84 Land 116.84 Land 180.00 Interest on carryover 532.00 Machinery 50.61 Total Costs/Acre 2171.16	Machinery Repair				19.02	- El -
Total Operating Costs/Acre 1034.01 Net Returns Above Operating Costs -1034.01 Cash Ownership Costs 28.02 Overhead 28.02 Property taxes (machinery) 35.10 Property insurance 7.55 Investment repairs 44.50 Total Cash Ownership Costs (Depreciation and Interest) 115.17 Irrigation system 142.53 Miscellaneous tools and equipment 116.84 Land 180.00 Interest on carryover 532.00 Machinery 50.61 Total Costs/Acre 1021.98 Total Costs/Acre 2171.16	Interest on Operating Capital @ 9.50%				55.85	
Net Returns Above Operating Costs -1034.01 Cash Ownership Costs 28.02 Overhead 28.02 Property taxes (machinery) 35.10 Property insurance 7.55 Investment repairs 44.50 Total Cash Ownership Costs/Acre 115.17 Non-Cash Ownership Costs (Depreciation and Interest) 116.84 Irrigation system 142.53 Miscellaneous tools and equipment 116.84 Land 180.00 Interest on carryover 532.00 Machinery 50.61 Total Costs/Acre 1021.98 Total Costs/Acre 2171.16 Returns to Risk and Management -2171.16	Total Operating Costs/Acre	States up par	15 Macros	and the second second	1034.01	La Filmer
Cash Ownership Costs. 28.02 Overhead 28.02 Property taxes (machinery) 35.10 Property insurance 7.55 Investment repairs 44.50 Total Cash Ownership Costs/Acre 115.17 Non-Cash Ownership Costs (Depreciation and Interest) 142.53 Irrigation system 142.53 Miscellaneous tools and equipment 116.84 Land 180.00 Interest on carryover 532.00 Machinery 50.61 Total Costs/Acre 1021.98 Total Costs/Acre 2171.16	Net Returns Above Operating Costs				-1034.01	- <u>7</u>
Overhead 28.02 Property taxes (machinery) 35.10 Property insurance 7.55 Investment repairs 44.50 Total Cash Ownership Costs/Acre 115.17 Non-Cash Ownership Costs (Depreciation and Interest) 142.53 Irrigation system 142.53 Miscellaneous tools and equipment 116.84 Land 180.00 Interest on carryover 532.00 Machinery 50.61 Total Costs/Acre 1021.98 Total Costs/Acre 2171.16	Cash Ownership Costs	I States				
Property taxes (machinery) 35.10 Property insurance 7.55 Investment repairs 44.50 Total Cash Ownership Costs/Acre 115.17 Non-Cash Ownership Costs (Depreciation and Interest) 142.53 Irrigation system 142.53 Miscellaneous tools and equipment 116.84 Land 180.00 Interest on carryover 532.00 Machinery 50.61 Total Costs/Acre 1021.98 Total Costs/Acre 2171.16 Returns to Risk and Management -2171.16	Overhead			「日本の方です」	28.02	2450 11/11/2016
Property insurance 7.55 Investment repairs 44.50 Total Cash Ownership Costs/Acre 115.17 Non-Cash Ownership Costs (Depreciation and Interest) 142.53 Irrigation system 142.53 Miscellaneous tools and equipment 116.84 Land 180.00 Interest on carryover 532.00 Machinery 50.61 Total Non-Cash Ownership Costs/Acre 1021.98 Total Costs/Acre 2171.16 Returns to Risk and Management -2171.16	Property taxes (machinery)				35.10	and the state
Investment repairs 44.50 Total Cash Ownership Costs/Acre 115.17 Non-Cash Ownership Costs (Depreciation and Interest) 142.53 Irrigation system 142.53 Miscellaneous tools and equipment 116.84 Land 180.00 Interest on carryover 532.00 Machinery 50.61 Total Non-Cash Ownership Costs/Acre 1021.98 Total Costs/Acre 2171.16 Returns to Risk and Management -2171.16	Property insurance			1 1 2 2 3 1 3	7.55	win S-
Total Cash Ownership Costs/Acre 115.17 Non-Cash Ownership Costs (Depreciation and Interest) 142.53 Irrigation system 142.53 Miscellaneous tools and equipment 116.84 Land 180.00 Interest on carryover 532.00 Machinery 50.61 Total Non-Cash Ownership Costs/Acre 1021.98 Total Costs/Acre 2171.16	Investment repairs				44.50	and the second
Non-Cash Ownership Costs (Depreciation and Interest) 142.53 Irrigation system 142.53 Miscellaneous tools and equipment 116.84 Land 180.00 Interest on carryover 532.00 Machinery 50.61 Total Non-Cash Ownership Costs/Acre 1021.98 Total Costs/Acre 2171.16 Returns to Risk and Management -2171.16	Total Cash Ownership Costs/Acre	and the state	11.0129412.24	the fatter	115.17	Contraction in the
Irrigation system 142.53 Miscellaneous tools and equipment 116.84 Land 180.00 Interest on carryover 532.00 Machinery 50.61 Total Non-Cash Ownership Costs/Acre 1021.98 Total Costs/Acre 2171.16 Returns to Risk and Management -2171.16	Non-Cash Ownership Costs (Depreciation an	nd Interest)		1. 19 19 19 19 19	S. H. M. LETAN	10.00
Miscellaneous tools and equipment 116.84 Land 180.00 Interest on carryover 532.00 Machinery 50.61 Total Non-Cash Ownership Costs/Acre 1021.98 Total Costs/Acre 2171.16 Returns to Risk and Management -2171.16	Irrigation system				142.53	
Land 180.00 Interest on carryover 532.00 Machinery 50.61 Total Non-Cash Ownership Costs/Acre 1021.98 Total Costs/Acre 2171.16 Returns to Risk and Management -2171.16	Miscellaneous tools and equipment				116.84	ten a hours
Interest on carryover 532.00 Machinery 50.61 Total Non-Cash Ownership Costs/Acre 1021.98 Total Costs/Acre 2171.16 Returns to Risk and Management -2171.16	Land				180.00	121212
Machinery 50.61 Total Non-Cash Ownership Costs/Acre 1021.98 Total Costs/Acre 2171.16 Returns to Risk and Management -2171.16	Interest on carryover	ALL STREET			532.00	
Total Non-Cash Ownership Costs/Acre 1021.98 Total Costs/Acre 2171.16 Returns to Risk and Management -2171.16	Machinery				50.61	1. 2.
Total Costs/Acre 2171.16 Returns to Risk and Management -2171.16	Total Non-Cash Ownership Costs/Acre				1021.98	LED S Y
Returns to Risk and Management -2171.16	Total Costs/Acre	and the set	and the second		2171.16	
	Returns to Risk and Management	and the second	A Martin	CONTRACTOR OF	-2171.16	

Table B4. Costs And Returns Per Acre to Establish Red Delicious Apples - Year 4

	Quantity		Price or	Value or	Your
the second second	Per Acre	Unit	Cost/Unit	Cost/Acre	Cost
Gross Returns					
Red Delicious Apples	10.00	bin	95.00	950.00	aparte de la composition de la
Total Gross Returns for Apples			n Conserve	950.00	Con States
Operating Costs	Sec. 25 193	1000	Viel State The		15 x 1.7 3
Fertilizer:				学习 周正正	
Nitrogen	40.00	lb	0.35	14.00	
Phosphate	60.00	lb	0.24	14.40	M. Calific a
Potash	40.00	lb	0.14	5.60	STATE IT
Sulfur Micro putricoto	2.00	DI	0.15	9.00	the second second
Insecticide:	2.00	acre	24.00	40.00	
Lorsban 4F	2 00	at	12.13	24.26	
Oil	3.00	gal	3.00	9.00	
Guthion	2.00	lb	7.10	14.20	S.S. BAN
Stopit calcium	1.00	gal	6.50	6.50	Stud Str.
Provado	4.00	OZ	3.52	14.08	
Pollinate:				Super Section	1 2
Hive rental	1.00	acre	15.00	15.00	12 - 22
Tree aids:	6	South The second		The states of	
Spreader stick 48"	800.00	each	0.30	240.00	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
Herbicide:	1.00	Sal de la serie	0.70	10.50	
Gramoxone	1.89	qt	8.78	10.59	and the
Irrigation power	26.00	2010	0.60	24.84	
Assessments	1.00	acre	30.00	30.00	
Harvest	1.00	acia	50.00	50.00	All second second
Pick apples	10.00	bin	12.00	120.00	SUDUCT
Rent:			「日本」「日本書		L'ALTER T
Forklift, rental	1.00	acre	12.00	12.00	
Rodenticide:					1. 1. 1. 1. 1.
Rodent control	1.00	acre	5.00	5.00	Mar Salar
Labor (machine)	13.06	hrs	7.20	94.00	The state of
Labor (non-machine)	55.95	hrs	7.20	402.84	
Fuel - gas	20.00	gal	1.38	27.60	See Shield
Fuel - diesel	16.80	gal	0.88	14.79	Sent - Frank
Lube Mashingar Repole	1.12 5			0.35	and a state
Interest on Operating Capital @ 9.50%			· · · · · · · · · · · · · · · · · · ·	24.90	the second
Total Operating Costs/Acre		*		1227 22	ALC: NOT THE OWNER
Total Operating Costs/Acre	ALESS A			1221.22	
Net Returns Above Operating Costs				-277.22	20.4 m
Cash Ownership Costs	ACCENTION OF	· · · · · · · · ·	ALL STRATE	主义于原始	STAT WE
Overhead		C The second		32.94	
Property taxes (machinery)				36.45	N. R. M.
Property insurance	1925 H		Day Start	8.22	Central Pro
Investment repairs				45.70	Charles & Jaco
Total Cash Ownership Costs/Acre				123.31	CASE AL
Non-Cash Ownership Costs (Depreciation an	d Interest)	100 C 20 1	2. The state	Sugar States	Carl Carl
Irrigation system	u moresty			142.53	A. A. S.
Miscellaneous tools and equipment				122.00	IVA CARA
Land	the start of the s	14 C . 1	The seat of the seat	180.00	the former
Interest on carryover				728.00	S-F- Sector
Machinery			ALL INFURNITION	74.62	Sale Sale
Total Non-Cash Ownership Costs/Acre		12 yr 18th		1247.15	A Read
Tatal Castal Assa		the state of the		000000	- Textore
Total Costs/Acre		17. 19		2597.68	14 5 m
Total Costs/Dill	115 5 S 119	and the second	It was a se	259.80	
Returns to Risk and Management	1 Same Mile			-1647.68	

Table B5. Costs And Returns Per Acre to Establish Red Delicious Apples - Year 5

	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
Gross Returns	Statister	No. of the	State State		35 90 Phi
Red Delicious Apples	15.00	bin	95.00	1425.00	
Total Gross Returns for Apples				1425.00	
Operating Costs	Sur.	No.		HISP VER T	
Fertilizer:					
Nitrogen	40.00	lb	0.35	14.00	C. S. D. Low
Phosphate	60.00	lb	0.24	14.40	ALC: NOT
Potash	40.00	lb	0.14	5.60	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
Sulfur	60.00	lb	0.15	9.00	Section 20
Micro nutrients	3.00	acre	24.00	72.00	A STATE
Insecticide:					and the second se
Lorsban 4E	2.00	qt	12.75	25.50	The Way
Oil	3.00	gal	3.00	9.00	the Sta
Provado	5.00	oz	3.52	17.60	A MARCE
Guthion	4.00	lb	7.10	28.40	Carton Starts
Thiadan	2.00	lb	6.65	13.30	VI-Street
Stopit calcium	1.00	gal	6.50	6.50	and a second
Pollinate:		Jan Fall St			1
Hive rental	1.00	acre	15.00	15.00	
Water:					100000
Irrigation power	36.00	acre	0.69	24.84	
Assessments	1.00	acre	30.00	30.00	the second
Herbicide:					AND A THE
Roundup	3.75	qt	13.25	49.69	
Rent:					A Trans I was in
Forklift, rental	1.00	acre	12.00	12.00	
Harvest:					The second
Pick fruit	15.00	bin	12.00	180.00	
Rodenticide:	「 」と イ				T. Harton
Rodent control	1.00	acre	5.00	5.00	
Labor (machine)	15.14	hrs	7.20	109.02	7
Labor (non-machine)	59.45	hrs	7.20	428.04	and the second
Fuel - gas	20.00	gal	1.38	27.60	1.2.2.2.17
Fuel - diesel	22.88	gal	0.88	20.14	The second second
Lube				7.15	THE WARDEN
Machinery Repair	States in the			28.70	A COLORADO
Interest on Operating Capital @ 9.50%		in shire he		33.66	The Con
Total Operating Costs/Acre			Sec. 1	1186.10	Carlos Starting
	and the second			1100.10	The second second
Net Returns Above Operating Costs		- Carlos	N 84 34 10	238.90	
Cash Ownership Costs					
Overhead			13-13-14	32.03	N. S. S. M. S.
Property taxes (machinery)		1. 2. 2		39.59	Set at Mar
Property insurance				9.80	the search of the
Investment repairs				45.70	
Total Cash Ownership Costs/Acre	A SAME	and the second		127.12	A DECEMBER
Non-Cash Ownership Costs (Depreciation an	d Interest)	1300 A.		17. See 1 2.	1 2 3 1
Irrigation system			A ALLER	142.53	
Miscellaneous tools and equipment				175.24	Carrantine to
Land	and the start of			180.00	A STATEMENT
Interest on carryover				876.00	STORE V.V
Machinery				89.47	
Total Non-Cash Ownership Costs/Acre	Sale and	Presents)	S. Thirthead	1463.24	12.2
Total Costs/Acre	and the second second	Service States		2776.46	
Total Costs/Bin	1. 14. 1.			185.10	The second
Returns to Risk and Management		5 15 17	THE THE PLAN	+1351.46	E. C.
Actuints to hisk and widhayement		the second se		1001.40	

Table B6. Costs And Returns Per Acre to Establish Red Delicious Apples - Year 6

	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
Gross Returns				2010-020-020	Non Chi
Red Delicious Apples	20.00	bin	95.00	1900.00	12. 11 1
Total Gross Returns for Apples			In the second	1900.00	- 5
Operating Costs	- 11 Stray	A SHA		WE & BOUSE	Harris &
Fertilizer:	State Ch				SALK I
Nitrogen	20.00	lb	0.35	7.00	and the second second
Phosphate	60.00	ID	0.24	14.40	and The state
Potasn	40.00	ID Ib	0.14	0.00	4-1-1- Eta
Micro nutrients	3.00	acre	24 00	72.00	
Insecticide:					THE STORES
Lorsban 4E	2.00	qt	12.13	24.26	
Oil	3.00	gal	3.00	9.00	- Con 19 5-1
Provado	5.00	oz	3.52	17.60	1.11 A 3 4 5
Guthion	4.00	lb	7.10	28.40	1405 574
Thiadan	2.00	ID.	6.65	13.30	and a start of
Chamical thin:	1.00	gai	0.50	0.00	1.1.5.6.1
Sovin	- 1.00	Ib	3.00	3.00	THE STATE
NAA 200	0.30	pint	11.88	3.56	The local day
Pollinate:		Pin		0.00	State State
Hive rental	1.00	acre	15.00	15.00	
Water:	2 9 174			The second second second	F.F. S. Day
Irrigation power	36.00	acre	0.69	24.84	
Assessments	1.00	acre	30.00	30.00	
Herbicide:	and the second				10 1 1 m
Roundup	3.75	qt	13.25	49.69	and the second
Rent:	2.00		12.00	24.00	1
Hanvest	2.00	acre	12.00	24.00	1
Pick fruit	20.00	bin	12.00	240.00	- DET SIT
Rodenticide:	20.00		12.00	210.00	
Rodent control	1.00	acre	5.00	5.00	LUT. He ?!
Labor (machine)	17.00	hrs	7.20	122.40	Sale and the
Labor (non-machine)	65.70	hrs -	7.20	473.04	HAR THE STORE
Fuel - gas	20.00	gal	1.38	27.60	
Fuel - diesel	- 27.07	gal	0.88	23.82	in starter
Lube Mashiman Dansis				7.71	
Interest on Operation Capital @ 9.50%		The cost		31.52	2011/2
Total Operating Casts/Acre				1324.26	the state of the s
	The Start Start	and the first	1	1324.20	1
Net Returns Above Operating Costs	approvide to the		1 188 2 /25	575.74	N
Cash Ownership Costs					
Overhead				35.51	12 5 2
Property taxes (machinery)				40.10	- HE ENE
Property insurance	S. R. F.			10.05	Sand and
Tatal Cook Oruparahin Coots/Aara		127 4 122	R. S. S. S. S.	45.70	Contraction of the
Total Cash Ownership Costs/Acre	The second	22 74	and the second	131.36	A CONTRACTOR
Non-Cash Ownership Costs (Depreciation ar	nd Interest)	2.5. 1.54	N POLICY	also atom	a sata da
Irrigation system				142.53	
Miscellaneous tools and equipment	The state of the		-	175.24	And Do At 1
Land				180.00	V States
Interest on carryover			Sty - Starting	998.00	at a data set to
Machinery				99.75	State of
Total Non-Cash Ownership Costs/Acre				1595.52	1
Total Costs/Acre	State of the second	here the second	The second	3051 14	A STATIST
Total Costs/Bin		1. S. S. 1. 2.	A States	152.56	
	and the second	22.2.19	It was a series of the		and the second second
Returns to Risk and Management		CURE DE LON		-1151.14	- Martin

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Table B7. Costs And Returns Per Acre to Produce Red Delicious Apples - Full Production

S. A. Martine	Quantity Per Acre	Unit	Price or Cost/Unit	Value or Cost/Acre	Your Cost
Gross Returns	NASSING L		a state	Million Million	12.02
Red Delicious Apples	40.00	bin	95.00	3800.00	
Total Gross Returns for Apples				3800.00	1
Operating Costs	See The see	-	and a start		
Fertilizer					
Nitrogen	20.00	Ib.	0.33	6.60	
Phosphate	60.00	lb	0.23	13.80	A CONTRACT
Potash	40.00	lb	0.14	5.60	10
Sulfur	60.00	Ib.	0.15	9.00	E X YEAR
Micro nutrients	3.00	acre	24.00	72.00	The second second
Insecticide					AT THE
Lorsban 4E	2.00	qt	12.13	24.26	West of the Fred
OI	3.00	gal	3.00	9.00	
Guthion	6.00	lb	7.10	42.60	I - Halilbar
Thiadan	2.00	lb	6.65	13.30	
Provado	5.00	OZ	3.52	17,60	1 1 5 2
Stopit calcium	3.00	gal	6.50	19.50	11111114111
Chamical this	6.00	- Ib	5.50	33.00	
Chemical thin:	and the second second				A A A A A A A A A A A A A A A A A A A
Sevin	3.00	lb	3.00	9.00	
NAA 200	1.30	pint	11.88	15.44	2000年1月
Polinate:	Real Providence				Provide the second
Hive rental	1.00	acre	15.00	15.00	Martin Carl
vvater					
Irrigation power	36.00	acre	0.69	24.84	aller and
Assessments	1.00	acre	30.00	30.00	1
Herbicide:	and the second second			and the second	19 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Roundup	3.75	qt	13.25	49.69	The All Ant
Rent:	and the second s			1 - 10 -	
Porklift, rental	2.00	acre	12.00	24.00	a series and
Bins	8.00	bin	4.00	32.00	- I KAURA
Playest Player and Player	10.00		Marris Sta		
Prick Iruit	40.00	bin	12.00	480.00	P. C. Harris
Rodent central	1.00		10 Th - 12 (30)		
Labor (machino)	1.00	acre	5.00	5.00	A CONTRACT OF
Labor (machina)	23.37	nrs	7.20	168.26	And the second
Fuel - das	20.00	nrs	1.20	631.44	1. 1. 10 198 19
Fuel - diesel	42.00	gai	1.38	27.60	and the second
Lube	42.55	gar	0.00	37.79	
Machinery Repair				9.80	
Interest on Operating Capital @ 9.50%				40.12	A CONTRACTOR
Total Operating Costs/Acre				40.92	and the second second
isial operating costantite	The second	The second and	A CELLER	1913.11	the second second
Net Returns Above Operating Costs	States in			1886.89	A CARLENS
Cash Ownership Costs		and the second	Contra Contra	The second	No. Carlos
Overhead	The life of the second		M. L. Starker	50.24	
Property taxes (machinery)		and the second		41.97	the to the spec
Property insurance		Section 1		10.99	100 10 10 10 10 10 10 10 10 10 10 10 10
Investment repairs				45.70	
Total Cash Ownership Costs/Acre				148.90	Jert & Cart
Non-Cash Ownership Costs (Depreciation and	d Interest)	Charles State	the state of the		
Irrigation system	A March	Sarrist of		142 53	
Miscellaneous tools and equipment		ST.X.S.	Real and and and	175 23	-
Land				180.00	Contract for
Amortized establishment cost		La tre		1517.86	The state of the
Machinery			1	137.41	Contraction of the
Total Non-Cash Ownership Costs/Acre				2152.02	-
and a state of the	and the state of the	and the second	and the second	2153.03	1
Total Costs/Acre	State Inter	a set of the lo	and shares the state	4215.04	A CHARTY
Total Costs/Bin	2 3 M 3 M 2 M			105.38	State and the
	the second s		the second second	La pro	and the second s
Returns to Risk and Management				-415:04	

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Appendix C. Cash Flow, Years 1-7

Table C1. Monthly Summary of Cash Expenses per Acre for Red Delicious Apples - Establishment Year 1

	Sep 96	Oct 96	Nov 96	Dec 96	Jan 97	Feb 97	Mar 97	Apr 97	May 97	Jun 97	Jul 97	Aug 97	Sep 97	Oct 97	Total
Land Prep: Tree removal Root removal Ripping Plow	250.00 50.00	110.00 21.50									1. 14.15			and the second	250.00 50.00 110.00 21.50
Total Land Prep Costs	300.00	131.50			All A										431.50
Plant: Plant trees Plant grass seed	- AL						1627.65						40.00	10	1627.65 40.00
Total Plant Costs	1. 24	512	0-2-2	1277		A wit	1627.65	1941s		A HAN	19.05	The sur	40.00	and and	1667.65
Cultural: Disc Furnigate Mark rows Fertilize Protect trees Branch training Weed control Irrigate Hand hoeing Pickup use Rodent control		16.00 360.00		Levis	「「「「「「」」」を		10.03 77.60 51.00		86.00 14.06 112.44 28.80	140.40 14.06 28.80	14.06 28.80	78.61	12.20		16.00 360.00 10.03 77.60 51.00 226.40 42.19 112.44 86.40 78.61 12.20
Total Cultural Costs		376.00	1.200	1.4			138.63	12 8.4	241.30	183.26	42.86	78,61	12.20		1072.87
Interest on Operating Capit	tal 2.38	6.39	6.39	6.39	6.39	6.39	20.38	20.38	22.29	23.74	24.08	24.70	25.11	25.11	220.11
Operating Costs/Acre	302.38	513.89	6.39	6.39	6.39	6.39	1786.66	20.38	263.59	207.00	66.94	103.31	77.31	25.11	3392.14
Cash Ownership Cash overhead Property taxes (machiner Property insurance Investment repairs	7.25 y) 3.71	7.25	7.25	7.25 17.39 3.70 3.71	7.25	7.25	7.25	7.25	7.25	7.25 17.39 3.70 3.71	7.25	7.25			86.97 34.78 7.39 44.50
Cash Ownership Costs	10.96	10,96	10.96	32.04	10.96	10.96	10.96	10.96	10.96	32.04	10.96	10.96	Dass	1.5.1	173.64
Total Cash Costs/Acre	313.33	524.85	17.35	38.43	17,35	17.35	1797.62	31.33	274.55	239.04	77.90	114.26	77.31	25.11	3565.78

Table C2. Monthly Summary of Cash Expenses Per Acre for Red Delicious Apples - Establishment Year 2

	Mar Ap	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Total
	97	97	97	97	97	97	97	97	97	97	98	98	
Cultural	Die	2.5.5	10.00	1. 1979	1.	Carlos N.	11000	102	Gazza .	1208	The Co	22.15	I STORE
Fertilize	147.00												147.00
Dormant spray	39.93									0 10			39.93
Pollinate trees	N. A. C. e		15.00										15.00
Branch training			266.40	36.00		化学 我		2			2 2 4	Store .	302,40
Tree replacement		APP 1		14.60								2	14.60
Hand hoe			1.50.1	36.00			14						36.00
Weed control				14.06	14.06	14.06							42.19
Irrigate				112.44								Sec.	112.44
Mow row centers				5.98		5.98							11.96
Spray nutrients				18.67		18.67							37.33
Pickup use						78.61	- 111		25日 3			and mail	78.61
Rodent control						1 horas	12.20	sthe the					12.20
Total Cultural Costs	186.93	2	281.40	237.75	14.06	117.32	12.20	18		1000	100	1. 20	849.66
Interest on Operating Capital	1 1.48	1.48	3.71	5.59	5.70	6.63	6.73	6.73	6.73	6.73	1	1	51.49
Operating Costs/Acre	188.41	1.48	285.11	243.34	19.76	123.95	18.93	6.73	6.73	6,73		1 alla	901.16
Cash Ownership	IST P.P.	1200000		di cr	12.0		Tellat.	A VALLE	1. 1. 1.			- al	
Cash ownership	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	24.69
Property taxes (machinery)	1.5			17.55	1					17.55			35.10
Property insurance	Store .			3.77		Sec. 2			Constally	3.77			7.55
Investment repairs	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.71	3.71	44.50
Cash Ownership Costs	5.77	5.77	5.77	27.09	5.77	5.77	5.77	5.77	5.77	27.09	5,77	5.77	111.84
Total Cash Costs/Acre	194.17	7.25	290.87	270.43	25.53	129.72	24.69	12.49	12.49	33.82	5.77	5.77	1012.99

Table C3. Monthly Summary of Cash Expenses per Acre for Red Delicious Apples - Establishment Year 3

	Mar 97	Apr 97	May 97	Jun 97	Jul 97	Aug 97	Sep 97	Oct 97	Nov 97	Dec 97	Jan 98	Feb 98	Total
Cultural: Fertilize Dormant spray Pollinate trees Branch training Tree replacement Weed control Irrigate Mow row centers Spray nutrients	74.60 39.93		15.00 158.40	362.40 9.10 14.06 112.44 5.98 30.67	14.06	14.06 5.98 30.67							74.60 39.93 15.00 520.80 9.10 42.19 112.44 11.96 61.33
Rodent control	D'and		North Start	"listing		78.61	12.20	litera,	- The	hard	1000	as th	12.20
Total Cultural Costs	114.53		173.40	534.65	14.06	129,32	12.20	12:00	NEW S	N- N	有限	1	978.16
Interest on Operating Capital	0.91	0.91	2.28	6.51	6.62	7.65	7.74	7.74	7.74	7.74		1000	55.85
Operating Costs/Acre	115.43	0.91	175.68	541.16	20.69	136.97	19.94	7.74	7.74	7.74			1034.01
Cash Ownership Cash overhead Property taxes (machinery) Property insurance Investment repairs	2.34 3.71	2.34	2.34	2.34 17.55 3.77 3.71	2.34 3.71	2.34	2.34	2.34 3.71	2.34 3.71	2.34 17.55 3.77 3.71	2.34 3.71	2.34 3.71	28.02 35.10 7.55 44.50
Cash Ownership Costs	6.04	6.04	6.04	27.37	6.04	6.04	6.04	6.04	6.04	27.37	6.04	6.04	115.17
Total Cash Costs/Acre	121.48	6.95	181.72	568.53	26.73	143.01	25.99	13.79	13.79	35.11	6.04	6.04	1149.18

Table C4. Monthly Summary of Cash Expenses Per Acre for Red Delicious Apples - Establishment Year 4

	Mar 97	Apr 97	May 97	Jun 97	Jul 97	Aug 97	Sep 97	Oct 97	Nov 97	Dec 97	Jan 98	Feb 98	Total
Cultural:	The S	1.200.200	2003	19 11	13.12		Real Contraction	1.182	Date	and the	220	1	1 Speed
Fertilize	53.80						-		51-2	11 34		1.20	53.80
Dormant spray	39.98									11.203			39.98
Pollinate trees	La series		15.00								4 21		15.00
Branch training			100.80	362.40					Allow Nu	3 4 M.			463.20
Cover spray	(C. 5.			27.37							1.SQUARE THE		27.37
Hand thinning				57.60					1000		AT Sanus	the second	57.60
Aphid spray		222		20.75						1000			20.75
Weed control				14.06	14.06	14.06					12.23		42.19
Irrigate			2.2.1	126.84	1-41P								126.84
Mow row centers				5.98	5,98	5.98							17.94
Spray nutrients		10535		30.05		30.67				1. 1.			60.71
Pickup use				10 A 10		78.61			and the				78.61
Rodent control	A RUE	10= 12	at a list		1	aline .	12.20	- 12 ·	1994	724 14	1.2.5	- 345	12,20
Total Cultural Costs	93.78		115.80	645.04	20.04	129.32	12.20	and 3-	and the		11 to the		1016.19
Harvest:								The s	SW S			and s	Sec. 2
Pick fruit							171.03						171.03
Haul apples							5.77						5.77
Total Harvest Costs	175,17	Ser a	JUST	14			176.80	Mag.	122	25112	1.54	The AF	176.80
Interest on Operating Capital	0.74	0.74	1.66	6.77	6.92	7.95	9.44	250 10		19 g.		A. S.	34.23
Operating Costs/Acre	94.53	0.74	117.46	651.81	26.97	137.27	198.44	S. Harris	A. S.	Sec. 1	Nº F	1000	1227.22
Cash Ownership	12.3.	10.5921	1. 191	1.2.1.2	2		1.1.1	1. A. 18	24	S. A. Tr		SY AND	
Cash overhead	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	32.94
Property taxes (machinery)				18.22						18.22			36.45
Property insurance				4.11						4.11			8.22
Investment repairs	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	45.70
Cash Ownership Costs	6.55	6.55	6.55	28.89	6.55	6.55	6.55	6.55	6.55	28.89	6.55	6.55	123.31
Total Cash Costs/Acre	101.08	7.30	124.01	680.70	33.52	143.82	205.00	6.55	6.55	28:89	6.55	6.55	1350.53

Table C5. Monthly Summary of Cash Expenses per Acre for Red Delicious Apples - Establishment Year 5

ないってんです	Mar 97	Apr 97	May 97	Jun 97	Jul 97	Aug 97	Sep 97	Oct 97	Nov 97	Dec 97	Jan 98	Feb 98	Total
Cultural:	THE FY	1.1.1.1	1-12.0	1201-1	Ser S	51.5%	22.5	1997	1	12 10 10 1	De A	1.11	1000
Prune trees	144.00												144.00
Fertilize	53.80		Y 18				14 2						53.80
Dormant spray	41.17								12.23			143.5	41.17
Pollinate trees			15.00										15.00
Spray nutrients			30.72	30.72	30.67	100							92.11
Aphid spray				24.27									24.27
Irrigate				112.44									112.44
Hand thin				165.60					5 + 5				165.60
Weed control				25.09	25.09	25.09				1.20-			75.28
Mow row centers				5.98	5.98	5.98		100	2024	2			17.94
Cover spray				34.17	27.42							- Sector	61.59
Pickup use	1.2.3.					78.61							78.61
Rodent control	11-26	8-10			A PARTY OF		12.20						12.20
Total Cultural Costs	238.97	4.4.5	45.72	398.27	89.17	109.69	12.20	1	1.54.3	- 1. A.	Ser. C	1362	894.01
Harvest:	2018	112.50	au 12	SUSSI	and the second	1200		(Cares)	1521	No. 19	0-1-220	24	PAL-
Pick fruit							249.72				1. 54		249.72
Haul apples							8.71						8.71
Total Harvest Costs	and the	Sugar Ser		12 states		1 the second	258.43	211-54	VIII P	19 Mar 19	12	E da	258.43
Interest on Operating Capita	1 1.89	1.89	2.25	5.41	6.11	6.98	9.12	1. Sec. 1.	-Street	1.54.9	30.00	1000	33.66
Operating Costs/Acre	240.86	1.89	47.98	403.68	95.28	116.67	279.75	AR AN	1. C	te in first	S. Part	"MARY	1186.10
Cash Ownership	WE TE		1 43	1.1	1.75	2000	AN SAINT	Sec. Sec.	227		2 Miles	2 23	SCHOOL IN
Cash overhead	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	32.03
Property taxes (machinery)	1			19.80						19.80			39.59
Property insurance				4.90			2-11-91	12 52		4.90			9.80
Investment repairs	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	45.70
Cash Ownership Costs	6.48	6.48	6.48	31.17	6.48	6.48	6.48	6.48	6.48	31.17	6.48	6.48	127.12
Total Cash Costs/Acre	247.34	8.37	54.45	434.85	101.76	123.14	-286.23	6.48	6.48	31,17	6.48	6.48	1313.22

Table C6. Monthly Summary of Cash Expenses per Acre for Red Delicious Apples - Establishment Year 6

	Mar 97	Apr 97	May 97	Jun 97	Jul 97	Aug 97	Sep 97	Oct 97	Nov 97	Dec 97	Jan 98	Feb 98	Total
Cultural		1	The second second				ten stalle	C. Contract	N.	13.8			2.80
Prune trees	158 40	1	St. St.		1.26								158.40
Fertilize	46.80									Sec. 1			46.80
Dormant spray	39.93					a series							39.93
Thin with chemicals	1.3	13.23	2 and						2.77				13.23
Pollinate trees			15.00										15.00
Spray nutrients			30.72	30.72	30.72								92.17
Aphid spray				24.32									24.32
Irrigate				112.44					12 6 12		12 31 1/2		112.44
Hand thin		20 22		187.20									187.20
Weed control			A CONT	25.09	25.09	25.09						211	75.28
Mow row centers				5.98	5.98	5.48			E. I.E.			1 = 11	17.44
Cover spray		State No.		34.22	27.37			11.45					61.59
Pickup use		Sec. Sta	1 33			78.61		1.15	115				78.61
Rodent control							12.20					100	12.20
Total Cultural Costs	245.13	13.23	45.72	419.99	89.17	109.18	12.20	dell'	5-20	A DAY AND	14 C	A MIS	934.61
Harvest	189 M.L	Seat	10 24	CALC: NO	alloca -	- AVERAGE	Par V	A CALL		1.4.2.5	1. 55.30	C T	1 10 S
Pick fruit							342.05						342.05
Haul apples							11.53	and the					11.53
Total Harvest Costs	1	a here	ALC: N	AND REAL	- 2.7 M	1 5 - 3	353 58	-		100	The second	12 2.15	353 58
		0.05	0.44	E 70	0.44	7.00	40.00	- Action		-		- Arris	00.00
Interest on Operating Capita	1_1.94	2.05	2.41	5.73	6,44	7.30	10.20	18110 - E	and the second	1 V	2 - 2.1	C. C. D.	36.06
Operating Costs/Acre	247.07	15.28	48.13	425.72	95.60	116.48	375.98		11190	21119	1. 2	Sin 7	1324.26
Cash Ownership	3 Aug	1241	1.1	A STER			114	2	T'SY	105	128.20	1.2.5	20.212
Cash overhead	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.96	35.51
Property taxes (machinery)	Files			20.05						20.05			40.10
Property insurance				5.03						5.03			10.05
Investment repairs	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	45.70
Cash Ownership Costs	6.77	6.77	6.77	31.84	6.77	6.77	6.77	6.77	6.77 -	31.84	6.77	6.77	131.36
Total Cash Costs/Acre	253.83	22.04	54.90	457.56	102.37	123.25	382.75	6.77	6.77	31.84	6.77	6.77	1455.62

Table C7. Monthly Summary of Cash Expenses per Acre for Red Delicious Apples - Full Production

	Mar 97	Apr 97	May 97	Jun 97	Jul 97	Aug 97	Sep 97	Oct 97	Nov 97	Dec 97	Jan 98	Feb 98	Total
Cultural:	a str	1	200	11	- 8 S.	1903	2-2-	(4. P)	12.4	and where	1572	28.234	8013
Prune trees	201.60												201.60
Fertilize	45.80								de la la				45.80
Dormant spray	39.98		T. Cal										39.98
Thin with chemicals		19.23				1.500					Gent -		19.23
Pollinate trees			15.00										15.00
Cover spray			34.22	27.37	60.42						10 C 1		122.01
Spray nutrients			30.67	30.72	30.67								92.06
Aphid spray				24.32		41				1.55			24.32
Irrigate				112.44									112.44
Hand thin				288.00							1256		288.00
Weed control				25.09	25.09	25.09				57123			75.28
Mow row centers				5.98	5.98	5.48							17.44
Pickup use						78.61						1. 1	78.61
Stop drop spray					2.2	25.05							25.05
Rodent control			1.	Renner		1.1	8,60	14 B.2	Set. 63/	XX	NAT'S	in the	8.60
Total Cultural Costs	287.38	19.23	79.89	513.93	122.17	134.23	8,60	Ref John	「「「	+	12125	A Cart	1165.43
Harvest:													
Pick fruit							677.70						677.70
Haul apples						10012	23.06						23.06
Total Harvest Costs	1.1.1	6	1 The	and a	2000	S.C. T	700.76	1. 9013	14 1 24	6.10	5.1.3.E	1.200	700.76
Interest on Operating Capita	al 2.28	2.43	3.06	7,13	8.10	9.16	14.77	48 P	and the	1. 44	a mark	5.5	46.92
Operating Costs/Acre	289.66	21.66	82.95	521.06	130.26	143.39	724.14	1.2.18.1	No Ch	- 21		Carlos S	1913.11
Cash Ownership	42121	1 23	(B YEAL)	CALER.	5	A MARTIN	2010	1. 1. 1.	a state of	a stand		S. 95.	249.4
Cash overhead	4,19	4.19	4.19	4.19	4.19	4.19	4.19	4.19	4.19	4.19	4.19	4.19	50.24
Property taxes (machinery)			20.99			-1 -1			20.99			41.97
Property insurance				5.49	1 St					5.49			10.99
Investment repairs	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	3.81	45.70
Cash Ownership Costs	8.00	8.00	8.00	34.47	8.00	8.00	8.00	8.00	8.00	34.47	8.00	8.00	148.90
Total Cash Costs/Acre	297,65	29.65	90.94	555.53	138.26	151.38	732.13	8.00	8.00	34.47	8.00	8.00	2062.01





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