

**Assessing the Economic Impact
and
Establishment Cost of Replanting Orchards**

A Companion Study to *Replanting for the Future*

Tree Fruit Yield and Price Survey June 1999

November 1999



**MINISTRY OF AGRICULTURE
AND FOOD**

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This project was funded by a commodity specific initiative
Provided by the Plant Industry Branch
BC Ministry of Agriculture and Food

Acknowledgements

This project would not have been possible without the participation of individual orchardists at the focus groups. They will remain anonymous but our sincere appreciation is extended for their time and contributions.

BC Ministry of Agriculture and Food Staff

Jim Campbell, P.Ag. Tree Fruit and Grape Industry Specialist, Oliver
George Geldart, P.Ag. Business Management Specialist, Vernon
Helmut Arndt, P.Ag. District Agrologist, Kelowna
Ken McAra, P.Ag. Resource Planning Specialist, Kelowna

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Caution

The information contained in this publication is based on survey results and consensus cost of inputs, labour, systems, etc. There can be no single model that fits all locations and circumstances. The approach used herein is intended to be representative of the Okanagan – Similkameen tree fruit production areas. Reliance on this material should be limited to trends and components, not specific results. Due diligence by the individual investing in new orchard plantings is mandatory. Specific analysis and planning using the individual's unique resources and the conditions of the intended site need to be conducted before starting.

Executive Summary

The OVTFRA Replanting for the Future, June 1999 publication ends its Summary and Conclusions section with **Further Analysis**.

“To assist with the analysis of the replant program, it is proposed that the following be completed as soon as possible:

1. An updated establishment cost analysis to assess the profitability of different densities and commodities.
2. An analysis of apple pack outs from blocks of 1500 – 2000 trees as contrasted to the blocks of >2000 trees per acre.
3. The development of a new variety introduction and development strategy.”

This report is a companion study to address Point 1 in the continued assessment process of Orchard Replanting.

Two focus groups were brought together at the Summerland Research Station to share and discuss approaches and input costs for replant for apples and cherries. Utilizing information from these sessions and the leaf age production data gathered in the survey, the following trends and indicators were derived.

Establishment Costs - The higher the density of the planting the greater the total cost. However, irrigation, land preparation and support systems (where used) tend to be fairly constant for all densities. The cost per tree and the time to full production need to be considered with total expenditure and from the information compiled, the optimum density is in the 1500 to 2000 tree range for apples and the lower density of the two for cherries.

Cost Recovery Price - This analysis has been used to help assess market return risk in conjunction with the longevity of market popularity. The cents per pound at 10 years favoured the 1000 to 2000 trees per acre densities and the lower cherry density.

Internal Rate of Return - This measures the performance of an investment as a rate of return (the rate being defined as the discount rate required to bring the present value of all future cash flows, after taking into account the initial investment, to zero). Provided this percentage yield is greater than the producer’s cost of capital (borrowing rate) then the project is acceptable from a financial point of view. Again, the optimum density is in the 1500 to 2000 tree range for apples and for cherries, there is no real difference.

What if I don’t replant? - A traditional red delicious planting was used for comparison and the analysis indicated that even the lowest density apple planting (726 trees per acre) was superior to maintaining a status quo orchard.

Highest profitability and best cumulative cash flow at 1500 – 2000 trees per acre - The projections using actual survey production results to a maximum yield indicated that the best profitability (IRR), total cash flow for the period and the shortest number of years to a positive cash flow favoured the 1500 – 2000 trees per acre plantings for apples and tended toward the higher density cherry planting.

High variability in production - Scatter graphs from the production survey showed extremes in production per acre at all leaf age and density classes. The > 2000 trees per acre apple results showed basically identical average production at the 5th and 6th leaf stages impacting analysis. If the expectation of an increasing yield from 5th and 6th leaves had been demonstrated there would have been better profitability and cash flow results at the high density. Cherries had few production records to go on but they too showed extreme variability that adds to risk consideration.

Soft fruit potential comparable to apples - After full consideration of suitability, horticultural requirements, market and production risk it is reasonable to consider replant of cherries or apples to be comparable. Peaches did not have enough data to include in this generalization, but there appears to be some similarities in potential.

Conclusions

The average yields for different density ranges provided from the OVTFA Replanting for the Future survey and capped at a maximum yield per acre indicate that the densities between 1500 and 2000 trees per acre best meet the long term issue of profitability and the short term issue of cash flow for apples. As price and production increase, the indicators shift toward the higher density plantings through greater total revenue and the attaining of maximum production and at lower yield and price the same indicators shift towards the lower density plantings. The better the horticultural capabilities of the site and management in reaching yields higher than the maximums used for this study, the more the higher densities are favoured for apples. The two cherry densities analysed do not provide a sufficient difference in aggregate yield and cash flow although they are better for the higher density.

The higher the density the higher the establishment costs and the greater the financial risk. The pursuit of reducing costs through less expensive trees and other inputs is an avenue to consider. However, the 1 year delay in production, tree mortality and the cost of replacement nursery trees to maintain uniform tree production does not make the profitability significantly better for benchgraft and the total cash flow is less than a nursery tree planting. Higher product prices in early years of the planting further reduce the benefit of any establishment cost reduction of a benchgraft planting.

All densities considered are better than the Red Delicious planting / results used for comparison and have a potential for profit. Individual assessment will make the choice of whether or not the cash flow and profitability is adequate to meet fixed costs and personal income requirements.

The returns for cherries at present appear to make them a great choice for investment. Along with the "high" returns comes extremely high risk. Insufficient data to back up continued yields at 14,000 lbs. per acre is available. Combining production uncertainty with historical price and quality extremes spells caution. Suitable sites for cherry plantings are more limited in the Okanagan – Similkameen than sites for apples.

The previous TPAP and Replant Grants have not been considered. The investment decision should be based on the merits of the project not the assistance available and so past or future program availability is not necessary in choosing the right variety or planting density.

Profitability and Cash Flow

The decision to replant or replace orchards is based on financial feasibility and profitability. Profitability is the long-term requirement, cash flow is the short term requirement. The discounted cash flow (DCF) techniques of investment appraisal were developed to take into account the time value of money. The two main DCF methods are the net present value (NPV) and the internal rate of return (IRR). Net Present Value acknowledges that a 1999 dollar isn't worth the same as a dollar in 1989 or 2009. It also recognizes that returns from an investment vary year to year, depending on business conditions, interest rates, risk and inflation. The IRR measures the performance of an investment as a rate of return (the rate being defined as the discount rate required to bring the present value of all future cash flows, after taking into account the initial investment, to zero), unlike the NPV that expresses the performance of a project as a dollar amount of return. The IRR uses the same net cash flows as one would use under the NPV method but expresses the end result as a percentage yield.

Provided this percentage yield is greater than the producer's cost of capital (borrowing rate) then the project is acceptable from a financial point of view. The internal rate of return of a replant project is therefore the discount rate that reduces the stream of net cash flows associated with the project to a present value of zero.

Two focus groups were brought together at the Summerland Research Station to share and discuss approaches and input costs for replant for apples and cherries/peaches. Arriving at one cost for the area covered by the yield and price survey is difficult and can be challenged on factors such as variations in topography, soils, temperature, prevailing wind, precipitation, management ability etc. The approach in convening the focus groups was to include growers from each general growing area (e.g. Osoyoos, Oliver, Keremeos, Penticton, Summerland, Kelowna, Vernon) and thereby arriving at a **fair** representation of establishment costs.

Production Survey Results (Apples) for Yield by Density reached almost 45,000 lbs. for plantings greater than 2000 trees per acre in the 6th leaf. Fewer surveys and shorter histories with the higher density cherry plantings have meant limited high level production information on which to follow trends. Continuous production at high levels may be realized by some but on average the "full production" level will be less. For basic analysis, maximum production per acre has been capped at 36,000 pounds per planted acre for apples and at 14,000 lbs. for cherries.

The orchard industry is higher risk than safe investments and should attract a Prime + 2% rate (currently 8.25%) although some individuals may have lower rates based on their history, security, etc. The same P+2% has been used as the discount rate for Net Present Value and Internal Rate of Return calculations.

Commodity prices do not remain constant and tend to decline as supply and demand responses come into play. Likewise, most orchard expenses do not remain constant and tend to increase at or near the annual inflation rate. Prices were held at a constant level for comparison and were based on historical averages and trends. Analyses for expenses and input cost recovery have also been calculated for additional risk assessment. Sensitivity analyses were done to measure the effect of production or price change on the profitability of planting densities.

APPLES**Table 1 Costs**

| Tree | Nursery Tree | Benchgraft |
|----------------|-------------------|------------|
| trees per acre | -- \$ per acre -- | |
| 726 | 12,301 | 9,608 |
| 990 | 14,943 | 11,270 |
| 1452 | 19,565 | 14,179 |
| 1742 | 22,467 | 16,004 |
| 2489 | 29,941 | 20,707 |

Table 2 Cost Recovery Price – 10 Years

(3 maximum production levels)

| | Tree Density (trees per acre) | | | | |
|----------------------|-------------------------------|-------|---------------|-------|-------|
| | 726 | 990 | 1452 | 1742 | 2489 |
| Nursery Trees | | | \$/lb. | | |
| 32,000 lbs. | 0.185 | 0.172 | 0.174 | 0.182 | 0.217 |
| 36,000 lbs. | 0.185 | 0.164 | 0.164 | 0.169 | 0.203 |
| 40,000 lbs. | 0.185 | 0.159 | 0.156 | 0.159 | 0.191 |
| Benchgraft | | | \$/lb. | | |
| 32,000 lbs. | 0.201 | 0.177 | 0.169 | 0.174 | 0.201 |
| 36,000 lbs. | 0.201 | 0.170 | 0.161 | 0.163 | 0.190 |
| 40,000 lbs. | 0.201 | 0.167 | 0.154 | 0.154 | 0.180 |

Table 3 Internal Rate of Return – 10 Years

(full production at 36,000 lbs. per acre)

| | Tree Density (trees per acre) | | | | |
|----------------------|-------------------------------|--------|--------|--------|---------|
| | 726 | 990 | 1452 | 1742 | 2489 |
| Nursery Trees | | | | | |
| 20¢/lb. | 2.48% | 4.83% | 4.83% | 3.30% | (2.81%) |
| 25¢/lb. | 9.52% | 12.94% | 13.99% | 13.25% | 6.68% |
| 30¢/lb. | 15.21% | 17.29% | 18.50% | 17.34% | 10.66% |
| Benchgraft | | | | | |
| 20¢/lb. | (0.12%) | 3.87% | 5.68% | 4.88% | (0.22%) |
| 25¢/lb. | 6.94% | 11.57% | 14.44% | 14.52% | 8.99% |
| 30¢/lb. | 12.48% | 15.95% | 18.90% | 18.58% | 13.17% |

Ranking apple planting densities for economic impact considered the following indicators:

- # of years to attain full production
- # of years to 1st positive contribution margin
- # of years to a positive cumulative cash flow
- cost recovery price per pound at 8, 10 & 12 years
- Net present value at 8, 10 & 12 years
- Internal rate of return at 8, 10 & 12 years

From the section on the Analysis of Replant Program Survey Results – Overview we quote “To obtain a comprehensive analysis of replanting, we need to examine the establishment cost of replanting to assess its economic impact.”

Production Survey Results for Yield by Density for Gala, Fuji and Jonagold reached almost 45,000 lbs. per acre at 2000 trees per acre at 3rd leaf.

level will be less. Gala has been capped at 38,000 lbs. per acre, Fuji at 36,000 and Jonagold at 3

- <800 trees per acre
- 800 1200 trees per acre
- 1200 1500 trees per acre
- 1500 2000 trees per acre
- >2000 t

¹ per acre at 2 through 7th

| | 2 nd | 3 leaf | 4 th leaf | 5 th | 6 leaf | 7 th leaf |
|---------------|-----------------|--------|----------------------|-----------------|--------|----------------------|
| All Densities | | 10,215 | 16,193 | | 23,458 | 26,439 |
| | 1,762 | 6,199 | | 15,779 | 16,872 | |
| 800 1200 | | 7,178 | 13,899 | | 24,182 | 29,821 |
| – 1500 | 4,854 | | 21,415 | 29,779 | | 39,698 |
| 1500 – | 8,628 | 17,442 | | 34,288 | 44,053 | |
| > 2000 | 7,518 | | 30,454 | 30,381 | | N/A |
| Red Delicious | 20,524 | 20,524 | 20,524 | 20,524 | 20,524 | 20,524 |

Typical spacing between trees and rows in these density categories are:

- 5' x 12' – 726 trees per acre
- 4' x 11' – 990 trees per acre
- 3' x 10' – 1452 trees per acre
- 2.5' x 10' – 1742 trees per acre
- 1.75' x 10' – 2489 trees per acre

Planting Densities of 1452 and 1742 indicate a positive cumulative cash flow after year 6 whereas the other densities require an additional year. Over the twelve years these 2 densities also have a greater cumulative cash flow, the 2489 density and 990 density follow similar trends.

The Benchgraft planting assumes a 25% tree mortality after year 1. The spaces are filled with nursery trees in the 2nd year. The highest density (2489) does perform the best over the 12 years although not significantly better than the 1742 and 1452 densities. All densities were still at a negative cash flow after Year 6 and the 726 density took until Year 8 to attain a positive cash flow.

The resources required to replant include money. Even if there are cash reserves there is still an opportunity cost and an applicable interest rate is for borrowing is required for analysis and this cost is included as an expense in calculations. The orchard industry is higher risk and should attract a Prime + 2% rate (currently 8.25%) although some may have preferred rates based on security, history etc. The same discount rate has been used for Net Present Value and Internal Rate of Return calculations.

Fruit prices do not remain constant nor do most expenses. The use of a discount rate for analysis takes price decline and cost increase into account. The 8.25% may be high (some will argue that the appropriate rate is rate of interest on borrowed capital – expected rate of inflation + differential rate premium for risk (8.25-4+2=6.25)) but compensates adequately for the concerns on price and expense. The use of a 25¢ per pound apple averages the price curve of a new, fairly well accepted variety over 15 years.

¹ *Replanting for the Future* Tree Fruit Yield and Price Survey OVTFA – June 1999

Table 4**8, 10 & 12 Year Economic and Financial Indicators², Nursery Tree Planting****2489 trees per acre**

| | Total Production | Total Revenue | Establishment Costs | + | Direct Expense | = | Total Expense | Cumulative Cash Flow |
|----------|---------------------|------------------|------------------------|---|-------------------|---|------------------|-------------------------|
| 8 years | 197,928 lbs. | \$49,482 | \$29,941 | | \$18,593 | | \$48,534 | \$948 |
| 10 years | 269,928 lbs. | \$67,482 | \$29,941 | | \$24,796 | | \$54,737 | \$12,745 |
| 12 years | 341,928 lbs. | \$85,482 | \$29,941 | | \$31,000 | | \$60,941 | \$24,541 |

| Density 2489 | 8 Year Analysis | 10 Year Analysis | 12 Year Analysis |
|-------------------------------|-----------------|------------------|------------------|
| Discounted Benefits | \$32,044 | \$40,527 | \$47,766 |
| Discounted Costs | \$39,644 | \$42,568 | \$45,063 |
| Net Present Value | (\$7,600) | (\$2,041) | \$2,704 |
| Internal Rate of Return | 0.68% | 6.68% | 9.96% |
| Direct Cost Recovery (\$/lb.) | 0.2452 | 0.2028 | 0.1782 |

1742 trees per acre

| | Total Production | Total Revenue | Establishment Costs | + | Direct Expense | = | Total Expense | Cumulative Cash Flow |
|----------|---------------------|------------------|------------------------|---|-------------------|---|------------------|-------------------------|
| 8 years | 193,572 lbs. | \$48,393 | \$22,467 | | \$16,755 | | \$39,223 | \$9,170 |
| 10 years | 265,572 lbs. | \$66,393 | \$22,467 | | \$22,451 | | \$44,918 | \$21,475 |
| 12 years | 337,572 lbs. | \$84,393 | \$22,467 | | \$28,146 | | \$50,613 | \$33,780 |

| Density 1742 | 8 Year Analysis | 10 Year Analysis | 12 Year Analysis |
|-------------------------------|-----------------|------------------|------------------|
| Discounted Benefits | \$31,170 | \$39,653 | \$46,892 |
| Discounted Costs | \$31,532 | \$34,216 | \$36,506 |
| Net Present Value | (\$362) | \$5,437 | \$10,386 |
| Internal Rate of Return | 7.82% | 13.25% | 16.09% |
| Direct Cost Recovery (\$/lb.) | 0.2026 | 0.1691 | 0.1499 |

1452 trees per acre

| | Total Production | Total Revenue | Establishment Costs | + | Direct Expense | = | Total Expense | Cumulative Cash Flow |
|----------|---------------------|------------------|------------------------|---|-------------------|---|------------------|-------------------------|
| 8 years | 176,169 lbs. | \$44,042 | \$19,565 | | \$15,550 | | \$35,115 | \$8,927 |
| 10 years | 248,169 lbs. | \$62,042 | \$19,565 | | \$21,047 | | \$40,613 | \$21,430 |
| 12 years | 320,169 lbs. | \$80,042 | \$19,565 | | \$26,545 | | \$46,111 | \$33,932 |

| Density 1452 | 8 Year Analysis | 10 Year Analysis | 12 Year Analysis |
|-------------------------------|-----------------|------------------|------------------|
| Discounted Benefits | \$27,983 | \$36,466 | \$43,705 |
| Discounted Costs | \$28,025 | \$30,616 | \$32,827 |
| Net Present Value | (\$43) | \$5,849 | \$10,877 |
| Internal Rate of Return | 8.19% | 13.99% | 16.94% |
| Direct Cost Recovery (\$/lb.) | 0.1993 | 0.1636 | 0.1440 |

² Discount Rate Prime+2% (8.25% at time of analysis)

Table 4 continued...

990 trees per acre

| | Total Production | Total Revenue | Establishment Costs | + | Direct Expense | = | Total Expense | Cumulative Cash Flow |
|----------|---------------------|------------------|------------------------|---|-------------------|---|------------------|-------------------------|
| 8 years | 130,947 lbs. | \$32,737 | \$14,943 | | \$13,080 | | \$28,023 | \$4,714 |
| 10 years | 202,947 lbs. | \$50,737 | \$14,943 | | \$18,263 | | \$33,206 | \$17,530 |
| 12 years | 274,947 lbs. | \$68,737 | \$14,943 | | \$23,447 | | \$38,390 | \$30,347 |

| Density 990 | 8 Year Analysis | 10 Year Analysis | 12 Year Analysis |
|-------------------------------|-----------------|------------------|------------------|
| Discounted Benefits | \$20,202 | \$28,685 | \$35,924 |
| Discounted Costs | \$22,100 | \$24,543 | \$26,628 |
| Net Present Value | (\$1,898) | \$4,142 | \$9,296 |
| Internal Rate of Return | 5.24% | 12.94% | 16.56% |
| Direct Cost Recovery (\$/lb.) | 0.2140 | 0.1636 | 0.1396 |

726 trees per acre

| | Total Production | Total Revenue | Establishment Costs | + | Direct Expense | = | Total Expense | Cumulative Cash Flow |
|----------|---------------------|------------------|------------------------|---|-------------------|---|------------------|-------------------------|
| 8 years | 96,986 lbs. | \$24,246 | \$12,301 | | \$11,414 | | \$23,716 | \$531 |
| 10 years | 152,162 lbs. | \$38,040 | \$12,301 | | \$15,891 | | \$28,192 | \$9,848 |
| 12 years | 223,010 lbs. | \$55,752 | \$12,301 | | \$20,858 | | \$33,160 | \$22,593 |

| Density 726 | 8 Year Analysis | 10 Year Analysis | 12 Year Analysis |
|-------------------------------|-----------------|------------------|------------------|
| Discounted Benefits | \$15,122 | \$21,603 | \$28,722 |
| Discounted Costs | \$18,635 | \$20,742 | \$22,739 |
| Net Present Value | (\$3,512) | \$861 | \$5,983 |
| Internal Rate of Return | 0.80% | 9.52% | 14.71% |
| Direct Cost Recovery (\$/lb.) | 0.2445 | 0.1853 | 0.1487 |

Table 5

8, 10 & 12 Year Economic and Financial Indicators, Benchgraft Planting**2489 trees per acre**

| | Total Production | Total Revenue | Establishment Costs | + | Direct Expense | = | Total Expense | Cumulative Cash Flow |
|----------|---------------------|------------------|------------------------|---|-------------------|---|------------------|-------------------------|
| 8 years | 161,928 lbs. | \$40,482 | \$20,707 | | \$17,464 | | \$38,171 | \$2,311 |
| 10 years | 233,928 lbs. | \$58,482 | \$20,707 | | \$23,668 | | \$44,375 | \$14,107 |
| 12 years | 305,928 lbs. | \$76,482 | \$20,707 | | \$29,871 | | \$50,578 | \$25,904 |

| Density 2489 | 8 Year Analysis | 10 Year Analysis | 12 Year Analysis |
|-------------------------------|-----------------|------------------|------------------|
| Discounted Benefits | \$25,193 | \$33,676 | \$40,915 |
| Discounted Costs | \$29,985 | \$32,908 | \$35,403 |
| Net Present Value | (\$4,792) | \$767 | \$5,511 |
| Internal Rate of Return | 2.09% | 8.99% | 12.54% |
| Direct Cost Recovery (\$/lb.) | 0.2357 | 0.1897 | 0.1653 |

Table 5 continued...

1742 trees per acre

| | Total Production | Total Revenue | Establishment Costs | + | Direct Expense | = | Total Expense | Cumulative Cash Flow |
|----------|---------------------|------------------|------------------------|---|-------------------|---|------------------|-------------------------|
| 8 years | 157,572 lbs. | \$39,393 | \$16,004 | | \$15,627 | | \$31,631 | \$7,762 |
| 10 years | 229,572 lbs. | \$57,393 | \$16,004 | | \$21,322 | | \$37,326 | \$20,067 |
| 12 years | 301,572 lbs. | \$75,393 | \$16,004 | | \$27,017 | | \$43,021 | \$32,372 |

| Density 1742 | 8 Year Analysis | 10 Year Analysis | 12 Year Analysis |
|-------------------------------|-----------------|------------------|------------------|
| Discounted Benefits | \$24,385 | \$32,868 | \$40,107 |
| Discounted Costs | \$24,522 | \$27,206 | \$29,496 |
| Net Present Value | (\$137) | \$5,662 | \$10,610 |
| Internal Rate of Return | 8.05% | 14.52% | 17.71% |
| Direct Cost Recovery (\$/lb.) | 0.2007 | 0.1626 | 0.1427 |

1452 trees per acre

| | Total Production | Total Revenue | Establishment Costs | + | Direct Expense | = | Total Expense | Cumulative Cash Flow |
|----------|---------------------|------------------|------------------------|---|-------------------|---|------------------|-------------------------|
| 8 years | 140,169 lbs. | \$35,042 | \$14,179 | | \$14,421 | | \$28,600 | \$6,443 |
| 10 years | 212,169 lbs. | \$53,042 | \$14,179 | | \$19,919 | | \$34,097 | \$18,945 |
| 12 years | 284,169 lbs. | \$71,042 | \$14,179 | | \$25,417 | | \$39,595 | \$31,447 |

| Density 1452 | 8 Year Analysis | 10 Year Analysis | 12 Year Analysis |
|-------------------------------|-----------------|------------------|------------------|
| Discounted Benefits | \$21,441 | \$29,924 | \$37,163 |
| Discounted Costs | \$22,071 | \$24,662 | \$26,873 |
| Net Present Value | (\$631) | \$5,261 | \$10,289 |
| Internal Rate of Return | 7.23% | 14.44% | 17.87% |
| Direct Cost Recovery (\$/lb.) | 0.2040 | 0.1607 | 0.1393 |

990 trees per acre

| | Total Production | Total Revenue | Establishment Costs | + | Direct Expense | = | Total Expense | Cumulative Cash Flow |
|----------|---------------------|------------------|------------------------|---|-------------------|---|------------------|-------------------------|
| 8 years | 95,307 lbs. | \$23,827 | \$11,270 | | \$11,963 | | \$23,233 | \$594 |
| 10 years | 166,947 lbs. | \$41,737 | \$11,270 | | \$17,135 | | \$28,405 | \$13,332 |
| 12 years | 238,947 lbs. | \$59,737 | \$11,270 | | \$22,318 | | \$33,588 | \$26,148 |

| Density 990 | 8 Year Analysis | 10 Year Analysis | 12 Year Analysis |
|-------------------------------|-----------------|------------------|------------------|
| Discounted Benefits | \$14,297 | \$22,736 | \$29,975 |
| Discounted Costs | \$17,859 | \$20,297 | \$22,381 |
| Net Present Value | (\$3,563) | \$2,439 | \$7,594 |
| Internal Rate of Return | 0.85% | 11.57% | 16.12% |
| Direct Cost Recovery (\$/lb.) | 0.2438 | 0.1701 | 0.1406 |

Table 5 continued...

726 trees per acre

| | Total Production | Total Revenue | Establishment Costs | + | Direct Expense | = | Total Expense | = | Cumulative Cash Flow |
|----------|---------------------|------------------|------------------------|---|-------------------|---|------------------|---|-------------------------|
| 8 years | 75,206 lbs. | \$18,801 | \$9,608 | | \$9,608 | | \$9,608 | | (\$1,538) |
| 10 years | 122,396 lbs. | \$30,599 | \$9,608 | | \$9,608 | | \$9,608 | | \$6,034 |
| 12 years | 187,010 lbs. | \$46,752 | \$9,608 | | \$9,608 | | \$9,608 | | \$17,415 |

| Density 726 | 8 Year Analysis | 10 Year Analysis | 12 Year Analysis |
|-------------------------------|-----------------|------------------|------------------|
| Discounted Benefits | \$11,302 | \$16,845 | \$23,321 |
| Discounted Costs | \$15,589 | \$17,578 | \$19,495 |
| Net Present Value | (\$4,287) | (\$733) | \$3,826 |
| Internal Rate of Return | (2.74%) | 6.94% | 13.10% |
| Direct Cost Recovery (\$/lb.) | 0.2704 | 0.2007 | 0.1569 |

Table 6 - 10 Year Sensitivity Tests for Economic and Financial Indicators, Traditional Red Delicious

| | Red Delicious 290 | New Variety 726 | New Variety 1742 |
|---|-------------------------|--------------------|---------------------|
| Price per lb. | \$0.1216 | \$0.2500 | \$0.2500 |
| Accumulated Production | 205,240 lbs. | 122,396 lbs. | 229,572 lbs. |
| Net Present Value @10 Years | \$2,303 | (\$733) | \$6,831 |
| Accumulated Cash Flow after 10 Years | \$3,471 | \$6,034 | \$21,829 |

Table 7 - 10 Year Sensitivity Tests for Economic and Financial Indicators, Nursery Tree Planting**Production****Nursery Tree - production in year 2**

INTERNAL RATE OF RETURN after 10 yrs. Production
- full production at 36,000 lbs.

| Price (cents) | Tree Density | 726 | 990 | 1452 | 1742 | 2489 |
|---------------|--------------|--------|--------|--------|--------|---------|
| 20 | | 2.48% | 4.83% | 4.83% | 3.30% | (2.61%) |
| 25 | | 9.52% | 11.69% | 12.30% | 10.95% | 4.68% |
| 30 | | 15.21% | 17.29% | 18.50% | 17.34% | 10.66% |

Price**Nursery Tree**

INTERNAL RATE of RETURN after 10 yrs. Production
- constant 25 cent price

| Full Production (lbs.) | Tree Density | 726 | 990 | 1452 | 1742 | 2489 |
|------------------------|--------------|-------|--------|--------|--------|-------|
| 32,000 | | 9.52% | 11.69% | 12.30% | 10.95% | 4.68% |
| 36,000 | | 9.52% | 12.94% | 13.99% | 13.25% | 6.68% |
| 40,000 | | 9.52% | 13.69% | 15.36% | 15.03% | 8.46% |

Table 8 - 10 Year Sensitivity Tests for Economic and Financial Indicators, Benchgraft Planting**Production****Benchgraft - production in year 3**

INTERNAL RATE OF RETURN after 10 yrs. Production
- full production at 36,000 lbs.

| Price (cents) | Tree Density | 726 | 990 | 1452 | 1742 | 2489 |
|---------------|--------------|---------|--------|--------|--------|---------|
| 20 | | (0.12%) | 3.87% | 5.68% | 4.88% | (0.22%) |
| 25 | | 6.94% | 10.59% | 12.98% | 12.44% | 7.21% |
| 30 | | 12.48% | 15.95% | 18.90% | 18.58% | 13.17% |

Price**Benchgraft**

INTERNAL RATE of RETURN after 10 yrs. Production
- constant 25 cent price

| Full Production (lbs.) | Tree Density | 726 | 990 | 1452 | 1742 | 2489 |
|------------------------|--------------|-------|--------|--------|--------|--------|
| 32,000 | | 6.94% | 10.59% | 12.98% | 12.44% | 7.21% |
| 36,000 | | 6.94% | 11.57% | 14.44% | 14.52% | 8.99% |
| 40,000 | | 6.94% | 12.03% | 15.58% | 16.09% | 10.59% |

CHERRIES

And the average yield³ per acre at 2nd through 7th leaf for these densities was

| | 2 nd leaf | 3 rd leaf | 4 th leaf | 5 th leaf | 6 th leaf | 7 th leaf |
|---------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| All Densities | 27 | 887 | 2,955 | 5,544 | 9,510 | 13,247 |

Table 9 Establishment Costs

| Tree Density | Nursery Tree |
|--------------|--------------|
| 303 | 8,274 |
| 581 | 11,861 |

Table 10 Cost Recovery Price – 10 Years

(3 maximum production levels)

Tree Density (trees per acre)

| | 303 | 581 |
|----------------------|---------------|-------|
| Nursery Trees | | |
| | \$/lb. | |
| 12,000 lbs. | 0.680 | 0.698 |
| 14,000 lbs. | 0.649 | 0.658 |
| 16,000 lbs. | 0.633 | 0.625 |

Table 11 Internal Rate of Return – 10 Years

(full production at 14,000 lbs. per acre)

Tree Density (trees per acre)

| | 303 | 581 |
|----------------------|--------|--------|
| Nursery Trees | | |
| \$0.85/lb. | 16.08% | 14.59% |
| \$1.25/lb. | 32.06% | 32.66% |
| \$1.65/lb. | 44.33% | 45.10% |

³ *Replanting for the Future* Tree Fruit Yield and Price Survey OVTFA – June 1999

Table 12**8, 10 & 12 Year Economic and Financial Indicators, Cherry Planting****581 trees per acre**

| | Total Production | Total Revenue | Establishment Costs | + | Direct Expense | = | Total Expense | Cumulative Cash Flow |
|----------|---------------------|------------------|------------------------|---|-------------------|---|------------------|-------------------------|
| 8 years | 60,049 lbs. | \$75,062 | \$11,861 | | \$32,558 | | \$44,418 | \$30,643 |
| 10 years | 88,049 lbs. | \$110,062 | \$11,861 | | \$46,040 | | \$57,901 | \$52,161 |
| 12 years | 116,049 lbs. | \$145,062 | \$11,861 | | \$59,522 | | \$71,383 | \$73,769 |

| Density 581 | 8 Year Analysis | 10 Year Analysis | 12 Year Analysis |
|-------------------------------|-----------------|------------------|------------------|
| Discounted Benefits | \$46,034 | \$62,528 | \$76,605 |
| Discounted Costs | \$31,354 | \$37,708 | \$43,131 |
| Net Present Value | \$18,098 | \$28,239 | \$36,893 |
| Internal Rate of Return | 36.05% | 40.27% | 41.98% |
| Direct Cost Recovery (\$/lb.) | 0.7397 | 0.6576 | 0.6151 |

303 trees per acre

| | Total Production | Total Revenue | Establishment Costs | + | Direct Expense | = | Total Expense | Cumulative Cash Flow |
|----------|---------------------|------------------|------------------------|---|-------------------|---|------------------|-------------------------|
| 8 years | 45,805 lbs. | \$57,256 | \$8,274 | | \$26,512 | | \$34,786 | \$22,470 |
| 10 years | 73,805 lbs. | \$92,256 | \$8,274 | | \$39,614 | | \$47,888 | \$44,368 |
| 12 years | 101,805 lbs. | \$127,256 | \$8,274 | | \$52,716 | | \$60,990 | \$66,266 |

| Density 303 | 8 Year Analysis | 10 Year Analysis | 12 Year Analysis |
|-------------------------------|-----------------|------------------|------------------|
| Discounted Benefits | \$34,189 | \$50,684 | \$64,760 |
| Discounted Costs | \$24,054 | \$30,228 | \$35,498 |
| Net Present Value | \$12,784 | \$23,104 | \$31,911 |
| Internal Rate of Return | 32.93% | 38.91% | 41.19% |
| Direct Cost Recovery (\$/lb.) | 0.7594 | 0.6488 | 0.5991 |

Appendix A - 1 - 10 Year Apple Budget – 1.75' x 10' spacing, 2,489 trees per acre, Nursery Tree Planting

| | Establishment Budget Super Spindle Nursery Tree 1.75' x 10' 1 Planted Acre of Apples(Okanagan) | | | | | | | | | |
|----------------------------------|---|--------------------|----------|----------|----------|----------|---------|--------|--------|---------|
| | Density | 2,489 trees / acre | | | | | | | | |
| | Planting Year | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
| Total Income | | | | | | | | | | |
| Yield (lb./acre) | 0 | 7,518 | 21,575 | 30,454 | 30,381 | 36,000 | 36,000 | 36,000 | 36,000 | 36,000 |
| Price (\$/lb.) | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 |
| Fruit Income | 0 | 1,879 | 5,394 | 7,613 | 7,595 | 9,000 | 9,000 | 9,000 | 9,000 | 9,000 |
| Direct Expenses | | | | | | | | | | |
| Nursery Tree | 17,423 | | | | | | | | | |
| Planting Mortality (Replacement) | | 523 | | | | | | | | |
| Peat/Soil Conditioning | 1,991 | | | | | | | | | |
| Cover Crop | 30 | | | | | | | | | |
| Support System * | 1,500 | | | | | | | | | |
| Irrigation System & Inst. * | 1,500 | | | | | | | | | |
| Nitrogen | 200 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| Foliar Sprays | 50 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 |
| Pest Monitoring | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| Pest Control | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Chemical Thinning | | | | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| Hive Rental | | | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| Irrigation Water | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| Crop Insurance | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Fuel | 143 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 |
| Oil & Lube | 21 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Machinery R & M | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Labour | | | | | | | | | | |
| Ground Prep/Replant Test | 857 | | | | | | | | | |
| Survey/Stake,Plant/Instal | 1,600 | | | | | | | | | |
| Pruning/Training | 571 | 571 | 571 | 571 | 571 | 571 | 571 | 571 | 571 | 571 |
| Replacement Planting | | 757 | | | | | | | | |
| Mowing/Weeding/General | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| Thinning | | 343 | 343 | 171 | 171 | 171 | 171 | 171 | 171 | 171 |
| Picking | | 169 | 485 | 685 | 684 | 810 | 810 | 810 | 810 | 810 |
| Hauling | | 38 | 108 | 152 | 152 | 180 | 180 | 180 | 180 | 180 |
| Payroll Expense | 424 | 298 | 246 | 256 | 256 | 278 | 278 | 278 | 278 | 278 |
| Total Direct Expenses | 26,860 | 3,708 | 2,808 | 2,928 | 2,926 | 3,102 | 3,102 | 3,102 | 3,102 | 3,102 |
| Contribution Margin | (26,860) | (1,829) | 2,586 | 4,686 | 4,670 | 5,898 | 5,898 | 5,898 | 5,898 | 5,898 |
| Cumulative Cash Flow | (26,860) | (28,688) | (26,102) | (21,417) | (16,747) | (10,849) | (4,950) | 948 | 6,846 | 12,745 |

Appendix A - 2 - 10 Year Apple Budget – 2.5' x 10' spacing, 1,742 trees per acre, Nursery Tree Planting

| Establishment Budget Super Spindle Nursery Tree 2.5' x 10' 1 Planted Acre of Apples(Okanagan) | | Density 1,742 trees / acre | | | | | | | | |
|--|---------------|----------------------------|----------|----------|---------|---------|--------|--------|--------|---------|
| Total Income | Planting Year | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
| Yield (lb./acre) | 0 | 8,628 | 17,442 | 25,214 | 34,288 | 36,000 | 36,000 | 36,000 | 36,000 | 36,000 |
| Price (\$/lb.) | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 |
| Fruit Income | 0 | 2,157 | 4,360 | 6,303 | 8,572 | 9,000 | 9,000 | 9,000 | 9,000 | 9,000 |
| Direct Expenses | | | | | | | | | | |
| Nursery Tree | 12,194 | | | | | | | | | |
| Planting Mortality (Replacement) | | 366 | | | | | | | | |
| Peat/Soil Conditioning | 1,394 | | | | | | | | | |
| Cover Crop | 30 | | | | | | | | | |
| Support System * | 1,500 | | | | | | | | | |
| Irrigation System & Inst. * | 1,500 | | | | | | | | | |
| Nitrogen | 200 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| Foliar Sprays | 50 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 |
| Pest Monitoring | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| Pest Control | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Chemical Thinning | | | | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| Hive Rental | | | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| Irrigation Water | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| Crop Insurance | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Fuel | 143 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 |
| Oil & Lube | 21 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Machinery R & M | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Labour | | | | | | | | | | |
| Ground Prep/Replant Test | 600 | | | | | | | | | |
| Survey/Stake,Plant/Instal | 1,120 | | | | | | | | | |
| Pruning/Training | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| Replacement Planting | | 530 | | | | | | | | |
| Mowing/Weeding/General | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| Thinning | | 240 | 240 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| Picking | | 194 | 392 | 567 | 771 | 810 | 810 | 810 | 810 | 810 |
| Hauling | | 43 | 87 | 126 | 171 | 180 | 180 | 180 | 180 | 180 |
| Payroll Expense | 297 | 232 | 192 | 205 | 240 | 246 | 246 | 246 | 246 | 246 |
| Total Direct Expenses | 19,997 | 3,014 | 2,366 | 2,509 | 2,794 | 2,848 | 2,848 | 2,848 | 2,848 | 2,848 |
| Contribution Margin | (19,997) | (857) | 1,995 | 3,794 | 5,778 | 6,152 | 6,152 | 6,152 | 6,152 | 6,152 |
| Cumulative Cash Flow | (19,997) | (20,854) | (18,859) | (15,065) | (9,287) | (3,134) | 3,018 | 9,170 | 15,323 | 21,475 |

Appendix A - 3 - 10 Year Apple Budget – 3' x 10' spacing, 1,452 trees per acre, Nursery Tree Planting

| | Establishment Budget Super Spindle Nursery Tree 3' x 10' 1 Planted Acre of Apples(Okanagan) | | | | | | | | | |
|----------------------------------|--|--------------------|----------|----------|---------|---------|--------|--------|--------|---------|
| | Density | 1,452 trees / acre | | | | | | | | |
| Total Income | Planting Year | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
| Yield (lb./acre) | 0 | 4,854 | 14,923 | 21,415 | 29,779 | 33,198 | 36,000 | 36,000 | 36,000 | 36,000 |
| Price (\$/lb.) | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 |
| Fruit Income | 0 | 1,213 | 3,731 | 5,354 | 7,445 | 8,300 | 9,000 | 9,000 | 9,000 | 9,000 |
| Direct Expenses | | | | | | | | | | |
| Nursery Tree | 10,164 | | | | | | | | | |
| Planting Mortality (Replacement) | | 305 | | | | | | | | |
| Peat/Soil Conditioning | 1,162 | | | | | | | | | |
| Cover Crop | 30 | | | | | | | | | |
| Support System * | 1,500 | | | | | | | | | |
| Irrigation System & Inst. * | 1,500 | | | | | | | | | |
| Nitrogen | 200 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| Foliar Sprays | 50 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 |
| Pest Monitoring | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| Pest Control | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Chemical Thinning | | | | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| Hive Rental | | | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| Irrigation Water | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| Crop Insurance | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Fuel | 143 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 |
| Oil & Lube | 21 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Machinery R & M | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Labour | | | | | | | | | | |
| Ground Prep/Replant Test | 500 | | | | | | | | | |
| Survey/Stake,Plant/Instal | 933 | | | | | | | | | |
| Pruning/Training | 333 | 333 | 333 | 333 | 333 | 333 | 333 | 333 | 333 | 333 |
| Replacement Planting | | 442 | | | | | | | | |
| Mowing/Weeding/General | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| Thinning | | 200 | 200 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Picking | | 109 | 336 | 482 | 670 | 747 | 810 | 810 | 810 | 810 |
| Hauling | | 24 | 75 | 107 | 149 | 166 | 180 | 180 | 180 | 180 |
| Payroll Expense | 247 | 190 | 167 | 178 | 210 | 223 | 234 | 234 | 234 | 234 |
| Total Direct Expenses | 17,333 | 2,613 | 2,165 | 2,292 | 2,554 | 2,661 | 2,749 | 2,749 | 2,749 | 2,749 |
| Contribution Margin | (17,333) | (1,399) | 1,566 | 3,062 | 4,891 | 5,639 | 6,251 | 6,251 | 6,251 | 6,251 |
| Cumulative Cash Flow | (17,333) | (18,732) | (17,166) | (14,104) | (9,213) | (3,575) | 2,676 | 8,927 | 15,178 | 21,430 |

Appendix A - 4 - 10 Year Apple Budget – 4' x 11' spacing, 990 trees per acre, Nursery Tree Planting

| | Establishment Budget Super Spindle Nursery Tree 4' x 11' | | | | | | | | | |
|----------------------------------|--|----------|--------------|----------|----------|---------|---------|--------|--------|---------|
| | 1 Planted Acre of Apples(Okanagan) | | | | | | | | | |
| | Density | 990 | trees / acre | | | | | | | |
| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
| Total Income | | | | | | | | | | |
| Yield (lb./acre) | 0 | 2,029 | 7,178 | 13,899 | 18,199 | 24,182 | 29,821 | 35,640 | 36,000 | 36,000 |
| Price (\$/lb.) | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 |
| Fruit Income | 0 | 507 | 1,794 | 3,475 | 4,550 | 6,046 | 7,455 | 8,910 | 9,000 | 9,000 |
| Direct Expenses | | | | | | | | | | |
| Nursery Tree | 6,930 | | | | | | | | | |
| Planting Mortality (Replacement) | | 208 | | | | | | | | |
| Peat/Soil Conditioning | 792 | | | | | | | | | |
| Cover Crop | 30 | | | | | | | | | |
| Support System * | 1,500 | | | | | | | | | |
| Irrigation System & Inst. * | 1,500 | | | | | | | | | |
| Nitrogen | 200 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| Foliar Sprays | 50 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 |
| Pest Monitoring | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| Pest Control | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Chemical Thinning | | | | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| Hive Rental | | | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| Irrigation Water | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| Crop Insurance | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Fuel | 143 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 |
| Oil & Lube | 21 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Machinery R & M | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Labour | | | | | | | | | | |
| Ground Prep/Replant Test | 341 | | | | | | | | | |
| Survey/Stake,Plant/Instal | 636 | | | | | | | | | |
| Pruning/Training | 227 | 227 | 227 | 227 | 227 | 227 | 227 | 227 | 227 | 227 |
| Replacement Planting | | 301 | | | | | | | | |
| Mowing/Weeding/General | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| Thinning | | 136 | 136 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| Picking | | 46 | 161 | 313 | 409 | 544 | 671 | 802 | 810 | 810 |
| Hauling | | 10 | 36 | 69 | 91 | 121 | 149 | 178 | 180 | 180 |
| Payroll Expense | 169 | 136 | 114 | 130 | 146 | 169 | 191 | 214 | 215 | 215 |
| Total Direct Expenses | 13,088 | 2,074 | 1,729 | 1,899 | 2,034 | 2,221 | 2,398 | 2,580 | 2,592 | 2,592 |
| Contribution Margin | (13,088) | (1,566) | 66 | 1,576 | 2,516 | 3,824 | 5,057 | 6,330 | 6,408 | 6,408 |
| Cumulative Cash Flow | (13,088) | (14,655) | (14,589) | (13,013) | (10,497) | (6,673) | (1,616) | 4,714 | 11,122 | 17,530 |

Appendix A - 5 - 10 Year Apple Budget – 5' x 12' spacing, 726 trees per acre, Nursery Tree Planting

| | Establishment Budget Super Spindle Nursery Tree 5' x 12' 1 Planted Acre of Apples(Okanagan) | | | | | | | | | |
|----------------------------------|--|------------------|----------|----------|---------|---------|---------|--------|--------|---------|
| | Density | 726 trees / acre | | | | | | | | |
| Total Income | Planting Year | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
| Yield (lb./acre) | 0 | 1,762 | 6,199 | 10,286 | 15,779 | 16,872 | 24,309 | 21,780 | 25,410 | 29,766 |
| Price (\$/lb.) | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 |
| Fruit Income | 0 | 441 | 1,550 | 2,572 | 3,945 | 4,218 | 6,077 | 5,445 | 6,353 | 7,442 |
| Direct Expenses | | | | | | | | | | |
| Nursery Tree | 5,082 | | | | | | | | | |
| Planting Mortality (Replacement) | | 152 | | | | | | | | |
| Peat/Soil Conditioning | 581 | | | | | | | | | |
| Cover Crop | 30 | | | | | | | | | |
| Support System * | 1,500 | | | | | | | | | |
| Irrigation System & Inst. * | 1,500 | | | | | | | | | |
| Nitrogen | 200 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| Foliar Sprays | 50 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 |
| Pest Monitoring | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| Pest Control | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Chemical Thinning | | | | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| Hive Rental | | | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| Irrigation Water | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| Crop Insurance | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Fuel | 143 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 |
| Oil & Lube | 21 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Machinery R & M | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Labour | | | | | | | | | | |
| Ground Prep/Replant Test | 250 | | | | | | | | | |
| Survey/Stake,Plant/Instal | 467 | | | | | | | | | |
| Pruning/Training | 167 | 167 | 167 | 167 | 167 | 167 | 167 | 167 | 167 | 167 |
| Replacement Planting | | 221 | | | | | | | | |
| Mowing/Weeding/General | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| Thinning | | 100 | 100 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| Picking | | 40 | 139 | 231 | 355 | 380 | 547 | 490 | 572 | 670 |
| Hauling | | 9 | 31 | 51 | 79 | 84 | 122 | 109 | 127 | 149 |
| Payroll Expense | 124 | 110 | 96 | 105 | 126 | 130 | 159 | 149 | 163 | 180 |
| Total Direct Expenses | 10,663 | 1,808 | 1,588 | 1,696 | 1,868 | 1,902 | 2,135 | 2,056 | 2,170 | 2,306 |
| Contribution Margin | (10,663) | (1,367) | (38) | 876 | 2,077 | 2,316 | 3,942 | 3,389 | 4,183 | 5,135 |
| Cumulative Cash Flow | (10,663) | (12,030) | (12,068) | (11,192) | (9,116) | (6,800) | (2,858) | 531 | 4,713 | 9,848 |

Appendix A - 6 - 10 Year Apple Budget – 1.75' x 10' spacing, 2,489 trees per acre, Benchgraft Planting

| Establishment Budget Super Spindle Benchgraft 1.75' x 10' 1 Planted Acre of Apples(Okanagan) | | Density 2,489 trees / acre | | | | | | | | |
|---|-----------------|----------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Total Income | Planting Year | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
| Yield (lb./acre) | 0 | 0 | 7,518 | 21,575 | 30,454 | 30,381 | 36,000 | 36,000 | 36,000 | 36,000 |
| Price (\$/lb.) | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 |
| Fruit Income | 0 | 0 | 1,879 | 5,394 | 7,613 | 7,595 | 9,000 | 9,000 | 9,000 | 9,000 |
| Direct Expenses | | | | | | | | | | |
| Benchgraft | 4,356 | | | | | | | | | |
| Planting Mortality (Replacement) | | 4,356 | | | | | | | | |
| Peat/Soil Conditioning | 1,991 | | | | | | | | | |
| Cover Crop | 30 | | | | | | | | | |
| Support System * | 1,500 | | | | | | | | | |
| Irrigation System & Inst. * | 1,500 | | | | | | | | | |
| Nitrogen | 200 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| Foliar Sprays | 50 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 |
| Pest Monitoring | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| Pest Control | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Chemical Thinning | | | | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| Hive Rental | | | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| Irrigation Water | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| Crop Insurance | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Fuel | 143 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 |
| Oil & Lube | 21 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Machinery R & M | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Labour | | | | | | | | | | |
| Ground Prep/Replant Test | 857 | | | | | | | | | |
| Survey/Stake,Plant/Instal | 1,600 | | | | | | | | | |
| Pruning/Training | 571 | 571 | 571 | 571 | 571 | 571 | 571 | 571 | 571 | 571 |
| Replacement Planting | | 757 | | | | | | | | |
| Mowing/Weeding/General | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| Thinning | | 343 | 343 | 171 | 171 | 171 | 171 | 171 | 171 | 171 |
| Picking | | 0 | 169 | 485 | 685 | 684 | 810 | 810 | 810 | 810 |
| Hauling | | 0 | 38 | 108 | 152 | 152 | 180 | 180 | 180 | 180 |
| Payroll Expense | 424 | 269 | 192 | 222 | 256 | 256 | 278 | 278 | 278 | 278 |
| Total Direct Expenses | 13,792 | 7,305 | 2,367 | 2,649 | 2,928 | 2,926 | 3,102 | 3,102 | 3,102 | 3,102 |
| Contribution Margin | (13,792) | (7,305) | (488) | 2,744 | 4,686 | 4,670 | 5,898 | 5,898 | 5,898 | 5,898 |
| Cumulative Cash Flow | (13,792) | (21,098) | (21,586) | (18,841) | (14,156) | (9,486) | (3,588) | 2,311 | 8,209 | 14,107 |

Appendix A - 7 - 10 Year Apple Budget – 2.5' x 10' spacing, 1,742 trees per acre, Benchgraft Planting

| Establishment Budget Super Spindle Benchgraft 2.5' x 10' 1 Planted Acre of Apples(Okanagan) | | Density 1,742 trees / acre | | | | | | | | |
|--|-----------------|----------------------------|-----------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Total Income | Planting Year | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
| Yield (lb./acre) | 0 | 0 | 8,628 | 17,442 | 25,214 | 34,288 | 36,000 | 36,000 | 36,000 | 36,000 |
| Price (\$/lb.) | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 |
| Fruit Income | 0 | 0 | 2,157 | 4,360 | 6,303 | 8,572 | 9,000 | 9,000 | 9,000 | 9,000 |
| Direct Expenses | | | | | | | | | | |
| Benchgraft | 3,049 | | | | | | | | | |
| Planting Mortality (Replacement) | | 3,049 | | | | | | | | |
| Peat/Soil Conditioning | 1,394 | | | | | | | | | |
| Cover Crop | 30 | | | | | | | | | |
| Support System * | 1,500 | | | | | | | | | |
| Irrigation System & Inst. * | 1,500 | | | | | | | | | |
| Nitrogen | 200 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| Foliar Sprays | 50 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 |
| Pest Monitoring | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| Pest Control | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Chemical Thinning | | | | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| Hive Rental | | | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| Irrigation Water | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| Crop Insurance | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Fuel | 143 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 |
| Oil & Lube | 21 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Machinery R & M | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Labour | | | | | | | | | | |
| Ground Prep/Replant Test | 600 | | | | | | | | | |
| Survey/Stake,Plant/Instal | 1,120 | | | | | | | | | |
| Pruning/Training | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| Replacement Planting | | 530 | | | | | | | | |
| Mowing/Weeding/General | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| Thinning | | 240 | 240 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| Picking | | 0 | 194 | 392 | 567 | 771 | 810 | 810 | 810 | 810 |
| Hauling | | 0 | 43 | 87 | 126 | 171 | 180 | 180 | 180 | 180 |
| Payroll Expense | 297 | 199 | 158 | 175 | 205 | 240 | 246 | 246 | 246 | 246 |
| Total Direct Expenses | 10,851 | 5,426 | 2,089 | 2,266 | 2,509 | 2,794 | 2,848 | 2,848 | 2,848 | 2,848 |
| Contribution Margin | (10,851) | (5,426) | 68 | 2,095 | 3,794 | 5,778 | 6,152 | 6,152 | 6,152 | 6,152 |
| Cumulative Cash Flow | (10,851) | (16,278) | (16,210) | (14,115) | (10,321) | (4,543) | 1,609 | 7,762 | 13,914 | 20,067 |

Appendix A - 8 - 10 Year Apple Budget – 3' x 10' spacing, 1,452 trees per acre, Benchgraft Planting

| | Establishment Budget Super Spindle Benchgraft 3' x 10' 1 Planted Acre of Apples(Okanagan) | | | | Density 1,452 trees / acre | | | | | |
|----------------------------------|--|----------|----------|----------|----------------------------|---------|--------|--------|--------|---------|
| Total Income | Planting Year | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
| Yield (lb./acre) | 0 | 0 | 4,854 | 14,923 | 21,415 | 29,779 | 33,198 | 36,000 | 36,000 | 36,000 |
| Price (\$/lb.) | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 |
| Fruit Income | 0 | 0 | 1,213 | 3,731 | 5,354 | 7,445 | 8,300 | 9,000 | 9,000 | 9,000 |
| Direct Expenses | | | | | | | | | | |
| Benchgraft | 2,541 | | | | | | | | | |
| Planting Mortality (Replacement) | | 2,541 | | | | | | | | |
| Peat/Soil Conditioning | 1,162 | | | | | | | | | |
| Cover Crop | 30 | | | | | | | | | |
| Support System * | 1,500 | | | | | | | | | |
| Irrigation System & Inst. * | 1,500 | | | | | | | | | |
| Nitrogen | 200 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| Foliar Sprays | 50 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 |
| Pest Monitoring | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| Pest Control | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Chemical Thinning | | | | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| Hive Rental | | | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| Irrigation Water | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| Crop Insurance | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Fuel | 143 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 |
| Oil & Lube | 21 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Machinery R & M | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Labour | | | | | | | | | | |
| Ground Prep/Replant Test | 500 | | | | | | | | | |
| Survey/Stake,Plant/Instal | 933 | | | | | | | | | |
| Pruning/Training | 333 | 333 | 333 | 333 | 333 | 333 | 333 | 333 | 333 | 333 |
| Replacement Planting | | 442 | | | | | | | | |
| Mowing/Weeding/General | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| Thinning | | 200 | 200 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Picking | | 0 | 109 | 336 | 482 | 670 | 747 | 810 | 810 | 810 |
| Hauling | | 0 | 24 | 75 | 107 | 149 | 166 | 180 | 180 | 180 |
| Payroll Expense | 247 | 172 | 128 | 153 | 178 | 210 | 223 | 234 | 234 | 234 |
| Total Direct Expenses | 9,710 | 4,697 | 1,849 | 2,088 | 2,292 | 2,554 | 2,661 | 2,749 | 2,749 | 2,749 |
| Contribution Margin | (9,710) | (4,697) | (636) | 1,643 | 3,062 | 4,891 | 5,639 | 6,251 | 6,251 | 6,251 |
| Cumulative Cash Flow | (9,710) | (14,407) | (15,042) | (13,400) | (10,338) | (5,447) | 192 | 6,443 | 12,694 | 18,945 |

Appendix A - 9 - 10 Year Apple Budget – 4' x 11' spacing, 990 trees per acre, Benchgraft Planting

| | Establishment Budget Super Spindle Benchgraft 4' x 11' | | | | | | | | | |
|----------------------------------|--|------------------|-----------------|-----------------|-----------------|----------------|----------------|--------------|--------------|---------------|
| | 1 Planted Acre of Apples(Okanagan) | | | | | | | | | |
| | Density | 990 trees / acre | | | | | | | | |
| | Planting Year | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
| Total Income | | | | | | | | | | |
| Yield (lb./acre) | 0 | 0 | 2,029 | 7,178 | 13,899 | 18,199 | 24,182 | 29,821 | 35,640 | 36,000 |
| Price (\$/lb.) | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 |
| Fruit Income | 0 | 0 | 507 | 1,794 | 3,475 | 4,550 | 6,046 | 7,455 | 8,910 | 9,000 |
| Direct Expenses | | | | | | | | | | |
| Benchgraft | 1,733 | | | | | | | | | |
| Planting Mortality (Replacement) | | 1,733 | | | | | | | | |
| Peat/Soil Conditioning | 792 | | | | | | | | | |
| Cover Crop | 30 | | | | | | | | | |
| Support System * | 1,500 | | | | | | | | | |
| Irrigation System & Inst. * | 1,500 | | | | | | | | | |
| Nitrogen | 200 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| Foliar Sprays | 50 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 |
| Pest Monitoring | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| Pest Control | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Chemical Thinning | | | | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| Hive Rental | | | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| Irrigation Water | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| Crop Insurance | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Fuel | 143 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 |
| Oil & Lube | 21 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Machinery R & M | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Labour | | | | | | | | | | |
| Ground Prep/Replant Test | 341 | | | | | | | | | |
| Survey/Stake,Plant/Instal | 636 | | | | | | | | | |
| Pruning/Training | 227 | 227 | 227 | 227 | 227 | 227 | 227 | 227 | 227 | 227 |
| Replacement Planting | | 301 | | | | | | | | |
| Mowing/Weeding/General | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| Thinning | | 136 | 136 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| Picking | | 0 | 46 | 161 | 313 | 409 | 544 | 671 | 802 | 810 |
| Hauling | | 0 | 10 | 36 | 69 | 91 | 121 | 149 | 178 | 180 |
| Payroll Expense | 169 | 128 | 94 | 104 | 130 | 146 | 169 | 191 | 214 | 215 |
| Total Direct Expenses | 7,891 | 3,535 | 1,567 | 1,688 | 1,899 | 2,034 | 2,221 | 2,398 | 2,580 | 2,592 |
| Contribution Margin | (7,891) | (3,535) | (1,060) | 106 | 1,576 | 2,516 | 3,824 | 5,057 | 6,330 | 6,408 |
| Cumulative Cash Flow | (7,891) | (11,425) | (12,486) | (12,379) | (10,804) | (8,288) | (4,463) | 594 | 6,924 | 13,332 |

Appendix A - 10 - 10 Year Apple Budget – 5' x 12' spacing, 726 trees per acre, Benchgraft Planting

| | Establishment Budget Super Spindle Benchgraft 5' x 12' 1 Planted Acre of Apples(Okanagan) | | | | | | | | | |
|----------------------------------|--|----------------|-----------------|-----------------|----------------|----------------|----------------|----------------|--------------|--------------|
| | Density 726 trees / acre | | | | | | | | | |
| | Planting Year | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
| Total Income | | | | | | | | | | |
| Yield (lb./acre) | 0 | 0 | 1,762 | 6,199 | 10,286 | 15,779 | 16,872 | 24,309 | 21,780 | 25,410 |
| Price (\$/lb.) | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 |
| Fruit Income | 0 | 0 | 441 | 1,550 | 2,572 | 3,945 | 4,218 | 6,077 | 5,445 | 6,353 |
| Direct Expenses | | | | | | | | | | |
| Benchgraft | 1,271 | | | | | | | | | |
| Planting Mortality (Replacement) | | 1,271 | | | | | | | | |
| Peat/Soil Conditioning | 581 | | | | | | | | | |
| Cover Crop | 30 | | | | | | | | | |
| Support System * | 1,500 | | | | | | | | | |
| Irrigation System & Inst. * | 1,500 | | | | | | | | | |
| Nitrogen | 200 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| Foliar Sprays | 50 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 28 |
| Pest Monitoring | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| Pest Control | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 |
| Chemical Thinning | | | | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| Hive Rental | | | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| Irrigation Water | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 |
| Crop Insurance | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Fuel | 143 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 |
| Oil & Lube | 21 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Machinery R & M | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 |
| Labour | | | | | | | | | | |
| Ground Prep/Replant Test | 250 | | | | | | | | | |
| Survey/Stake,Plant/Instal | 467 | | | | | | | | | |
| Pruning/Training | 167 | 167 | 167 | 167 | 167 | 167 | 167 | 167 | 167 | 167 |
| Replacement Planting | | 221 | | | | | | | | |
| Mowing/Weeding/General | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| Thinning | | 100 | 100 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| Picking | | 0 | 40 | 139 | 231 | 355 | 380 | 547 | 490 | 572 |
| Hauling | | 0 | 9 | 31 | 51 | 79 | 84 | 122 | 109 | 127 |
| Payroll Expense | 124 | 103 | 79 | 89 | 105 | 126 | 130 | 159 | 149 | 163 |
| Total Direct Expenses | 6,851 | 2,871 | 1,449 | 1,568 | 1,696 | 1,868 | 1,902 | 2,135 | 2,056 | 2,170 |
| Contribution Margin | (6,851) | (2,871) | (1,008) | (18) | 876 | 2,077 | 2,316 | 3,942 | 3,389 | 4,183 |
| Cumulative Cash Flow | (6,851) | (9,722) | (10,730) | (10,748) | (9,872) | (7,795) | (5,480) | (1,538) | 1,851 | 6,034 |

Appendix A - 11 - 10 Year Red Delicious Budget – 10' x 15' spacing, 290 trees per acre

| | Production Budget Traditional 10'x15' | | | | Density 290 trees / acre | | | | | | |
|----------------------------------|---------------------------------------|--------|--------|--------|--------------------------|--------|--------|--------|--------|---------|--|
| | 1 Planted Acre of Apples(Okanagan) | | | | | | | | | | |
| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | |
| Total Income | | | | | | | | | | | |
| Yield (lb./acre) | 20,524 | 20,524 | 20,524 | 20,524 | 20,524 | 20,524 | 20,524 | 20,524 | 20,524 | 20,524 | |
| Price (\$/lb.) | 0.122 | 0.122 | 0.122 | 0.122 | 0.122 | 0.122 | 0.122 | 0.122 | 0.122 | 0.122 | |
| Fruit Income | 2,496 | 2,496 | 2,496 | 2,496 | 2,496 | 2,496 | 2,496 | 2,496 | 2,496 | 2,496 | |
| Direct Expenses | | | | | | | | | | | |
| Tree Value | | | | | | | | | | | |
| Planting Mortality (Replacement) | | | | | | | | | | | |
| Peat/Soil Conditioning | | | | | | | | | | | |
| Cover Crop | | | | | | | | | | | |
| Support System * | | | | | | | | | | | |
| Irrigation System & Inst. * | | | | | | | | | | | |
| Nitrogen / Foliar Sprays | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | |
| Crop Protection | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | 102 | |
| Pest Monitoring | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | |
| Pest Control | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | |
| Chemical Thinning | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | |
| Hive Rental | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 | |
| Irrigation Water | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | 78 | |
| Crop Insurance | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | |
| Fuel | 143 | 143 | 143 | 143 | 143 | 143 | 143 | 143 | 143 | 143 | |
| Oil & Lube | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | |
| Machinery R & M | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | 176 | |
| Labour | | | | | | | | | | | |
| Ground Prep/Replant Test | | | | | | | | | | | |
| Survey/Stake,Plant/Instal | | | | | | | | | | | |
| Pruning/Training | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 200 | |
| Replacement Planting | | | | | | | | | | | |
| Mowing/Weeding/Genera | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | |
| Thinning | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | |
| Picking | 462 | 462 | 462 | 462 | 462 | 462 | 462 | 462 | 462 | 462 | |
| Hauling | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | 103 | |
| Payroll Expense | 148 | 148 | 148 | 148 | 148 | 148 | 148 | 148 | 148 | 148 | |
| Total Direct Expenses | 2,149 | 2,149 | 2,149 | 2,149 | 2,149 | 2,149 | 2,149 | 2,149 | 2,149 | 2,149 | |
| Contribution Margin | 347 | 347 | 347 | 347 | 347 | 347 | 347 | 347 | 347 | 347 | |
| Cumulative Cash Flow | 347 | 694 | 1,041 | 1,388 | 1,735 | 2,082 | 2,430 | 2,777 | 3,124 | 3,471 | |

Appendix B - 1 - 10 Year Cherry Budget – 5' x 15' spacing, 581 trees per acre

| | Establishment Budget Full Caliper Tree 5'x15' | | | | | | | | | |
|----------------------------------|---|------------------|----------|---------|---------|--------|--------|--------|--------|--------|
| | 1 Planted Acre of Cherries(Okanagan) | | | | | | | | | |
| | Density | 581 trees / acre | | | | | | | | |
| | Planting | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | 8 | 9 | 10 |
| Total Income | | | | | | | | | | |
| Yield (lb./acre) | 0 | 52 | 1,701 | 5,666 | 10,631 | 14,000 | 14,000 | 14,000 | 14,000 | 14,000 |
| Price (\$/lb.) | 1.250 | 1.250 | 1.250 | 1.250 | 1.250 | 1.250 | 1.250 | 1.250 | 1.250 | 1.250 |
| Fruit Income | 0 | 65 | 2,126 | 7,083 | 13,288 | 17,500 | 17,500 | 17,500 | 17,500 | 17,500 |
| Direct Expenses | | | | | | | | | | |
| Full Caliper Tree | 4,593 | | | | | | | | | |
| Planting Mortality (Replacement) | | 138 | | | | | | | | |
| Peat/Soil Conditioning | 281 | | | | | | | | | |
| Cover Crop | 30 | | | | | | | | | |
| Irrigation System & Inst. * | 1,350 | | | | | | | | | |
| Fertilizer | 100 | | | | | | | | | |
| Sprays etc. | 93 | 180 | 180 | 180 | 180 | 180 | 180 | 180 | 180 | 180 |
| Growth Regulators | 0 | 0 | 150 | 150 | 150 | 100 | 100 | 100 | 100 | 100 |
| Pest Monitoring | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| Weed / Rodent Control | 157 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 |
| Crop Protection | | | | 35 | 35 | 188 | 188 | 188 | 188 | 188 |
| Hive Rental | | | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| Irrigation Water | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Crop Insurance | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Fuel | 76 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 |
| Oil & Lube | 11 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| Machinery R & M | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 |
| Labour | | | | | | | | | | |
| Ground Prep/Replant Test | 750 | | | | | | | | | |
| Survey/Stake,Plant/Instal | 1,511 | | | | | | | | | |
| Pruning/Training | 349 | 349 | 349 | 349 | 349 | 349 | 349 | 349 | 349 | 349 |
| Replacement Planting | | 279 | | | | | | | | |
| Mowing/Weeding/General | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| Thinning | | 300 | 300 | 150 | 150 | 150 | 150 | 150 | 150 | 150 |
| Picking | | 13 | 425 | 1,417 | 2,658 | 3,500 | 3,500 | 3,500 | 3,500 | 3,500 |
| Hauling | | 3 | 85 | 283 | 532 | 700 | 700 | 700 | 700 | 700 |
| Payroll Expense | 365 | 167 | 197 | 343 | 551 | 693 | 693 | 693 | 693 | 693 |
| Total Direct Expenses | 10,027 | 2,190 | 2,493 | 3,713 | 5,411 | 6,666 | 6,666 | 6,666 | 6,666 | 6,666 |
| Contribution Margin | (10,027) | (2,125) | (367) | 3,369 | 7,877 | 10,834 | 10,834 | 10,834 | 10,834 | 10,834 |
| Cumulative Cash Flow | (10,027) | (12,152) | (12,519) | (9,150) | (1,273) | 9,561 | 20,394 | 31,228 | 42,062 | 52,896 |

Appendix B - 2 - 10 Year Cherry Budget – 9' x 16' spacing, 303 trees per acre

| | Establishment Budget Full Caliper Tree 9'x16' | | | | | | | | | |
|----------------------------------|---|------------------|---------|---------|---------|--------|--------|--------|--------|--------|
| | 1 Planted Acre of Cherries(Okanagan) | | | | | | | | | |
| | Density | 303 trees / acre | | | | | | | | |
| Total Income | Planting Year | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | 8 | 9 | 10 |
| Yield (lb./acre) | 0 | 27 | 887 | 2,955 | 5,544 | 9,510 | 13,247 | 13,635 | 14,000 | 14,000 |
| Price (\$/lb.) | 1.250 | 1.250 | 1.250 | 1.250 | 1.250 | 1.250 | 1.250 | 1.250 | 1.250 | 1.250 |
| Fruit Income | 0 | 34 | 1,109 | 3,694 | 6,930 | 11,888 | 16,559 | 17,044 | 17,500 | 17,500 |
| Direct Expenses | | | | | | | | | | |
| Full Caliper Tree | 2,395 | | | | | | | | | |
| Planting Mortality (Replacement) | | 72 | | | | | | | | |
| Peat/Soil Conditioning | 281 | | | | | | | | | |
| Cover Crop | 30 | | | | | | | | | |
| Irrigation System & Inst. * | 1,350 | | | | | | | | | |
| Fertilizer | 100 | | | | | | | | | |
| Sprays etc. | 93 | 180 | 180 | 180 | 180 | 180 | 180 | 180 | 180 | 180 |
| Growth Regulators | 0 | 0 | 150 | 150 | 150 | 100 | 100 | 100 | 100 | 100 |
| Pest Monitoring | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| Weed / Rodent Control | 157 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 | 82 |
| Crop Protection | | | | 35 | 35 | 188 | 188 | 188 | 188 | 188 |
| Hive Rental | | | 45 | 45 | 45 | 45 | 45 | 45 | 45 | 45 |
| Irrigation Water | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Crop Insurance | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Fuel | 76 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 |
| Oil & Lube | 11 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| Machinery R & M | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 |
| Labour | | | | | | | | | | |
| Ground Prep/Replant Test | 750 | | | | | | | | | |
| Survey/Stake,Plant/Instal | 788 | | | | | | | | | |
| Pruning/Training | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 | 182 |
| Replacement Planting | | 145 | | | | | | | | |
| Mowing/Weeding/General | | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| Thinning | | 300 | 300 | 150 | 150 | 150 | 150 | 150 | 150 | 150 |
| Picking | | 7 | 222 | 739 | 1,386 | 2,378 | 3,312 | 3,409 | 3,500 | 3,500 |
| Hauling | | 1 | 44 | 148 | 277 | 476 | 662 | 682 | 700 | 700 |
| Payroll Expense | 241 | 124 | 140 | 206 | 314 | 481 | 638 | 654 | 669 | 669 |
| Total Direct Expenses | 6,815 | 1,773 | 2,025 | 2,596 | 3,482 | 4,940 | 6,218 | 6,351 | 6,476 | 6,476 |
| Contribution Margin | (6,815) | (1,740) | (916) | 1,098 | 3,448 | 6,947 | 10,340 | 10,693 | 11,024 | 11,024 |
| Cumulative Cash Flow | (6,815) | (8,554) | (9,471) | (8,373) | (4,924) | 2,023 | 12,363 | 23,055 | 34,079 | 45,103 |

Appendix C - Pricing and assumptions for planting models**23 acre orchard**

| Cost Parameters | Variable Rates | |
|----------------------|---------------------|--|
| Apple Benchgrafts | 1.75 | 25% Mortality |
| Apple Nursery Trees | 7.00 | 3% Mortality |
| Cherry Nursery Trees | 7.91 | 3% Mortality |
| Labour Rate | | |
| Hourly | 10 | |
| Piece Rate (Bin) | 18 | |
| Payroll Expense | 14% | |
| Fuel (Diesel) | 0.426 | |
| Fuel (Gas) | 0.509 liter | Fuel Consumption 40 Hp tractor 8 litres/hr |
| Oil & Lube | 15% Oil and Lube | 15% of fuel bill |
| Machinery R & M | 3% Mach & Equip R&M | 3% original cost/23 acres |
| Interest Rate P+2 | 8.25% | |
| Prime Rate | 6.25% | |

| | |
|---|--------|
| Irrigation system | 45,000 |
| Tractor - 40 Hp | 26,000 |
| Tractor - 30 Hp | 29,000 |
| Truck 3/4 ton | 20,000 |
| Sprayer - 200 gal | 10,000 |
| Sprayer - 50 gal | 1,500 |
| Rotovator | 10,000 |
| Front end loader/bucket/blade/pallet fork | 11,000 |
| Mower- 80 inch | 5,000 |
| Hand pruning and electric tools | 3,000 |
| Ladders 50 @ 100 | 5,000 |
| Flat deck trailer | 3,000 |
| fuel tanks 2 @ 1800 | 3,600 |
| Picking Equipment | 800 |
| Small tools & other | 2,500 |