

**A Cost of Production  
Analysis of Conventional  
vs. Integrated vs.  
Organic apple  
Production Systems**

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# **A Cost of Production Analysis of Conventional vs. Integrated vs. Organic Apple Production Systems**

**Jerry Glover, Herbert Hinman, John Reganold and Preston Andrews<sup>1</sup>**

## **Introduction**

Modern, intensive apple production practices have maintained Washington State, with nearly 172,000 acres of bearing trees yielding close to 2.5 million tons of utilized apples in 1999, as the leading apple producer in the United States (Washington State Department of Agriculture, 2000). Recent studies have, however, called into question the long-term viability of using some chemicals associated with modern conventional production practices due to their negative impacts on farm worker and community health (Hardell and Eriksson, 1999; Lu et al., 2000; Bell et al., 2001) and on the environment (Bishop et al., 1999; Nicolaus and Hansoo, 1999; Epstein et al., 2000). Furthermore, widespread financial failures of family-owned orchards in the Pacific Northwest due to overproduction, rising production costs, and the consolidation of fruit retailers have called into question conventional approaches to tree fruit production and marketing (Mullinix, 2000).

Faced with these health, environmental, and economic problems, fruit growers are increasingly interested in organic and integrated farming systems because they have the potential to reduce some of the negative environmental effects of conventional agriculture (Reganold et al., 2001) and may offer market advantages over conventional production practices (Granatstein and Dauer, 2000; Loureiro et al., 2000). Organic management practices exclude most synthetic chemical pesticide and fertilizer inputs and use naturally derived products as defined by organic certification programs (Washington State Department of Agriculture, 2001). Integrated farming systems utilize methods of conventional and organic production systems in an attempt to optimize both environmental quality and economic profit. Certified integrated farming practices have been successfully adopted in some of the major apple-growing regions in Europe where fruit from certified integrated farms enjoys access to popular markets denied to conventionally produced fruit (Sansavini, 1997).

## **Study Objective and Limitations**

Financial data were collected during a six-year study of 'Golden Delicious' apple research plots managed under conventional, integrated, and organic production methods in the Yakima Valley of Washington State from 1994 through 1999. The

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objective of this study was to determine, based on data obtained from the research plots, estimated production costs and returns for ten-acre orchard operations managed under each of the three management strategies from initial planting of trees through the sixth year for the years 1994 through 1999.

There are several critical issues that must be considered in using the data presented here. Due to the dynamic nature of the current fruit market, prices used in this study ought not be assumed to reflect current or future market conditions. Organically certified apple acreage is expected to more than double over the next several years (Granatstein and Dauer, 2000) making predictions of future prices speculative at best. As an example, a two-fold increase in reported organic Golden Delicious sales from the 1999 crop to the 2000 crop coincided with a nearly 50% fall in organic Golden Delicious prices over the same period.

For this study, prices used for fruit had a significant impact on overall production costs through their effect on interest costs. With the nearly 50% price premium above conventional fruit of similar size and grade received for organic fruit (see Budget Assumption 9 on page 4), the organic system more quickly paid off establishment costs thereby significantly reducing carryover interest costs in the latter years of the study. These costs may be considered as either interest costs in the event that a grower is borrowing money to cover the startup expenses or as opportunity costs in lieu of potential returns from alternative investments. Anecdotal reports of 20–30% higher costs of organic production typically do not take into consideration these interest costs.

In a separate analysis of this study's economic data (Reganold et al., 2001) it was estimated that 12–14% price premiums for organic fruit are required for the organic system to match the breakeven point of the conventional system. These values reflect the greater costs associated with organic production as compared with conventional production in our study. Important to note is that when no price premium was assumed for organic apples, interest costs accounted for a significant portion of production costs and resulted in lower profitability than either the conventional or integrated systems. Interest costs, and therefore production costs, are greatly influenced by fruit prices, indicating that the prices used in this study ought not necessarily be used for future production cost and return estimates.

Other critical considerations that make forecasts of financial situations difficult are the changing nature of production practices, the experience level of the grower, and how familiar the grower is with the specific production site. As was the case with this study, the lack of familiarity with managing organic and reduced-chemical systems at a particular site may result in unnecessarily high production costs while effective management strategies are being developed for that particular situation. For example, the effectiveness of a specific organic weed management strategy may be very site dependent, unlike an herbicide that works effectively at a wide range of sites.

Also, as was seen in this study, the lack of organically certified chemical thinners has proven a problem for organic growers who widely report significantly

higher thinning costs to achieve similar fruit size and yields as conventional growers employing chemical thinners. In this study it should be noted that our organic thinning costs were actually lower than in the conventional and integrated systems, but consequently, organic fruit were smaller in 1998 and 1999, and yields were significantly lower in 1999. Considering the impacts to fruit size alone, we estimate that had organic fruit size matched that of the conventional system in 1998 and 1999, receipts for the organic system would have been 20% greater. Assuming better thinning practices in the organic system could have resulted in similarly sized fruit as in the conventional system, more than \$1,200 per acre in 1998, and nearly \$2,000 per acre in 1999 were foregone in revenue due to inadequate thinning in the organic system.

Up to the present, relatively little research has been directed toward overcoming these problems. As research interest expands to fill information gaps, however, technical obstacles to organic or reduced-chemical production may be overcome and reduce their associated production costs. In contrast to possible reductions in organic and integrated production costs, production costs associated with intensive pesticide use may significantly rise over the next ten years due to government regulations associated with chemical applications (Benbrook et al., 1996). Reentry times following azinphos-methyl application, for example, have increased from 24 to 72 hours over the past few years. This results in greater difficulty in scheduling subsequent operations and may increase production costs. We do not expect, therefore, this study to fully reflect the range of management systems currently in use in Washington State, or the actual costs and returns for these systems in the future. The usefulness of this study, rather, is that it highlights the many uncertainties involved in alternative production systems, indicates the potential viability of these systems over the long term, and provides a side-by-side comparison of a range of production systems managed by the same grower.

### **Research Site Description**

Four one-third acre replicate plots for each management system were planted to Golden Delicious apples in May 1994, in a randomized complete block design on a commercial apple orchard in the Yakima Valley of Washington State. Each plot contained four rows of approximately eighty trees per row trained on a two-wire trellis system. Trees were planted at a spacing of four feet within rows and twelve feet between rows for a density of 908 trees per acre. The eight inches of average annual precipitation at the site was supplemented with an under-tree sprinkler irrigation system. Prior to installation of the experimental orchard, the site had been in grass pasture that was tilled to a depth of twelve inches in January 1994.

### **Management Practices**

In cooperation with the growers, professional consultants, and extension agents, appropriate management practices for the three systems were followed. The

organic system relied on compost and foliar sprays for nutrients. In the first three years (1994-1996), bark mulch and landscape fabric controlled weeds; thereafter, cultivation and mowing were used for weed control. Organically certified biological controls, including applications of *Bacillus thuringiensis* and pheromone mating disruption to control codling moth (*Cydia pomonella* L.), were used for pest management. Fruit thinning was by hand. The conventional system included synthetic soil fertilizers and foliar sprays, pesticides, chemical fruit thinners, and pheromone mating disruption. The integrated system used both compost and synthetic fertilizers and controlled weeds with both bark mulch and herbicides. Pest management and fruit thinning were similar to those of the conventional system. Each of the three systems had similar total soil nitrogen inputs and was monitored for pests, diseases, and physiological disorders by the growers and professional consultants. Based on their observations, recommendations were made as to the organic, conventional, or integrated treatments for their control. Specific products and practices used for each of the three production systems are listed in Appendices I–III.

### **Budget Assumptions**

The following assumptions were used to estimate production costs and returns for 10-acre operations managed under each of the three production systems:

1. Ten acres of ‘Golden Delicious’ apple trees are being added to an existing 100-acre orchard in the Yakima Valley. The new plantings utilize a two-wire trellis system and a high-density spacing of 4 x 12 feet (908 trees/acre). The site was formerly in grass pasture.
2. Golden Delicious trees are partially self-fruitful making additional pollenizer trees unnecessary particularly when, as in this study, they are planted near or within established orchards of differing varieties. Costs associated with pollenizer trees, therefore, were not considered in this study.
3. The irrigation pump and mainlines, valued at \$1,000 per acre with a 30-year life, are already established and operating.
4. A solid set under-tree irrigation system with mini-sprinklers set every 20 feet in every row in a diamond pattern is installed at a per-acre cost of \$800 for materials, \$300 for labor, \$45 for rental of a trencher, and \$5 for fuel and lube.
5. A 125-horsepower propane-driven wind machine is installed in the early spring of year 4 at a cost of \$16,000. This wind machine serves the entire 10 acres and has an estimated life of 30 years.
6. A holding pond for frost control purposes for the 10 acres is established in the fourth year after planting. The pond costs \$7,000 and has a 20-year life.

7. The 10-acre 'Golden Delicious' orchard, the orchard support system, and irrigation system excluding the irrigation pump and mainlines has a 20-year life.
8. Land, excluding trees, is valued at \$5,000 per acre. The grower desires a 7% return from the land investment.
9. Yields (bins/acre) for years three through six were based on measured yields of the research plots from 1996 through 1999. Price premiums for organic fruit were based on averages (for the period 1997–1999) of sales reported by the Washington Growers Clearinghouse Association and interviews with two packing houses and eight organic growers. While reported premiums for organic fruit ranged from approximately 10% to over 250% above conventional market prices during the study period, an average premium of 54% (after packing, shipping, and marketing costs are deducted) above conventional fruit was used for calculating organic prices for the actual size, grade, and quality of the fruit harvested from organic plots. Values of picked bins for conventional and integrated management systems were based on market prices averaged over 1997–1999 for the actual grade, size, and quality of fruit harvested from research plots. Three- and six-month storage tests under refrigerated regular and controlled atmosphere conditions were also conducted for each of the three management systems to determine market quality of fruit after storage. No fruit was harvested for 1994 and 1995.
10. Interest rates are 9% on operating loans, machinery and equipment, and all other types of loans.
11. Machinery and buildings are valued at new or used replacement value depending on how they are typically replaced. While this may overstate current production costs, it provides an indication of the enterprise's ability to generate the earnings needed to replace depreciable assets. When an enterprise is evaluated to determine its long-run viability, it is important to consider its ability to replace depreciable assets on a replaceable cost basis.

### **Summary of Fruit Productivity and Quality**

All fruit harvested in 1996 and 1997 were considered culls and sold for processing due to the high incidence of skin russeting. In 1998, harvested apples were field sorted according to whether each fruit was to be sold as processed fruit (culls) or as fresh fruit. Cullage estimates for 1998 were based on these field observations. Cullage rates for 1999 were estimated using packout information obtained from a commercial fruit-packing facility and postharvest assessment of fruit defects on 200 fruit per plot.

Fruit quality at harvest and after three- and six-month periods of controlled atmosphere and regular atmosphere storage conditions was determined and used to



assess market value of the fruit for each of the three systems. In accordance with Washington State Department of Agriculture's Organic Certification Program, 1994 through 1996 were considered to be transitional years for the organic system during which fruit was not sold as organic, and therefore, did not receive a price premium.

Market grades (at harvest) were similar for the three production systems in 1998 and 1999 although organic fruit were smaller than conventional and integrated fruit during that same period (Reganold et al., 2001). While this resulted in an average 20% reduction in organic fruit value, integrated and conventional fruit generally stored less well resulting in lower fruit value for those two systems following storage in 1998 and 1999. As shown in Table 1, cumulative yields for the duration of the study were similar for the three production systems although organic yields were significantly lower than the conventional and integrated systems in 1999.

Table 1. Yields and Bin Values (after packing shipping and marketing costs are deducted) for the Three Production Systems 1996-1999

Production System	Year	Yield (Bin / Acre)	Bin Value
<u>Conventional</u>	1996	38.3	\$ 48.15
	1997	62.5	48.15
	1998	63.3	57.34
	1999	70.2	125.48
<u>Integrated</u>	1996	27.7	\$ 48.15
	1997	67.1	48.15
	1998	65.3	56.98
	1999	68.3	126.95
<u>Organic</u>	1996	20.9	\$ 48.15
	1997	75.1	66.88
	1998	73.7	90.55
	1999	49.8	199.40

After the sixth leaf, the decision was made to use the research site in a study to compare grafting with a new variety with that of replanting. Thus, the 'Golden Delicious' trees at the research site were cut and grafted over with 'Gala' scion wood.

## **Summary of Economic Results**

Economic analysis of each of the three management systems relied on actual records of orchard inputs for labor, equipment, and products to determine costs of production for 1994 through 1999. A summary of the economic results for each of the three production practices is presented below.

### **Results of Conventional Production Practices**

Table 2 presents the estimated annual capital requirements in land, irrigation system, operating expenses, and equipment purchased as a direct consequence of adding 10 acres to an existing 100-acre orchard. Since the 10-acre planting is being added to an existing 100-acre orchard, most field equipment, buildings, and vehicles required to operate the added orchard have already been purchased. Therefore, the only equipment purchases listed as a direct result of this 10-acre change in fruit production are the irrigation system, holding pond, wind machine, alarm, and thermometers. Where the situation differs from the above assumptions, adjustments in the figures presented in Table 2 may be necessary. It was assumed that all items were purchased the year they are first used. Of course, the actual timing of the capital outlays will vary, depending on how the various assets are financed.

Table 2. Summary of Capital Requirements per Year for Establishing 10 Acres of Golden Delicious Apples in the Lower Yakima Valley, Washington, under Conventional Production Practices.<sup>a</sup>

	1994	1995	1996	1997	1998	1999
	\$	\$	\$	\$	\$	\$
Requirements:						
Land (10 acres) <sup>b</sup>	50,000					
Irrigation System <sup>c</sup>	11,500					
Equipment <sup>d</sup>				16,205		
Holding Pond				7,000		
Operating Expenses <sup>e</sup>	73,966	17,744	26,816	34,475	40,149	45,596
Total Requirements	135,466	17,774	26,816	57,680	40,149	45,596
Receipts <sup>f</sup>	-	-	18,441	30,094	36,296	88,087
Net Yearly Requirements	135,466	17,774	8,375	27,586	3,853	-42,491

<sup>a</sup>Does not include interest on investment.

<sup>b</sup>Although a land purchase in this situation may not be required, the value of the land is added to this table.

<sup>c</sup>The irrigation pump and mainlines, valued at \$1,000 per acre with a 30-year life, are already established and operating. This figure includes only the cost of the solid set under-tree irrigation system. See assumption 4 on page 4.

<sup>d</sup>One wind machine and a frost alarm with 4 thermometer stations in year 4 and a holding pond in year 4. Any other field equipment that may be purchased as a result of adding these 10 acres of Golden Delicious apples to the existing orchard are not listed.

<sup>e</sup>Includes variable costs, land taxes, and prorated taxes and insurance on equipment and buildings (see Tables 1c1 through 3c6 in Appendix I).

<sup>f</sup>See assumption 9 on page 4.

Table 3 is a per acre summary of the costs incurred during the 6-year period of establishment and production under conventional management. Appendix I presents a detailed list of the production practices, materials, and services required for conventional management. In Tables 1c1 through 1c6 and Tables 3c1 through 3c6, in Appendix I, the yearly costs are categorized as variable, fixed, and total costs. While variable cost reflects cash input costs that are incurred and used the year of purchase (trees being the exception), fixed cost reflects the cost of inputs that are purchased, or already owned, that have a life of more than one year. Therefore, some of the up-front

cash costs such as land, the irrigation system, and the wind machine are allocated over their respective lives and do not show as a 1-year cost obligation, as in Table 2. Furthermore, all opportunity costs as to operator labor, management, interest on equity capital, and returns to land investment are included in Table 3 and in the detailed results presented in Appendix I. See "Detailed Results" on page 15 for a description of how variable, fixed, and opportunity costs are allocated within the yearly budgets

Under conventional production practices the total per acre net accumulated establishment and production costs equal \$20,496 at the end of six years (Table 3). Assuming the sixth year (1999) is representative of the per acre cost for the remaining 14 years of production life, the average prices required per bin, net of marketing cost, for the investment to break even (covering all cost including opportunity cost) at various yield levels over this 14-year period are:

<u>Average Per Acre Yield</u>	<u>Breakeven Price/Bin</u>
45 bins	\$173.11
50 bins	158.86
55 bins	147.20
60 bins	137.48
65 bins	129.25
70 bins	122.21

### **Results of Integrated Production Practices**

Table 4 presents the estimated annual capital requirements in land, irrigation system, operating expenses, and equipment purchased as a direct consequence of adding 10 acres to an existing 100-acre orchard. Since the 10-acre planting is being added to an existing 100-acre orchard, most field equipment, buildings, and vehicles required to operate these 10 acres have already been purchased. Therefore, the only equipment purchases listed as a direct result of this 10-acre change in fruit production are the irrigation system, holding pond, wind machine, alarm, and thermometers. Where the situation differs from the above assumptions, adjustments in the figures in Table 4 may be necessary. It was assumed that all items were purchased the year they are first used. Of course, the actual timing of the capital outlays will vary, depending on how the various assets are financed.

Table 5 is a per acre summary of the costs incurred during the 6-year period of establishment and production under integrated management. Appendix II includes a detailed list of the production practices, materials, and services required for integrated management.

Table 3. Per Acre Cost of Establishing a Golden Delicious Apple Orchard Using Conventional Production Practices.

	1994	1995	1996	1997	1998	1999
Variable Cost:	\$	\$	\$	\$	\$	\$
Custom Soil Prep.	267.00					
Trees	3632.00					
Custom Planting	363.20					
Trellis Material	650.00					
Tape & Twine	6.00	50.00	25.00	50.00	50.00	50.00
Tree Training Material	24.00					
Grass Cover Estab.	28.75					
Fertilizer	102.85	104.55	31.09	48.91	36.69	48.96
Chemicals	116.16	178.66	478.60	670.40	565.02	651.55
Beehives	0.00	0.00	35.00	35.00	35.00	35.00
Pheromone Dispensers	0.00	0.00	110.00	110.00	110.00	110.00
Labor	1144.36	898.34	902.64	903.59	1172.96	1205.80
Custom Picking	0.00	0.00	306.40	500.00	886.70	1209.70
Custom Hauling	0.00	0.00	114.90	187.50	189.90	210.60
Irrig/Electric Charge	150.00	150.00	150.00	168.75	168.75	168.75
Equipment Repair	110.35	118.32	162.17	227.74	216.68	221.78
Equipment Fuel/Lube	45.02	44.84	67.87	147.37	145.15	149.41
Overhead	348.02	80.06	122.52	156.55	183.31	207.90
Interest	320.76	56.57	66.66	81.69	89.33	96.42
<b>Total Variable Cost</b>	<b>7308.47</b>	<b>1681.34</b>	<b>2572.85</b>	<b>3287.50</b>	<b>3849.49</b>	<b>4365.87</b>
<b>Fixed Costs:</b>						
Equipment Deprec.	192.66	203.54	256.65	374.72	363.54	370.95
Equipment Interest	192.33	199.87	245.43	398.97	389.87	397.70
Equipment Insurance	12.81	13.32	16.36	26.53	25.93	26.45
Equipment Taxes	28.12	29.62	38.73	69.26	67.44	69.01
Land Tax	47.16	49.78	53.71	64.19	72.05	98.25
Land Cost	350.00	350.00	350.00	350.00	350.00	350.00
Management	250.00	250.00	250.00	250.00	250.00	250.00
Estab. Cost Interest	0.00	754.34	1072.20	1343.26	1627.22	1930.15
<b>Total Fixed Cost</b>	<b>1073.08</b>	<b>1850.47</b>	<b>2283.08</b>	<b>2876.93</b>	<b>3146.05</b>	<b>3492.51</b>
<b>Total Cost</b>	<b>8381.55</b>	<b>3531.81</b>	<b>4855.93</b>	<b>6164.43</b>	<b>6995.54</b>	<b>7858.38</b>
Value of Production	0.00	0.00	1844.14	3009.38	3629.62	8808.70
<b>Net Cost</b>	<b>8381.55</b>	<b>3531.81</b>	<b>3011.79</b>	<b>3155.05</b>	<b>3365.92</b>	<b>-950.32</b>
<b>Net Accumulated Cost</b>	<b>8381.55</b>	<b>11913.36</b>	<b>14925.15</b>	<b>18080.21</b>	<b>21446.12</b>	<b>20495.81</b>

Table 4. Summary of Capital Requirements per Year for Establishing 10 Acres of Golden Delicious Apples in the Lower Yakima Valley, Washington, under Integrated Production Practices.<sup>a</sup>

	1994	1995	1996	1997	1998	1999
	\$	\$	\$	\$	\$	\$
Requirements:						
Land (10 acres) <sup>b</sup>	50,000					
Irrigation System <sup>c</sup>	11,500					
Equipment <sup>d</sup>				16,205		
Holding Pond				7,000		
Operating Expenses <sup>e</sup>	86,006	17,861	26,231	33,881	38,469	43,369
Total Requirements	147,506	17,861	26,231	57,086	38,469	43,369
Receipts <sup>f</sup>	-	-	13,338	32,309	37,208	86,700
Net Yearly Requirements	147,506	17,861	12,893	24,777	1,261	-43,331

<sup>a</sup>Does not include interest on investment.

<sup>b</sup>Although a land purchase in this situation may not be required, the value of the land is added to this table.

<sup>c</sup>The irrigation pump and mainlines, valued at \$1,000 per acre with a 30-year life, are already established and operating. This figure includes only the cost of the solid set under-tree irrigation system. See assumption 4 on page 4.

<sup>d</sup>One wind machine and a frost alarm with 4 thermometer stations in year 4 and a holding pond in year 4. Any other field equipment that may be purchased as a result of adding this 10 acres of Golden Delicious apples to the existing orchard are not listed.

<sup>e</sup>Includes variable costs, land taxes, and prorated taxes and insurance on equipment and buildings (see Tables 1i1 through 3i6 in Appendix II).

<sup>f</sup>See assumption 9 on page 4.

Table 5. Per Acre Cost of Establishing a Golden Delicious Apple Orchard Using Integrated Production Practices.

	1994	1995	1996	1997	1998	1999
Variable Cost:	\$	\$	\$	\$	\$	\$
Custom Soil Prep.	267.00					
Trees	3632.00					
Custom Planting	363.20					
Trellis Material	650.00					
Tape & Twine	6.00	50.00	25.00	50.00	50.00	50.00
Tree Training Material	24.00					
Grass Cover Estab.	28.75					
Mulch	1025.00					
Compost	35.00	35.00				
Fertilizer	51.43	59.25	39.09	48.91	36.69	48.96
Chemicals	86.60	149.09	411.45	554.90	419.95	501.48
Beehives	0.00	0.00	35.00	35.00	35.00	35.00
Pheromone Dispensers	0.00	0.00	110.00	110.00	110.00	110.00
Labor	1239.91	944.00	1320.80	917.88	1169.84	1184.22
Custom Picking	0.00	0.00	0.00	536.80	887.70	1200.70
Custom Hauling	0.00	0.00	83.10	201.30	195.90	204.90
Irrig/Electric Charge	150.00	150.00	150.00	168.75	168.75	168.75
Equipment Repair	114.74	117.73	169.80	219.99	201.35	203.57
Equipment Fuel/Lube	51.53	47.72	74.21	148.79	144.21	136.06
Overhead	405.18	80.56	124.28	153.70	175.35	197.40
Interest	378.35	58.39	67.22	81.69	87.67	94.31
<b>Total Variable Cost</b>	<b>8508.69</b>	<b>1691.74</b>	<b>2609.95</b>	<b>3227.71</b>	<b>3682.41</b>	<b>4135.35</b>
<b>Fixed Costs:</b>						
Equipment Deprec.	204.26	208.31	267.30	375.58	359.48	362.70
Equipment Interest	206.60	206.04	261.52	400.41	386.39	389.77
Equipment Insurance	13.77	13.74	17.44	26.64	25.69	25.92
Equipment Taxes	30.98	30.86	41.95	69.54	66.74	67.42
Land Tax	47.16	49.78	53.71	64.19	72.05	98.25
Land Cost	350.00	350.00	350.00	350.00	350.00	350.00
Management	250.00	250.00	250.00	250.00	250.00	250.00
Estab. Cost Interest	0.00	865.03	1194.93	1529.10	1804.71	2099.61
<b>Total Fixed Cost</b>	<b>1102.77</b>	<b>1973.76</b>	<b>2436.85</b>	<b>3065.46</b>	<b>3315.06</b>	<b>3643.67</b>
<b>Total Cost</b>	<b>9611.46</b>	<b>3665.50</b>	<b>5046.80</b>	<b>6293.17</b>	<b>6997.47</b>	<b>7779.02</b>
Value of Production	0.00	0.00	1333.75	3230.86	3720.79	8670.00
<b>Net Cost</b>	<b>9611.46</b>	<b>3665.50</b>	<b>3713.05</b>	<b>3062.31</b>	<b>3276.68</b>	<b>-890.98</b>
<b>Net Accumulated Cost</b>	<b>9611.46</b>	<b>13276.96</b>	<b>16990.01</b>	<b>20052.32</b>	<b>23329.00</b>	<b>22438.02</b>

Under integrated production practices the total per acre net accumulated establishment and production costs equal \$22,438 at the end of six years (Table 5). Assuming the sixth year (1999) is representative of the per acre cost for the remaining 14 years of production life, the average prices required per bin, net of marketing cost, for the investment to break even (covering all costs including opportunity cost) at various yield levels over this 14 year-period are:

<u>Average Per Acre Yield</u>	<u>Breakeven Price/Bin</u>
45 bins	\$174.45
50 bins	160.10
55 bins	148.36
60 bins	138.57
65 bins	130.29
70 bins	123.20

### **Results of Organic Production Practices**

Table 6 presents the estimated annual capital requirements in land, irrigation system, operating expenses, and equipment purchased as a direct consequence of adding 10 acres to an existing 100-acre orchard. Since the 10-acre planting is being added to an existing 100-acre orchard, most field equipment, buildings, and vehicles required to operate these 10 acres have already been purchased. Therefore, the only equipment purchases listed as a direct result of this 10-acre change in fruit production are the irrigation system, holding pond, wind machine, alarm, and thermometers. Where the situation differs from the above assumptions, adjustments in the figures presented in Table 7 may be necessary. It was assumed that all items were purchased the year they are first used. Of course, the actual timing of the capital outlays will vary, depending on how the various assets are financed.

Table 7 is a per acre summary of the costs involved during the 6-year period of establishment and production. Appendix III includes a detailed list of the production practices, materials and services use for organic management in this study.



Table 6. Summary of Capital Requirements per Year for Establishing 10 Acres of Golden Delicious Apples in the Lower Yakima Valley, Washington, under Organic Production Practices.<sup>a</sup>

Year:	1994	1995	1996	1997	1998	1999
	\$	\$	\$	\$	\$	\$
Requirements:						
Land (10 acres) <sup>b</sup>	50,000					
Irrigation System <sup>c</sup>	11,500					
Equipment <sup>d</sup>				16,205		
Holding Pond				7,000		
Operating Expenses <sup>e</sup>	85,240	29,405	24,646	36,732	40,484	37,020
Total Requirements	146,740	29,405	24,646	59,937	40,484	37,020
Receipts <sup>f</sup>	-	-	10,063	50,227	66,744	99,301
Net Yearly Requirements	146,740	29,405	14,583	9,710	-26,260	-62,281

<sup>a</sup>Does not include interest on investment.

<sup>b</sup>Although a land purchase in this situation may not be required, the value of the land is added to this table.

<sup>c</sup>The irrigation pump and mainlines, valued at \$1,000 per acre with a 30-year life, are already established and operating. This figure includes only the cost of the solid set under-tree irrigation system. See assumption 4 on page 4.

<sup>d</sup>One wind machine and a frost alarm with 4 thermometer stations in year 4 and a holding pond in year 4. Any other field equipment that may be purchased as a result of adding this 10 acres of Golden Delicious apples to the existing orchard are not listed.

<sup>e</sup>Includes variable costs, land taxes, and prorated taxes and insurance on equipment and buildings (see Tables 1o1 through 3o6 in Appendix III).

<sup>f</sup>See assumption 9 on page 4.

Table 7. Per Acre Cost of Establishing a Golden Delicious Apple Orchard Using Organic Production Practices.

	1994	1995	1996	1997	1998	1999
	\$	\$	\$	\$	\$	\$
Variable Costs:						
Custom Soil Prep.	267.00					
Trees	3632.00					
Custom Planting	363.20					
Trellis Material	650.00					
Tape & Twine	6.00	50.00	25.00	50.00	50.00	50.00
Tree Training Material	24.00					
Grass Cover Estab.	28.75					
Mulch	1025.00					
Compost	70.00	70.00				
Landscape Fabric	0.00	949.00				
Fertilizer	0.00	0.00	21.74	13.36	10.24	26.04
Chemicals	1.28	22.62	35.69	58.44	51.64	42.34
Beehives	0.00	0.00	35.00	35.00	35.00	35.00
Pheromone Dispensers	0.00	0.00	110.00	110.00	110.00	110.00
Labor	1294.96	1218.56	1547.86	1602.76	1624.79	1511.42
Custom Picking	0.00	0.00	0.00	600.80	965.40	831.30
Custom Hauling	0.00	0.00	62.70	225.30	221.10	149.40
Irrig/Electric Charge	150.00	150.00	150.00	168.75	168.75	168.75
Equipment Repair	97.53	97.75	129.84	216.36	202.82	184.89
Equipment Fuel/Lube	48.09	46.10	61.62	166.91	160.71	145.83
Overhead	401.68	135.67	112.38	166.91	184.60	167.21
Interest	375.85	109.33	68.09	90.48	91.61	89.22
<b>Total Variable Cost</b>	<b>8435.34</b>	<b>2849.03</b>	<b>2359.92</b>	<b>3505.07</b>	<b>3876.66</b>	<b>3511.40</b>
Fixed Costs:						
Equipment Deprec.	189.80	192.41	234.18	403.63	387.55	361.63
Equipment Interest	194.64	195.46	230.06	429.55	413.50	386.03
Equipment Insurance	12.97	13.03	15.34	28.58	27.51	25.68
Equipment Taxes	28.57	28.74	35.66	75.38	72.17	66.67
Land Tax	47.16	49.78	53.71	64.19	72.05	98.25
Land Cost	350.00	350.00	350.00	350.00	350.00	350.00
Management	250.00	250.00	250.00	250.00	250.00	250.00
Estab. Cost Interest	0.00	855.76	1286.34	1629.14	1783.30	1833.54
<b>Total Fixed Cost</b>	<b>1073.14</b>	<b>1935.18</b>	<b>2455.29</b>	<b>3230.47</b>	<b>3356.08</b>	<b>3371.80</b>
<b>Total Cost</b>	<b>9508.48</b>	<b>4784.21</b>	<b>4815.21</b>	<b>6735.54</b>	<b>7232.74</b>	<b>6883.20</b>
Value of Production	0.00	0.00	1006.34	5022.69	6674.44	9930.12
<b>Net Cost</b>	<b>9508.48</b>	<b>4784.21</b>	<b>3808.87</b>	<b>1712.85</b>	<b>558.30</b>	<b>-3046.92</b>
<b>Net Accumulated Cost</b>	<b>9508.48</b>	<b>14292.69</b>	<b>18101.57</b>	<b>19814.42</b>	<b>20372.71</b>	<b>17325.80</b>

Under organic production practices the total per acre net accumulated establishment and production costs equal \$17,326 at the end of six years (Table 7). Accumulated costs are significantly less under organic management after the sixth year than under conventional and integrated management primarily due to the price premiums received for organic fruit in years 4 through 6. Assuming the sixth year (1999) is representative of the per acre cost for the remaining 14 years of production life, the average prices required per bin, net of marketing cost, for the investment to break even (covering all costs including opportunity cost) at various yield levels over this 14-year period are:

<u>Average Per Acre Yield</u>	<u>Breakeven Price/Bin</u>
45 bins	\$158.47
50 bins	145.63
55 bins	135.13
60 bins	126.38
65 bins	118.97
70 bins	112.62

### **Detailed Results**

The detailed estimated costs for the establishment and production years are in Appendices I, II and III for conventional, integrated and organic production practices, respectively. Since the format of each appendix is the same, an explanation of only Appendix I (conventional production practices) will be presented in this section.

Tables 1c1 through 1c6 outline the schedule of field operations and per acre cost by calendar month, type of machinery and labor used, and hours used per acre on an annual basis. The costs of field operations are divided into fixed and variable categories. Fixed costs include annual costs of machinery, building, irrigation pump and mainline, land ownership, and management. Variable costs include costs associated with operating machinery, hiring labor, and purchasing services and materials. Total cost is the sum of fixed costs and variable costs.

Machinery, building, and irrigation pump and mainline fixed costs include depreciation, interest on the average investment, property taxes, and insurance. These costs are incurred whether or not a crop is grown and do not vary given ownership of a specific equipment and building complement. Per hour fixed costs for machinery were determined by dividing the total annual fixed cost per machine by the annual hours of machinery use for the representative farm. Machinery fixed costs for a specific field operation were determined by multiplying the machine hours per acre times the per hour machinery fixed cost figure (Table 5c). Fixed costs per acre for the machine shed and shop and shop tools were determined by dividing the total annual fixed cost by the number of acres. Fixed costs for the irrigation pump and mainlines were also calculated on a per acre basis.

Land fixed cost includes taxes and a 7% return on the purchase price of the land. This cost represents the minimum return the owner-operator desires on the original investment in land, apart from appreciation of land value. In this publication, the land cost is termed an opportunity cost to indicate that it is not an out-of-pocket expense, but rather a return that is foregone by the producer as a result of investing in this enterprise. For each year, beginning with year 2, a fixed cost of 9% of the cumulative establishment costs summed through the previous year is charged against the investment. This cost represents interest being paid on the investment in the apple orchard or returns foregone by investing in the apple orchard rather than in an alternative investment that would give immediate returns. Operator management was valued, as an opportunity cost, at \$250 per acre, annually.

Variable costs vary with the number of acres farmed or with the enterprise. These costs include fuel, oil, repairs, fertilizer, chemicals, custom work, labor, overhead (utilities, legal and accounting fees, etc.), and interest (9%) on operating capital. Trees, trellises, and irrigation materials that are installed in year 1 and have the same life as the orchard were also included as variable costs.

In Tables 1c1 through 1c6, which show the schedule of operations for each year of orchard life, figures representing the cost of services and/or materials utilized by operation are shown in their respective columns. Tables 2c1 through 2c6 present by year, month, and operation the services and/or materials that went into the calculation of these figures for Table 1c1 through 1c6, respectively.

Tables 3c1 through 3c5 are itemized lists of the costs for each respective year. Most items are self-explanatory or have been explained previously. However, "Tractor Interest" and "Machinery Interest"<sup>2</sup> warrant additional explanation. These values represent opportunity costs (returns that are foregone by investment in a given equipment, building, and irrigation complement, rather than in alternative investments) or interest paid to finance the given equipment, building, and irrigation complement, or both. The 9% interest charge made against the average value of these items over their respective lives represents total interest costs. These interest costs are fixed costs and their per hour and per acre allocations were calculated in the manner as described on the previous page for building, irrigation, and machinery fixed cost.

Table 4c identifies the machine and building complement used to derive machinery and building cost estimates. It includes the type of machines and buildings used, their current replacement value (new or used), years of use before trade-in, salvage value at trade-in, annual repair cost, and annual hours of use. The data in this table are used to estimate the per hour or per acre fixed and variable costs appearing in Table 5c.

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<sup>2</sup>Machinery interest includes interest on the machine shed and shop, irrigation pump, and mainlines.

Machinery and building fixed costs include depreciation and interest on investment, property taxes, and insurance—costs that do not vary with use. Note that interest on investment represents a 9% opportunity cost to the enterprise. These are earnings foregone by investing money in the machinery and building complement rather than in the next best alternative investment. This may also represent the interest paid on funds borrowed to finance machinery purchases.

Machinery and building variable costs include repair, fuel, and lubrication costs—costs that vary with use.

### **Summary and Conclusion**

The data used in this study were taken from an actual research project of high density ‘Golden Delicious’ apple orchard plots in the Yakima Valley of Washington State grown under conventional, integrated, and organic production practices. The objective of this study was to determine, based on data obtained from the research plots, estimated production costs and returns for ten-acre orchard operations managed under each of the three management strategies from initial planting of trees through the sixth year.

Costs of production for 1994 through 1999 were based on actual records of orchard inputs for each of the three management systems at the research site for labor, equipment, and products. In determining the net per acre accumulated cost of establishing the ten-acre orchard over six years, all material and input costs, including opportunity costs for operator labor, management and invested equity capital, were included. As shown in Table 8, deducted from these cost figures was the value of production for the fruit actually produced on the various research plots expanded to a per acre basis. Thus, the net accumulated per acre costs of establishing a ten-acre ‘Golden Delicious’ orchard using conventional, integrated and organic production practices were \$20,496, \$22,438 and \$17,326, respectively. Some of the major factors affecting the net accumulated cost, other than material and services, were poor fruit quality in the first three years of production, resulting in low fruit prices in those years, and the price premiums received for organic fruit in years 5 and 6.

Based on the net accumulated cost figures for establishment and production during the first six years of orchard life and assuming that year 6 costs are representative of an average mature production year, Table 9 summarizes the prices that must be received for the fruit grown under the three different production systems, at various average yield levels, if the orchard is to break even (covering all cost including opportunity cost) over the remaining 14 years of a 20-year production life.

Under conventional and integrated management the added 10-acre orchard will need to maintain relatively high levels of productivity and fruit quality and receive approximately \$140/bin to be a profitable 20-year business endeavor. Under organic management, however, the added 10-acre orchard can produce at a lower level of production than the conventional and integrated orchards and still remain profitable only because of the price premium received for

organic fruit during the establishment years. As important as market prices are to overall profitability, maintenance of high levels of fruit quality is necessary to capture premium market prices over the remaining 14 years of the orchard's productive life. As was found in this study, high yields of poor quality fruit result in unprofitable operations even in years of relatively high market prices.

Table 8. Per Acre Cost Summary of Establishing a Golden Delicious Apple Orchard Using Conventional, Integrated and Organic Production Practices.

	1994	1995	1996	1997	1998	1999
<b>Conventional Practices:</b>						
Total Cost	8381.55	3531.81	4855.93	6164.43	6995.54	7858.38
Value of Production	0.00	0.00	1844.14	3009.38	3629.62	8808.70
Net Cost	8381.55	3531.81	3011.79	3155.05	3365.92	-950.32
Net Accumulated Cost	8381.55	11913.36	14925.15	18080.21	21446.12	20495.81
<b>Integrated Practices:</b>						
Total Cost	9611.46	3665.50	5046.80	6293.17	6997.47	7779.02
Value of Production	0.00	0.00	1333.75	3230.86	3720.79	8670.00
Net Cost	9611.46	3665.50	3713.05	3062.31	3276.68	-890.98
Net Accumulated Cost	9611.46	13276.96	16990.01	20052.32	23329.00	22438.02
<b>Organic Practices:</b>						
Total Cost	9508.48	4784.21	4815.21	6735.54	7232.74	6883.20
Value of Production	0.00	0.00	1006.34	5022.69	6674.44	9930.12
Net Cost	9508.48	4784.21	3808.87	1712.85	558.30	-3046.92
Net Accumulated Cost	9508.48	14292.69	18101.57	19814.42	20372.71	17325.80

Table 9. Average Prices Needed per Bin To Be Received by the Producer, Net of Marketing Cost, for the Orchard Investment to Break Even over the Remaining Fourteen Years of Productive Life.

Average Annual Yield	Breakeven Price Conventional Practices	Breakeven Prices Integrated Practices	Breakeven Prices Organic Practices
	\$	\$	\$
40 bins	190.93	192.38	174.51
45 bins	173.11	174.45	158.47
50 bins	158.86	160.10	145.63
55 bins	147.20	148.36	135.13
60 bins	137.48	138.57	126.38
65 bins	129.25	130.29	118.97
70 bins	122.21	123.20	112.62

Due to the procedures and assumptions used in this study, the results should be used with care. As a research study that benefitted from the expert input of many growers and professional horticulturalists and that was located on a larger, well-equipped orchard, the situation outlined is not typical of all orchard or farm operations. For example, economies were gained by planting this acreage in an existing farm operation. Conversely, added costs can be anticipated when the planting represents a separate business enterprise. Furthermore, in planting a given acreage, field dimensions, topography, and the need for roads, windbreaks, buildings, and service areas may reduce the number of actual acres of orchard.

It must also be restated for this study, prices used for fruit had a significant impact on overall production costs through their effect on interest costs. With the nearly 50% price premium above conventional fruit of similar size and grade received for organic fruit (see Budget Assumption 9 on page 4), the organic system more quickly paid off establishment costs thereby significantly reducing carryover interest costs in the latter years of the study. Anecdotal reports of 20–30 % higher costs of organic production typically do not take into consideration these interest costs.

In a separate analysis of this study’s economic data (Reganold et al., 2001) it was estimated that 12–14% price premiums for organic fruit are required for the organic system to match the breakeven point of the conventional system. These values reflect the greater costs associated with organic production as compared with conventional production in our study. It is also important to note that when no price premium was assumed for organic apples, interest costs accounted for a significant portion of production costs and resulted in lower profitability than either the conventional or integrated systems. Interest costs, and therefore production costs, are greatly influenced by fruit prices indicating that the prices used in this study ought not necessarily be used for future production cost and return estimates.

Thus, it is essential that this publication be used primarily as a guide in determining establishment costs and considerable judgment be exercised in generalizing cost estimates to situations differing from those outlined above. Moreover, this publication is not specifically intended as a guide to planting and production practices. Rather, it represents the technology used at a research site in the lower Yakima Valley in eastern Washington.



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## Appendix I

Cost of Establishing a High Density

Golden Delicious Apple Orchard

Using Conventional Production Practices

TABLE 1c1: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER CONVENTIONAL PRODUCTION PRACTICES - 1994.

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
						\$	\$	\$	\$	\$	\$	\$	
SOIL SAMPLE	CUSTOM HIRE	FEB	1994	.00	.00	.00	.00	.00	12.00	.00	.72	12.72	12.72
RIP LAND	CUSTOM HIRE	FEB	1994	.00	.00	.00	.00	.00	100.00	.00	6.00	106.00	106.00
CLEAN UP & DISK	CUSTOM HIRE	FEB	1994	.00	.00	.00	.00	.00	150.00	.00	9.00	159.00	159.00
LAYOUT & STAKE	HAND LABOR	FEB	1994	.00	4.00	.00	.00	30.00	.00	5.00	2.10	37.10	37.10
FERTILIZE	52HP-WT, TRAILER W/HAND LABOR	MAR	1994	2.00	6.30	17.09	8.62	49.87	.00	102.85	8.47	169.82	186.91
PLANT TREES	CUSTOM PLANTED	MAR	1994	.00	.00	.00	.00	.00	363.20	3632.00	209.75	4204.95	4204.95
COVER CROP PREP	52HP-WT, ROTOTILLER	MAR	1994	2.50	2.75	24.84	17.94	24.06	.00	.00	2.21	44.21	69.05
SEED COVER CROP	52HP-WT, RENTED SEEDER	MAR	1994	1.10	1.21	7.01	3.64	10.59	10.00	18.75	2.26	45.24	52.25
PRUNE	HAND LABOR (1 PERSON)	MAR	1994	.00	1.00	.09	.00	7.50	.00	.00	.39	7.89	7.99
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	APR	1994	.50	.60	8.38	4.78	5.25	.00	26.00	1.62	37.65	46.03
TREE TRAINING	HAND LABOR	SEA	1994	.00	20.00	.00	.00	150.00	.00	24.00	7.83	181.83	181.83
IRRIGATE	SOLID SET UNDERTREE IRR SYSTEM	SEA	1994	.00	.00	203.03	50.00	.00	150.00	.00	9.00	209.00	412.03
IRRIGATE	4-WHEEL ATV W/ABOVE OPERATION	SEA	1994	10.00	10.00	21.94	10.08	87.50	.00	.00	4.39	101.97	123.90
INSTALL TRELLIS	HAND LABOR	MAY	1994	.00	60.00	.00	.00	468.75	.00	650.00	41.95	1160.70	1160.70
TIE LEADERS	HAND LABOR	MAY	1994	.00	15.00	.00	.00	112.50	.00	6.00	4.44	122.94	122.94
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	MAY	1994	.50	.60	8.38	4.78	5.25	.00	25.95	1.35	37.33	45.71
HERBICIDE	52HP-WT, 100 GAL SPRAYER	JUN	1994	.40	.48	4.50	6.32	4.20	.00	29.58	1.20	41.30	45.80
HOE AROUND TREES	HAND LABOR	JUN	1994	.00	20.00	.00	.00	150.00	.00	.00	4.50	154.50	154.50
MOW ORCHARD	52HP-WT, 9' ROTARY MOWER	JUL	1994	.50	.55	4.95	2.74	4.81	.00	.00	.17	7.72	12.67
HERBICIDE	52HP-WT, 100 GAL. SPRAYER	JUL	1994	.40	.48	4.50	6.32	4.20	.00	29.58	.90	41.00	45.50
COVER SPRAY	52HP-WT, BLAST SPRAYER	JUL	1994	.50	.60	8.38	4.78	5.25	.00	3.78	.31	14.12	22.50
MOW ORCHARD	52HP-WT, 9' ROTARY MOWER	AUG	1994	.50	.55	4.95	2.74	4.81	.00	.00	.11	7.66	12.61
MOW ORCHARD	52HP-WT, 9' ROTARY MOWER	OCT	1994	.50	.55	4.95	2.74	4.81	.00	.00	.00	7.55	12.50
GOPHER CONTROL	HAND LABOR	ANN	1994	.00	2.00	.00	.00	15.00	.00	1.28	.73	17.01	17.01
MISC USE	1/2 TON PICKUP	ANN	1994	7.14	.00	36.45	23.42	.00	.00	.00	1.05	24.47	60.92
MISC USE	4-WHEEL ALL TERRAIN VEHICLE	ANN	1994	5.70	.00	12.50	5.74	.00	.00	.00	.26	6.00	18.51
MISC USE	MACH SHED & SHOP	ANN	1994	.00	.00	38.71	.71	.00	.00	.00	.03	.75	39.46
MISC USE	SHOP TOOLS	ANN	1994	.00	.00	15.29	.00	.00	.00	.00	.00	.00	15.29
OVERHEAD	UTILITIES, LEGAL, ACCTNG, ETC.	ANN	1994	.00	.00	.00	.00	.00	348.02	.00	.00	348.02	348.02
MANAGEMENT	OPERATOR MANAGEMENT	ANN	1994	.00	.00	250.00	.00	.00	.00	.00	.00	.00	250.00
LAND COST	INTEREST ON LAND	ANN	1994	.00	.00	350.00	.00	.00	.00	.00	.00	.00	350.00
TAXES	LAND	ANN	1994	.00	.00	47.16	.00	.00	.00	.00	.00	.00	47.16
TOTAL PER ACRE				32.24	146.67	1073.08	155.38	1144.36	1133.22	4554.77	320.74	7308.47	8381.56

**TABLE 2c1: MATERIALS AND SERVICES USED BY CONVENTIONAL PRACTICES - 1994.**

OPERATION		MATERIAL AND/OR SERVICE
Soil Sample	February	Custom hire @ \$12.00/acre
Rip Land	February	Custom hire @ \$100.00/acre
Cleanup & Disk	February	Custom hire @ \$150.00/acre
Layout & Stake	February	Layout & state material @ \$5.00/acre
Fertilize	March	605 lbs. calcium nitrate @ 17¢/lb
Plant Trees	March	908 Standard Golden Delicious trees @ \$4.00/tree Custom plant 908 trees @ 40¢/tree
Seed Cover Crop	March	Rented grass seeder @ \$10.00/acre 15.0 lbs. of Companion seed @ \$1.25/lb
Mildew Spray	April	5.0 ozs. Rally @ \$5.20/oz.
Tree Training	Season	Tree training material @ \$24.00/acre
Irrigate	Season	Irrigation charge & electricity @ \$150.00/acre
Install Trellis	May	Trellis material @ \$650.00/acre
Tie Leaders	May	Tape & twine @ \$6.00/acre
Mildew Spray	May	0.5 lbs. of Procure @ \$51.90/lb.
Herbicide	June	0.5 gals. of Roundup @ \$59.15/gal.
Herbicide	July	0.5 gals of Roundup @ \$59.15/gal.
Cover Spray	July	1.0 oz. of Provado @ \$3.78/oz.
Gopher Control	Annual	1.0 lb. of Gopher Getter Bait @ \$1.28/lb.
Overhead	Annual	5% variable cost

TABLE 3c1: ITEMIZED COST PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER CONVENTIONAL PRODUCTION PRACTICES - 1994.

	UNIT	PRICE OR COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
-----					
VARIABLE COSTS		\$		\$	
SOIL SAMPLE	ACRE	12.00	1.00	12.00	_____
CUSTOM RIPPING	ACRE	100.00	1.00	100.00	_____
CLEAN-UP & DISK	ACRE	150.00	1.00	150.00	_____
LAYOUT & STAKE MATER.	ACRE	5.00	1.00	5.00	_____
GOLDEN TREES	TREE	4.00	908.00	3632.00	_____
CUSTOM PLANT TREES	TREE	.40	908.00	363.20	_____
COMPANION SEED	LB.	1.25	15.00	18.75	_____
RENT SEEDER	ACRE	10.00	1.00	10.00	_____
TRELLIS MATERIALS	ACRE	650.00	1.00	650.00	_____
TAPE & TWINE	ACRE	6.00	1.00	6.00	_____
TREE TRAIN MAT.	ACRE	24.00	1.00	24.00	_____
CALCIUM NITRATE	LB.	.17	605.00	102.85	_____
RALLY	OZ.	5.20	5.00	26.00	_____
PROCURE	LB.	51.90	.50	25.95	_____
ROUNDUP	GAL.	59.15	1.00	59.15	_____
PROVADO	OZ.	3.78	1.00	3.78	_____
GOPHER GETTER	LB.	1.28	1.00	1.28	_____
IRR. CHG. & ELECT.	ACRE	150.00	1.00	150.00	_____
CASUAL LABOR	HOUR	7.50	111.20	834.00	_____
LABOR (TRAC/MACH)	HOUR	8.75	35.47	310.36	_____
TRACTOR REPAIR	ACRE	14.10	1.00	14.10	_____
TRACTOR FUEL/LUBE	ACRE	17.03	1.00	17.03	_____
MACHINERY REPAIRS	ACRE	96.25	1.00	96.25	_____
MACHINE FUEL/LUBE	ACRE	27.99	1.00	27.99	_____
OVERHEAD	ACRE	348.02	1.00	348.02	_____
INTEREST ON OP. CAP.	ACRE	320.76	1.00	320.76	_____
				-----	
TOTAL VARIABLE COST				7308.47	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	25.07	1.00	25.07	_____
TRACTOR INTEREST	ACRE	27.50	1.00	27.50	_____
TRACTOR INSURANCE	ACRE	1.83	1.00	1.83	_____
TRACTOR TAXES	ACRE	5.50	1.00	5.50	_____
MACHINE DEPRECIATION	ACRE	167.60	1.00	167.60	_____
MACHINE INTEREST	ACRE	164.83	1.00	164.83	_____
MACHINE INSURANCE	ACRE	10.99	1.00	10.99	_____
MACHINE TAXES	ACRE	22.62	1.00	22.62	_____
LAND TAX - YR 1	ACRE	47.16	1.00	47.16	_____
LAND COST	ACRE	350.00	1.00	350.00	_____
MANAGEMENT	ACRE	250.00	1.00	250.00	_____
				-----	
TOTAL FIXED COST				1073.08	_____
TOTAL COST				8381.56	_____
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TABLE 1c2: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER CONVENTIONAL PRODUCTION PRACTICES - 1995.

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
PRUNE	HAND LABOR (1 PERSON)	FEB	1995	.00	6.20	.57	.00	46.50	.00	.00	2.79	49.29	49.86
DORM. SPY + ZINC	52HP-WT, BLAST SPRAYER	MAR	1995	.50	.60	8.38	4.78	5.25	.00	6.85	.89	17.77	26.15
FERTILIZE	52HP-WT, TRAILER W/HAND LABOR	APR	1995	2.00	6.30	17.09	8.62	49.87	.00	90.61	6.71	155.82	172.91
FOLIAR SPRAY	52HP-WT, BLAST SPRAYER	APR	1995	.50	.60	8.38	4.78	5.25	.00	9.82	.89	20.74	29.12
IRRIGATE	SOLID SET UNDERTREE IRR SYSTEM	SEA	1995	.00	.00	203.03	50.00	.00	150.00	.00	9.00	209.00	412.03
IRRIGATE	4-WHEEL ATV W/ABOVE OPERATION	SEA	1995	10.00	10.00	21.94	10.08	87.50	.00	.00	4.39	101.97	123.90
MOW	52HP-WT, 9' ROTARY MOWER	MAY	1995	.50	.55	4.95	2.74	4.81	.00	.00	.28	7.83	12.78
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	MAY	1995	.50	.60	8.38	4.78	5.25	.00	26.00	1.35	37.38	45.76
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	MAY	1995	.50	.60	8.38	4.78	5.25	.00	9.30	.72	20.06	28.44
TREE TRAINING	HAND LABOR	MAY	1995	.00	60.00	.00	.00	468.75	.00	37.50	18.98	525.23	525.23
HERBICIDE	52HP-WT, 100 GAL SPRAYER	JUN	1995	.40	.48	4.50	6.32	4.20	.00	29.58	1.20	41.30	45.80
MOW	52HP-WT, 9' ROTARY MOWER	JUN	1995	.50	.55	4.95	2.74	4.81	.00	.00	.23	7.78	12.72
COVER SPRAY	52HP-WT, BLAST SPRAYER	JUN	1995	.50	.60	8.38	4.78	5.25	.00	16.04	.78	26.85	35.23
MOW	52HP-WT, 9' ROTARY MOWER	JUL	1995	.50	.55	4.95	2.74	4.81	.00	.00	.17	7.72	12.67
TREE TRAINING	HAND LABOR	JUL	1995	.00	20.00	.00	.00	156.25	.00	12.50	3.80	172.55	172.55
COVER SPRAY (2X)	52HP-WT, BLAST SPRAYER	JUL	1995	.50	.60	8.38	4.78	5.25	.00	32.08	.95	43.06	51.44
MOW	52HP-WT, 9' ROTARY MOWER	AUG	1995	.50	.55	4.95	2.74	4.81	.00	.00	.11	7.66	12.61
HERBICIDE	52HP-WT, 100 GAL SPRAYER	AUG	1995	.40	.48	4.50	6.32	4.20	.00	29.58	.60	40.70	45.20
COVER SPRAY	52HP-WT, BLAST SPRAYER	AUG	1995	.50	.60	8.38	4.78	5.25	.00	16.04	.39	26.46	34.84
MOW	52HP-WT, 9' ROTARY MOWER	SEP	1995	.50	.55	4.95	2.74	4.81	.00	.00	.06	7.66	12.55
COVER SPRAY	52HP-WT, BLAST SPRAYER	SEP	1995	.50	.60	8.38	4.78	5.25	.00	16.04	.20	26.27	34.65
GOPHER CONTROL	HAND LABOR	ANN	1995	.00	2.00	.00	.00	15.00	.00	1.28	.73	17.01	17.01
MISC USE	1/2 TON PICKUP	ANN	1995	7.14	.00	36.45	23.42	.00	.00	.00	1.05	24.47	60.92
MISC USE	4-WHEEL ALL TERRAIN VEHICLE	ANN	1995	5.70	.00	12.50	5.74	.00	.00	.00	.26	6.00	18.51
MISC USE	MACHINE SHED & SHOP	ANN	1995	.00	.00	38.71	.71	.00	.00	.00	.03	.75	39.46
MISC USE	SHOP TOOLS	ANN	1995	.00	.00	15.29	.00	.00	.00	.00	.00	.00	15.29
OVERHEAD	UTILITIES, LEGAL, ACCTNG, ETC.	ANN	1995	.00	.00	.00	.00	.00	80.06	.00	.00	80.06	80.06
MANAGEMENT	OPERATOR MANAGEMENT	ANN	1995	.00	.00	250.00	.00	.00	.00	.00	.00	.00	250.00
LAND COST	INTEREST ON LAND	ANN	1995	.00	.00	350.00	.00	.00	.00	.00	.00	.00	350.00
TAXES	LAND	ANN	1995	.00	.00	49.78	.00	.00	.00	.00	.00	.00	49.78
INTEREST COST	INTEREST ON 1ST YR ESTAB COST	ANN	1995	.00	.00	754.34	.00	.00	.00	.00	.00	.00	754.34
TOTAL PER ACRE				32.14	113.01	1850.47	163.16	898.33	230.05	333.22	56.57	1681.34	3531.81

**TABLE 2c2: MATERIALS AND SERVICES USED BY CONVENTIONAL PRACTICES - 1995.**

<b>OPERATION</b>		<b>MATERIAL AND/OR SERVICE</b>
Dormant Spray + Zinc	March	1.05 gals. of Superior Oil @ \$2.60/gal. 0.5 gals. of Zinc 10% @ \$8.25/gal.
Fertilize	April	533 lbs. of calcium nitrate @ 17¢/lb.
Foliar Spray	April	2.0 gals. of 3-18-18 @ \$4.55/gal. 4.0 lbs. of urea @ 18¢/lb.
Irrigate	Season	Irrigation charge and electricity @ \$150.00/acre
Mildew Spray	May	5.0 ozs. of Rally @ \$5.20/oz.
Mildew Spray	May	10.0 lbs. of Microthiol @ 93¢/lb.
Tree Training	May	Tape & twine @ \$37.50/acre
Herbicide	June	0.5 gal. of Roundup @ \$59.15/gal.
Cover Spray	June	2.0 lbs. of Guthion @ \$8.02/lb.
Tree Training	July	Tape & twine @ \$12.50/acre
Cover Spray (2x)	July	2.0 lbs. of Guthion @ \$8.02/lb. ea. time
Herbicide	August	0.5 gal. of Roundup @ \$59.15/gal.
Cover Spray	August	2.0 lbs. of Guthion @ \$8.02/lb.
Cover Spray	September	2.0 lbs. of Guthion @ \$8.02/lb.
Gopher Control	Annual	1.0 lb. of Gopher Getter Bait @ \$1.28/lb.
Overhead	Annual	5% variable cost

TABLE 3c2: ITEMIZED COST PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER CONVENTIONAL PRODUCTION PRACTICES - 1995.

		PRICE OR	QUANTITY	VALUE OR	YOUR
	UNIT	COST/UNIT		COST	FARM
-----					
VARIABLE COSTS		\$		\$	
SUPERIOR OIL	GAL.	2.60	1.05	2.73	_____
ZINC 10%	GAL.	8.25	.50	4.12	_____
3-18-18	GAL.	4.55	2.00	9.10	_____
UREA	LB.	.18	4.00	.72	_____
CALCIUM NITRATE	LB.	.17	533.00	90.61	_____
MICROTHIOL	LB.	.93	10.00	9.30	_____
RALLY	OZ.	5.20	5.00	26.00	_____
ROUNDUP	GAL.	59.15	1.00	59.15	_____
GUTHION	LB.	8.02	10.00	80.20	_____
GOPHER GETTER	LB.	1.28	1.00	1.28	_____
TAPE & TWINE	ACRE	50.00	1.00	50.00	_____
IRR. CHG. & ELECT.	ACRE	150.00	1.00	150.00	_____
CASUAL LABOR	HOUR	7.50	72.40	543.00	_____
LABOR (TRAC/MACH)	HOUR	8.50	41.80	355.34	_____
TRACTOR REPAIR	ACRE	13.95	1.00	13.95	_____
TRACTOR FUEL/LUBE	ACRE	16.84	1.00	16.84	_____
MACHINERY REPAIRS	ACRE	104.37	1.00	104.37	_____
MACHINE FUEL/LUBE	ACRE	27.99	1.00	27.99	_____
INTEREST ON OP. CAP.	ACRE	56.57	1.00	56.57	_____
OVERHEAD	ACRE	80.06	1.00	80.06	_____
				-----	
TOTAL VARIABLE COST				1681.34	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	24.80	1.00	24.80	_____
TRACTOR INTEREST	ACRE	27.20	1.00	27.20	_____
TRACTOR INSURANCE	ACRE	1.81	1.00	1.81	_____
TRACTOR TAXES	ACRE	5.44	1.00	5.44	_____
MACHINE DEPRECIATION	ACRE	178.74	1.00	178.74	_____
MACHINE INTEREST	ACRE	172.66	1.00	172.66	_____
MACHINE INSURANCE	ACRE	11.77	1.00	11.51	_____
MACHINE TAXES	ACRE	24.18	1.00	24.18	_____
LAND TAX - YR 2	ACRE	49.78	1.00	49.78	_____
LAND COST	ACRE	350.00	1.00	350.00	_____
MANAGEMENT	ACRE	250.00	1.00	250.00	_____
INTEREST ON ESTAB.	ACRE	754.34	1.00	754.34	_____
				-----	
TOTAL FIXED COST				1850.47	_____
TOTAL COST				3531.81	_____
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TABLE 1c3: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER CONVENTIONAL PRODUCTION PRACTICES - 1996.

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
							\$	\$	\$	\$	\$	\$	\$
PRUNE	HAND LABOR (2 PEOPLE)	FEB	1996	.00	15.00	1.38	.00	112.50	.00	.00	6.75	119.25	120.63
DORMANT SPRAY	52HP-WT, BLAST SPRAYER	MAR	1996	.50	.60	8.38	4.78	5.25	.00	17.33	1.44	28.79	37.17
COVER SPRAY	52HP-WT, BLAST SPRAYER	MAR	1996	.50	.60	8.38	4.78	5.25	.00	24.76	1.83	36.12	45.00
RENT BEEHIVE	ONE BEEHIVE PER ACRE	APR	1996	.00	.00	.00	.00	.00	35.00	.00	1.58	36.58	36.58
IRRIGATE	SOLID SET UNDERTREE IRR SYSTEM	SEA	1996	1.00	.00	203.03	50.00	.00	150.00	.00	9.00	209.00	412.03
IRRIGATE	4-WHEEL ATV W/ABOVE OPERATION	SEA	1996	10.00	10.00	21.94	10.08	87.50	.00	.00	4.39	101.97	123.90
HANG DISPENSERS	HAND LABOR	SEA	1996	.00	1.00	.00	.00	7.50	.00	110.00	5.29	122.79	122.79
MOW	52HP-WT, 9' ROTARY MOWER	MAY	1996	.50	.55	4.95	2.74	4.81	.00	.00	.28	7.83	12.78
MILDEW/FERT/COVR	52HP-WT, BLAST SPRAYER	MAY	1996	.50	.60	8.38	4.78	5.25	.00	51.14	2.29	63.46	71.84
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	MAY	1996	.50	.60	8.38	4.78	5.25	.00	26.00	1.35	37.38	45.76
THINNING SPRAY	52HP-WT, BLAST SPRAYER	MAY	1996	.50	.60	8.38	4.78	5.25	.00	117.15	4.77	131.95	140.33
TREE TRAINING	HAND LABOR	MAY	1996	.00	20.00	.00	.00	150.00	.00	12.50	6.09	168.59	168.59
HERBICIDE	52HP-WT, 100 GAL SPRAYER	MAY	1996	.40	.48	4.50	6.32	4.20	.00	29.58	1.50	41.60	46.10
MOW	52HP-WT, 9' ROTARY MOWER	JUN	1996	.50	.55	4.95	2.74	4.81	.00	.00	.23	7.78	12.72
HAND THINNING	HAND LABOR	JUN	1996	.00	14.00	.00	.00	105.00	.00	.00	3.15	108.15	108.15
MILDEW/COVER SPY	52HP-WT, BLAST SPRAYER	JUN	1996	.50	.60	8.38	4.78	5.25	.00	42.04	1.56	53.63	62.01
HERBICIDE	52HP-WT, 100 GAL SPRAYER	JUN	1996	.40	.48	4.50	6.32	4.20	.00	29.58	1.20	41.30	45.80
MOW	52HP-WT, 9' ROTARY MOWER	JUL	1996	.50	.55	4.95	2.74	4.81	.00	.00	.17	7.72	12.67
TREE TRAINING	HAND LABOR	JUL	1996	.00	20.00	.00	.00	150.00	.00	12.50	3.66	166.16	166.16
CALCIUM/COVER	52HP-WT, BLAST SPRAYER	JUL	1996	.50	.60	8.38	4.78	5.25	.00	51.44	1.38	62.86	71.24
HERBICIDE	52HP-WT, 100 GAL SPRAYER	JUL	1996	.40	.48	4.50	6.32	4.20	.00	29.58	.90	41.00	45.50
CALCIUM/COVER	52HP-WT, BLAST SPRAYER	AUG	1996	.50	.60	8.38	4.78	5.25	.00	19.16	.44	29.63	38.01
MOW	52HP-WT, 9' ROTARY MOWER	AUG	1996	.50	.55	4.95	2.74	4.81	.00	.00	.11	7.66	12.61
HARVEST(38.3 BN)	PICKERS (7 PEOPLE)	SEP	1996	.00	.00	9.29	.00	306.40	.00	.00	2.30	308.70	317.99
HARVEST	52HP-WT, BACKFORK	SEP	1996	7.66	8.43	49.90	26.39	73.76	.00	.00	.75	100.90	150.80
BIN HANDLING	52HP-WT, FORKLIFT	SEP	1996	3.83	4.21	30.09	15.96	36.84	.00	.00	.40	53.20	83.29
CHECK BINS	CHECKER FOR PICKING CREW	SEP	1996	.00	7.66	.00	.00	57.45	.00	.00	.43	57.88	57.88
LOAD FRUIT	50HP-WT, FORKLIFT	SEP	1996	1.53	1.69	15.96	9.40	14.79	.00	.00	.18	24.37	40.33
HAUL FRUIT	CUSTOM HAULING	SEP	1996	.00	.00	.00	.00	.00	114.90	.00	.86	115.76	115.76
HERBICIDE	52HP-WT, 100 GAL SPRAYER	SEP	1996	.40	.48	4.50	6.32	4.20	.00	29.58	.30	40.40	44.90
MOW	52HP-WT, 9' ROTARY MOWER	OCT	1996	.50	.55	4.95	2.74	4.81	.00	.00	.00	7.55	12.50
HERBICIDE	52HP-WT, 100 GAL SPRAYER	OCT	1996	.40	.48	4.50	6.32	4.20	.00	29.58	.00	40.10	44.60
FOLIAR FERTILIZE	52HP-WT, BLAST SPRAYER	OCT	1996	.50	.60	8.38	4.78	5.25	.00	11.50	.00	21.73	29.91
GOPHER CONTROL	HAND LABOR	ANN	1996	.00	2.00	.00	.00	15.00	.00	1.28	.73	17.01	17.01
MISC USE	1/2 TON PICKUP	ANN	1996	7.14	.00	36.45	23.42	.00	.00	.00	1.05	24.47	60.92
MISC USE	4-WHEEL ALL TERRAIN VEHICLE	ANN	1996	5.70	.00	12.50	5.74	.00	.00	.00	.26	6.00	18.51
MISC USE	MACHINE SHED & SHOP	ANN	1996	1.00	.00	38.71	.71	.00	.00	.00	.03	.75	39.46
MISC USE	SHOP TOOLS	ANN	1996	1.00	.00	15.29	.00	.00	.00	.00	.00	.00	15.29
OVERHEAD	UTILITIES, LEGAL, ACCTNG, ETC.	ANN	1996	.00	.00	.00	.00	.00	122.52	.00	.00	122.52	122.52
MANAGEMENT	OPERATOR MANAGEMENT	ANN	1996	.00	.00	250.00	.00	.00	.00	.00	.00	.00	250.00
LAND COST	INTEREST ON LAND	ANN	1996	.00	.00	350.00	.00	.00	.00	.00	.00	.00	350.00
TAXES	LAND	ANN	1996	.00	.00	53.71	.00	.00	.00	.00	.00	.00	53.71
INTEREST COST	INTEREST ON ESTABLISHMENT COST	ANN	1996	.00	.00	1072.20	.00	.00	.00	.00	.00	.00	1072.20
TOTAL PER ACRE				62.86	114.54	2283.08	230.05	1209.04	422.42	644.68	66.66	2572.85	4855.93

TABLE 2c3: MATERIALS AND SERVICES USED BY CONVENTIONAL PRACTICES - 1996.

OPERATION		MATERIAL AND/OR SERVICE
Dormant Spray + Zinc	March	1.5 gals. of Superior Oil @ \$2.60/gal. 0.5 gal. of Zinc 10% @ 8.25/gal. 10.0 lbs. of Microthiol @ 93¢/lb.
Cover Spray	March	4.0 pints of Lorsban @ \$6.19/pint
Rent Beehive	April	1.0 beehive @ \$35.00/hive
Irrigate	Season	Irrigation charge & electricity @ \$150.00/acre
Hang Dispensers	Season	400 ties @ 27.5¢/tie
Mildew/Fertilizer/ Cover Spray	May	2.0 lbs. of Guthion @ \$8.02/lb. 5.0 ozs. of Rally @ \$5.20/oz. 2.0 gals. of 3-18-18 @ \$4.55/gal.
Mildew Spray	May	5.0 ozs. of Rally @ \$5.20/oz.
Thinning Spray	May	6.6 ozs. of Accel @ \$12.58/oz. <sup>a</sup> 5.0 ozs. of Rally @ \$5.20/oz. 5.0 lbs. of Solubor @ 80¢/lb. 0.5 gal. of Zinc 10% @ \$8.25/gal.
Tree Training	May	Tape & twine @ \$12.50/acre
Herbicide	May	0.5 gal. of Roundup @ \$59.15/gal.
Mildew/Cover Spray	June	2.0 lbs. of Guthion @ \$8.02/lb. 5.0 ozs. of Rally @ \$5.20/oz.
Herbicide	June	0.5 gal. of Roundup @ \$59.15/gal.
Tree Training	July	Tape & twine @ \$12.50/acre
Calcium/Cover Spray	July	6.0 lbs. of calcium chloride @ 52¢/lb. 2.0 lbs. of Guthion @ \$8.02/lb. 2.0 ozs. of Provado @ \$3.78/oz. 0.25 gal. of Sylgard @ \$98.90/gal.
Herbicide	July	0.5 gal. of Roundup @ \$59.15/gal.
Calcium/Cover Spray	August	6.0 lbs. of calcium chloride @ 52¢/lb. 2.0 lbs. of Guthion @ \$8.02/lb.
Harvest	September	38.3 bins of apples picked @ \$8.00/bin
Haul Fruit	September	38.3 bins of apples hauled @ \$3.00/bin
Herbicide	September	0.5 gal. of Roundup @ \$59.15/gal.
Herbicide	October	0.5 gal. of Roundup @ \$59.15/gal.
Foliar Fertilizer	October	5.0 gals of zinc sulfate @ \$1.50/gal. 5.0 lbs. of Solubor @ 80¢/lb.
Gopher Control	Annual	1.0 lb. of Gopher Getter @ \$1.28/lb.
Overhead	Annual	5% variable cost

<sup>a</sup>Accel may not be typically used in thinning Golden Delicious fruit, but was used at this site to achieve larger fruit size.

TABLE 3c3: ITEMIZED COST PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER CONVENTIONAL PRODUCTION PRACTICES - 1996.

	UNIT	PRICE OR COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
-----					
VARIABLE COSTS		\$		\$	
SUPERIOR OIL	GAL.	2.60	1.50	3.90	_____
ZINC 10%	GAL.	8.25	1.00	8.25	_____
MICROTHIOL	LB.	.93	10.00	9.30	_____
LORSBAN	PINT	6.19	4.00	24.76	_____
ACCEL	OZ.	12.58	6.60	83.03	_____
RALLY	OZ.	5.20	20.00	104.00	_____
SOLUBOR	LB.	.80	10.00	8.00	_____
GUTHION	LB.	8.02	8.00	64.16	_____
3-18-18	GAL.	4.55	2.00	9.10	_____
ROUNDUP	GAL.	59.15	2.50	147.88	_____
CALCIUM CHLORIDE	LB.	.52	12.00	6.24	_____
PROVADO	OZ.	3.78	2.00	7.56	_____
SYLGARD	GAL.	98.90	.25	24.73	_____
ZINC SULFATE	GAL.	1.50	5.00	7.50	_____
GOPHER GETTER	LB.	1.28	1.00	1.28	_____
TAPE & TWINE	ACRE	25.00	1.00	25.00	_____
RENT BEEHIVE	HIVE	35.00	1.00	35.00	_____
PHEROMONE DISPENSERS	DISP	.28	400.00	110.00	_____
CUSTOM PICKING	BIN	8.00	38.30	306.40	_____
CUSTOM HAULING	BIN	3.00	38.30	114.90	_____
IRR. CHG. & ELECT.	ACRE	150.00	1.00	150.00	_____
CASUAL LABOR	HOUR	7.50	79.66	597.45	_____
LABOR (TRAC/MACH)	HOUR	8.50	35.91	305.20	_____
TRACTOR REPAIR	ACRE	33.03	1.00	33.03	_____
TRACTOR FUEL/LUBE	ACRE	39.88	1.00	39.88	_____
MACHINERY REPAIRS	ACRE	129.14	1.00	129.14	_____
MACHINE FUEL/LUBE	ACRE	27.99	1.00	27.99	_____
INTEREST ON OP. CAP.	ACRE	66.66	1.00	66.66	_____
OVERHEAD	ACRE	122.52	1.00	122.52	_____
				-----	
TOTAL VARIABLE COST				2572.85	_____
-----					
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	58.72	1.00	58.72	_____
TRACTOR INTEREST	ACRE	64.41	1.00	64.41	_____
TRACTOR INSURANCE	ACRE	4.29	1.00	4.29	_____
TRACTOR TAXES	ACRE	12.88	1.00	12.88	_____
MACHINE DEPRECIATION	ACRE	197.93	1.00	197.93	_____
MACHINE INTEREST	ACRE	181.02	1.00	181.02	_____
MACHINE INSURANCE	ACRE	12.07	1.00	12.07	_____
MACHINE TAXES	ACRE	25.85	1.00	25.85	_____
LAND TAX - YR 3	ACRE	53.71	1.00	53.71	_____
LAND COST	ACRE	350.00	1.00	350.00	_____
MANAGEMENT	ACRE	250.00	1.00	250.00	_____
INTEREST ON ESTAB.	ACRE	1072.20	1.00	1072.20	_____
				-----	
TOTAL FIXED COST				2283.08	_____
-----					
TOTAL COST				4855.93	_____
-----					

TABLE 1c4: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER CONVENTIONAL PRODUCTION PRACTICES - 1997.

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
						\$	\$	\$	\$	\$	\$	\$	
PRUNE	HAND LABOR	FEB	1997	.00	25.00	2.30	.00	187.50	.00	.00	11.25	198.75	201.05
DORM. SPY + ZINC	52HP-WT, BLAST SPRAYER	MAR	1997	.50	.60	8.38	4.78	5.25	.00	43.64	2.82	56.49	64.87
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	APR	1997	.50	.60	8.38	4.78	5.25	.00	35.25	2.04	47.32	55.70
RENT BEEHIVE	ONE BEEHIVE PER ACRE	APR	1997	.00	.00	.00	.00	.00	35.00	.00	1.58	36.58	36.58
HERBICIDE	52HP-WT, 100 GAL SPRAYER	APR	1997	.40	.48	4.50	6.32	4.20	.00	29.58	1.80	41.90	46.40
FROST CONTROL	WIND MACHINE	APR	1997	.00	2.00	152.11	92.79	17.50	.00	.00	4.96	115.25	267.36
FROST CONTROL	FROST ALARM & THERMOMETERS	APR	1997	.00	.00	2.97	.00	.00	.00	.00	.00	.00	2.97
FROST CONTROL	UNDERTREE SPRINKLERS	APR	1997	.00	.00	74.90	10.00	.00	18.75	.00	1.29	30.04	104.94
IRRIGATE	SOLID SET UNDERTREE IRR SYSTEM	SEA	1997	.00	.00	203.03	50.00	.00	150.00	.00	9.00	209.00	412.03
IRRIGATE	4-WHEEL ATV W/ABOVE OPERATION	SEA	1997	10.00	10.00	21.94	10.08	87.50	.00	.00	4.39	101.97	123.90
HANG DISPENSERS	HAND LABOR	SEA	1997	.00	1.00	.00	.00	7.50	.00	110.00	5.29	122.79	122.79
MOW	52HP-WT, 9' ROTARY MOWER	MAY	1997	.50	.55	4.95	2.74	4.81	.00	.00	.28	7.83	12.78
HERBICIDE	52HP-WT, 100 GAL SPRAYER	MAY	1997	.40	.48	4.50	6.32	4.20	.00	29.58	1.50	41.60	46.10
MILDEW/COVER SPY	52HP-WT, BLAST SPRAYER	MAY	1997	.50	.60	8.38	4.78	5.25	.00	21.35	1.18	32.56	40.94
COVER SPRAY	52HP-WT, BLAST SPRAYER	MAY	1997	.50	.60	8.38	4.78	5.25	.00	6.50	.62	17.15	25.53
FERT/MILDW/INSCCT	52HP-WT, BLAST SPRAYER	MAY	1997	.50	.60	8.38	4.78	5.25	.00	60.23	2.63	72.89	81.27
COVER SPRAY	52HP-WT, BLAST SPRAYER	MAY	1997	.50	.60	8.38	4.78	5.25	.00	77.09	3.27	90.39	98.77
THIN. SPRAY (2X)	52HP-WT, BLAST SPRAYER	MAY	1997	.50	.60	8.38	4.78	5.25	.00	166.06	6.60	182.69	191.07
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	MAY	1997	.50	.60	8.38	4.78	5.25	.00	9.30	.72	20.06	28.44
MOW	52HP-WT, 9' ROTARY MOWER	JUN	1997	.50	.55	4.95	2.74	4.81	.00	.00	.23	7.78	12.72
COVER SPRAY	52HP-WT, BLAST SPRAYER	JUN	1997	.50	.60	8.38	4.78	5.25	.00	45.16	1.66	56.85	65.23
HERBICIDE	52HP-WT, 100 GAL SPRAYER	JUL	1997	.40	.48	4.50	6.32	4.20	.00	29.58	.90	41.00	45.50
MOW	52HP-WT, 9' ROTARY MOWER	JUL	1997	.50	.55	4.95	2.74	4.81	.00	.00	.17	7.72	12.67
TREE TRAINING	HAND LABOR	JUL	1997	.00	25.00	.00	.00	187.50	.00	50.00	5.34	242.84	242.84
COVER SPRAY	52HP-WT, BLAST SPRAYER	JUL	1997	.50	.60	8.38	4.78	5.25	.00	30.07	.90	41.00	49.38
COVER SPRAY	52HP-WT, BLAST SPRAYER	AUG	1997	.50	.60	8.38	4.78	5.25	.00	19.16	.44	29.63	38.01
MOW	52HP-WT, 9' ROTARY MOWER	AUG	1997	.50	.55	4.95	2.74	4.81	.00	.00	.11	7.66	12.61
HERBICIDE	52HP-WT, 100 GAL SPRAYER	AUG	1997	.40	.48	4.50	6.32	4.20	.00	29.58	.60	40.70	45.20
HARVEST(62.5 BN)	PICKERS	SEP	1997	.00	.00	13.27	.00	.00	500.00	.00	3.75	503.75	517.02
HARVEST	52HP-WT, BACKFORK	SEP	1997	12.50	13.75	81.43	43.06	120.31	.00	.00	1.23	164.60	246.02
CHECK BINS	CHECKER FOR PICKING CREW	SEP	1997	.00	12.50	.00	.00	93.75	.00	.00	.70	94.45	94.45
BIN HANDLING	52HP-WT, BIN TRAILER	SEP	1997	6.25	6.88	49.10	26.05	60.16	.00	.00	.65	86.86	135.95
LOAD FRUIT	52HP-WT, FORKLIFT	SEP	1997	2.50	2.75	26.07	15.36	24.06	.00	.00	.30	39.72	65.79
HAUL FRUIT	CUSTOM HAULING	SEP	1997	.00	.00	.00	.00	.00	187.50	.00	1.41	188.91	188.91
MOW	52HP-WT, 9' ROTARY MOWER	OCT	1997	.50	.55	4.95	2.74	4.81	.00	.00	.00	7.55	12.50
HERBICIDE	52HP-WT, 100 GAL SPRAYER	OCT	1997	.40	.48	4.50	6.32	4.20	.00	85.92	.00	96.44	100.94
GOPHER CONTROL	HAND LABOR	ANN	1997	.00	2.00	.00	.00	15.00	.00	1.28	.73	17.01	17.01
MISC USE	1/2 TON PICKUP	ANN	1997	7.14	.00	36.45	23.42	.00	.00	.00	1.05	24.47	60.92
MISC USE	4-WHEEL ALL TERRAIN VEHICLE	ANN	1997	5.70	.00	12.50	5.74	.00	.00	.00	.26	6.00	18.51
MISC USE	MACHINE SHED & SHOP	ANN	1997	.00	.00	38.71	.71	.00	.00	.00	.03	.75	39.46
MISC USE	SHOP TOOLS	ANN	1997	.00	.00	15.29	.00	.00	.00	.00	.00	.00	15.29
OVERHEAD	UTILITIES, LEGAL, ACCTNG, ETC.	ANN	1997	.00	.00	.00	.00	.00	156.55	.00	.00	156.55	156.55
MANAGEMENT	OPERATOR MANAGEMENT	ANN	1997	.00	.00	250.00	.00	.00	.00	.00	.00	.00	250.00
LAND COST	INTEREST ON LAND	ANN	1997	.00	.00	350.00	.00	.00	.00	.00	.00	.00	350.00
TAXES	LAND	ANN	1997	.00	.00	64.19	.00	.00	.00	.00	.00	.00	64.19
INTEREST COST	INTEREST ON ESTABLISHMENT COST	ANN	1997	.00	.00	1343.26	.00	.00	.00	.00	.00	.00	1343.26
TOTAL PER ACRE				54.09	112.63	2876.93	375.11	903.59	1047.80	879.30	81.70	3287.50	6164.43

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**TABLE 2c4: MATERIALS AND SERVICES USED BY CONVENTIONAL PRACTICES  
- 1997.**

<b>OPERATION</b>		<b>MATERIAL AND/OR SERVICE</b>
Dormant Spray + Zinc	March	2.1 gals. of Superior Oil @ \$2.60/gal. 0.5 gal. of Zinc 10% @ \$8.25/gal. 4.0 pints of Lorsban @ \$6.19/pt. 10.0 lbs. of Microthiol @ .93¢/lb.
Mildew Spray	April	10.0 lbs. of Microthiol @ .93¢/lb. 0.5 lb. of Procure @ \$51.90/lb.
Rent Beehive	April	1.0 beehive @ \$35.00/hive
Herbicide	April	0.5 gal. of Roundup @ \$59.15/gal.
Frost Control	April	Irrigation charge & electricity @ \$18.75/acre
Irrigate	Season	Irrigation charge & electricity @ \$150.00/acre
Hang Dispensers	Season	400 ties @ 27.5¢/tie
Herbicide	May	0.5 gal. of Roundup @ \$59.15/gal.
Mildew/Cover Spray	May	4.2 ozs. of Rubigan @ \$2.25/oz. 1.4 lbs. of DiPel @ \$8.50/lb.
Cover Spray	May	1.05 pints of Lorsban @ \$6.19/pt.
Foliar Fertilizer/ Mildew/Insecticide	May	2.0 gals. of 3-18-18 @ \$4.55/gal. 0.5 gal. of Zinc 10% @ \$8.25/gal. 5.0 lbs. of Solubor @ .80¢/lb. 5.0 ozs. of Rally @ \$5.20/oz. 2.0 lbs. of DiPel @ \$8.50/lb.
Cover Spray	May	2.0 lbs. of Guthion @ \$8.02/lb. 5.0 ozs. of Rally @ \$5.20/oz. 0.5 lb. of Procure @ \$51.90/lb. 2.0 gals. of 3-18-18 @ \$4.55/gal.
Thinning Spray	May	6.6 ozs. of Accel @ \$12.58/oz. <sup>a</sup>
Thinning Spray	May	6.6 ozs. of Accel @ \$12.58/oz. <sup>a</sup>
Mildew Spray	May	10.0 lbs. of Microthiol @ .93¢/lb.
Cover Spray	June	2.0 lbs. of Guthion @ \$8.02/lb. 6.0 lbs. of calcium chloride @ .52¢/lb. 5.0 ozs. of Rally @ \$5.20/oz.
Herbicide	July	0.5 gal. of Roundup @ \$59.15/gal.
Tree Training	July	Tape & Twine @ \$50.00/acre
Cover Spray	July	2.0 gals. of 3-18-18 @ \$4.55/gal. 2.0 lbs. of Guthion @ \$8.02/lb. 6.0 lbs. of calcium chloride @ .52¢/lb. 1.0 pint of Trifol @ \$1.81/pt.

TABLE 2c4: MATERIALS AND SERVICES USED BY CONVENTIONAL PRACTICES  
 - 1997. (Continued)

OPERATIONS		MATERIAL AND/OR SERVICE
Cover Spray	August	2.0 lbs. of Guthion @ \$8.02/lb. 6.0 lbs. of calcium chloride @ .52¢/lb.
Herbicide	August	0.5 gal. of Roundup @ \$59.15/gal.
Harvest	September	62.5 bins of apples picked @ \$8.00/bin
Haul Fruit	September	62.5 bins of apples @ \$3.00/bin
Herbicide	October	0.5 gal. of Roundup @ \$59.15/gal. 2.5 lbs. of Solicam @ \$20.50/lb. 1.0 qt. of Simazine @ \$5.09/qt.
Gopher Control	Annual	1.0 lb. of Gopher Getter @ \$1.28/lb.
Overhead	Annual	5% variable cost.

<sup>a</sup>Accel may not be typically used in thinning Golden Delicious fruit, but was used at this site to achieve larger fruit size.

TABLE 3c4: ITEMIZED COST PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER CONVENTIONAL PRODUCTION PRACTICES - 1997.

	UNIT	PRICE OR COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
-----					
VARIABLE COSTS		\$		\$	
SUPERIOR OIL	GAL.	2.60	2.10	5.46	_____
ZINC 10%	GAL.	8.25	1.00	8.25	_____
LORSBAN	PINT	6.19	5.05	31.26	_____
MICROTHIOL	LB.	.93	30.00	27.90	_____
ROUNDUP	GAL.	59.15	2.50	147.88	_____
PROCURE	LB.	51.90	1.00	51.90	_____
ACCEL	OZ.	12.58	13.20	166.06	_____
RUBIGAN	OZ.	2.25	4.20	9.45	_____
DIPEL	LB.	8.50	3.40	28.90	_____
GUTHION	LB.	8.02	8.00	64.16	_____
RALLY	OZ.	5.20	15.00	78.00	_____
3-18-18	GAL.	4.55	6.00	27.30	_____
SOLUBOR	LB.	.80	5.00	4.00	_____
CALCIUM CHLORIDE	LB.	.52	18.00	9.36	_____
TRIFOL	PT.	1.81	1.00	1.81	_____
SOLICAM	LB.	20.50	2.50	51.25	_____
SIMAZINE	QT.	5.09	1.00	5.09	_____
GOPHER GETTER	LB.	1.28	1.00	1.28	_____
TAPE & TWINE	ACRE	50.00	1.00	50.00	_____
RENT BEEHIVE	HIVE	35.00	1.00	35.00	_____
PHEROMONE DISPENSERS	DISP	.28	400.00	110.00	_____
CUSTOM PICKING	BIN	8.00	62.50	500.00	_____
CUSTOM HAULING	BIN	3.00	62.50	187.50	_____
IRR CHG & ELECT	ACRE	168.75	1.00	168.75	_____
CASUAL LABOR	HOURL	7.50	65.50	491.25	_____
LABOR (TRAC/MACH)	HOURL	8.50	48.51	412.34	_____
TRACTOR REPAIR	ACRE	46.88	1.00	46.88	_____
TRACTOR FUEL/LUBE	ACRE	56.60	1.00	56.60	_____
MACHINERY REPAIRS	ACRE	180.86	1.00	180.86	_____
MACHINE FUEL/LUBE	ACRE	90.78	1.00	90.78	_____
INTEREST ON OP. CAP.	ACRE	81.69	1.00	81.69	_____
OVERHEAD	ACRE	156.55	1.00	156.55	_____
TOTAL VARIABLE COST				3287.50	_____
-----					
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	83.33	1.00	83.33	_____
TRACTOR INTEREST	ACRE	91.41	1.00	91.41	_____
TRACTOR INSURANCE	ACRE	6.09	1.00	6.09	_____
TRACTOR TAXES	ACRE	18.28	1.00	18.28	_____
MACHINE DEPRECIATION	ACRE	291.38	1.00	291.38	_____
MACHINE INTEREST	ACRE	307.56	1.00	307.56	_____
MACHINE INSURANCE	ACRE	20.44	1.00	20.44	_____
MACHINE TAXES	ACRE	50.98	1.00	50.98	_____
LAND TAX - YR 4	ACRE	64.19	1.00	64.19	_____
LAND COST	ACRE	350.00	1.00	350.00	_____
MANAGEMENT	ACRE	250.00	1.00	250.00	_____
INTEREST ON ESTAB.	ACRE	1343.26	1.00	1343.26	_____
TOTAL FIXED COST				2876.93	_____
TOTAL COST				6164.43	_____
-----					

TABLE 1c5: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER CONVENTIONAL PRODUCTION PRACTICES - 1998.

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
PRUNE	HAND LABOR	FEB	1998	.00	30.00	\$ 2.76	\$ .00	\$ 225.00	\$ .00	\$ .00	\$ 13.50	\$ 238.50	\$ 241.26
DORM. SPY + ZINC	52HP-WT, BLAST SPRAYER	MAR	1998	.50	.60	8.38	4.78	5.25	.00	43.64	2.82	56.49	64.87
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	APR	1998	.50	.60	8.38	4.78	5.25	.00	35.25	2.04	47.32	55.70
HERBICIDE	52HP-WT, 100 GAL SPRAYER	APR	1998	.40	.48	4.50	6.32	4.20	.00	29.58	1.80	41.90	46.40
RENT BEEHIVE	ONE BEEHIVE PER ACRE	APR	1998	.00	.00	.00	.00	.00	35.00	.00	1.58	36.58	36.58
FROST CONTROL	WIND MACHINE	APR	1998	.00	2.00	152.11	92.79	17.50	.00	.00	4.96	115.25	267.36
FROST CONTROL	FROST ALARM & THERMOMETERS	APR	1998	.00	.00	2.97	.00	.00	.00	.00	.00	.00	2.97
FROST CONTROL	UNDERTREE SPRINKLERS	APR	1998	.00	.00	74.90	10.00	.00	18.75	.00	1.29	30.04	104.94
IRRIGATE	SOLID SET UNDERTREE IRR SYSTEM	SEA	1998	.00	.00	203.03	50.00	.00	150.00	.00	9.00	209.00	412.03
IRRIGATE	4-WHEEL ATV W/ABOVE OPERATION	SEA	1998	10.00	10.00	21.94	10.08	87.50	.00	.00	4.39	101.97	123.90
HANG DISPENSERS	HAND LABOR	SEA	1998	.00	1.00	.00	.00	7.50	.00	110.00	5.29	122.79	122.79
HERBICIDE	52HP-WT, 100 GAL SPRAYER	MAY	1998	.40	.48	4.50	6.32	4.20	.00	29.58	1.50	41.60	46.10
MOW	52HP-WT, 9' ROTARY MOWER	MAY	1998	.50	.55	4.95	2.74	4.81	.00	.00	.28	7.83	12.78
COVER SPRAY	52HP-WT, BLAST SPRAYER	MAY	1998	.50	.60	8.38	4.78	5.25	.00	6.50	.62	17.15	25.53
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	MAY	1998	.50	.60	8.38	4.78	5.25	.00	9.30	.72	20.06	28.44
THIN. SPRAY (2X)	52HP-WT, BLAST SPRAYER	MAY	1998	.50	.60	8.38	4.78	5.25	.00	166.06	6.60	182.69	191.07
FERT/MILDW/INSC	52HP-WT, BLAST SPRAYER	MAY	1998	.50	.60	8.38	4.78	5.25	.00	60.23	2.63	72.89	81.27
MOW	52HP-WT, 9' ROTARY MOWER	JUN	1998	.50	.55	4.95	2.74	4.81	.00	.00	.23	7.78	12.72
COVER SPRAY	52HP-WT, BLAST SPRAYER	JUN	1998	.50	.60	8.38	4.78	5.25	.00	45.16	1.66	56.85	65.23
HAND THINNING	HAND LABOR	JUN	1998	.00	32.50	.00	.00	243.75	.00	.00	7.31	251.06	251.06
MOW	52HP-WT, 9' ROTARY MOWER	JUL	1998	.50	.55	4.95	2.74	4.81	.00	.00	.17	7.72	12.67
HERBICIDE	52HP-WT, 100 GAL SPRAYER	JUL	1998	.40	.48	4.50	6.32	4.20	.00	29.58	.90	41.00	45.50
TREE TRAINING	HAND LABOR	JUL	1998	.00	25.00	.00	.00	187.50	.00	50.00	5.34	242.84	242.84
COVER SPRAY	52HP-WT, BLAST SPRAYER	JUL	1998	.50	.60	8.38	4.78	5.25	.00	30.07	.90	41.00	49.38
MOW	52HP-WT, 9' ROTARY MOWER	AUG	1998	.50	.55	4.95	2.74	4.81	.00	.00	.11	7.66	12.61
HERBICIDE	52HP-WT, 100 GAL SPRAYER	AUG	1998	.40	.48	4.50	6.32	4.20	.00	29.58	.60	40.70	45.20
HARVEST(27.2 BN)	PICKERS	SEP	1998	.00	.00	5.71	.00	.00	489.60	.00	3.67	493.27	498.98
HARVEST(36.1 BN)	PICKERS	SEP	1998	.00	.00	7.56	.00	.00	397.10	.00	2.98	400.08	407.64
HARVEST	52HP-WT, BACKFORK	SEP	1998	12.66	13.93	82.47	43.61	121.89	.00	.00	1.24	166.74	249.21
CHECK BINS	CHECKER FOR PICKING CREW	SEP	1998	.00	12.66	.00	.00	94.95	.00	.00	.71	95.66	95.66
BIN HANDLING	52HP-WT, BIN TRAILER	SEP	1998	6.33	6.96	49.73	26.39	60.90	.00	.00	.65	87.94	137.67
LOAD FRUIT	52HP-WT, FORKLIFT	SEP	1998	2.53	2.79	26.39	15.55	24.41	.00	.00	.30	40.26	66.64
HAUL FRUIT	CUSTOM HAULING	SEP	1998	.00	.00	.00	.00	.00	189.90	.00	1.42	191.32	191.32
MOW	52HP-WT, 9' ROTARY MOWER	OCT	1998	.50	.55	4.95	2.74	4.81	.00	.00	.00	7.55	12.50
HERBICIDE	52HP-WT, 100 GAL SPRAYER	OCT	1998	.40	.48	4.50	6.32	4.20	.00	85.92	.00	96.44	100.94
GOPHER CONTROL	HAND LABOR	ANN	1998	.00	2.00	.00	.00	15.00	.00	1.28	.73	17.01	17.01
MISC USE	1/2 TON PICKUP	ANN	1998	7.14	.00	36.45	23.42	.00	.00	.00	1.05	24.47	60.92
MISC USE	4-WHEEL ALL TERRAIN VEHICLE	ANN	1998	5.70	.00	12.50	5.74	.00	.00	.00	.26	6.00	18.51
MISC USE	MACHINE SHED & SHOP	ANN	1998	.00	.00	38.71	.71	.00	.00	.00	.03	.75	39.46
MISC USE	SHOP TOOLS	ANN	1998	.00	.00	15.29	.00	.00	.00	.00	.00	.00	15.29
OVERHEAD	UTILITIES, LEGAL, ACCTNG, ETC.	ANN	1998	.00	.00	.00	.00	.00	183.31	.00	.00	183.31	183.31
MANAGEMENT	OPERATOR MANAGEMENT	ANN	1998	.00	.00	250.00	.00	.00	.00	.00	.00	.00	250.00
LAND COST	INTEREST ON LAND	ANN	1998	.00	.00	350.00	.00	.00	.00	.00	.00	.00	350.00
TAXES	LAND	ANN	1998	.00	.00	72.05	.00	.00	.00	.00	.00	.00	72.05
INTEREST COST	INTEREST ON ESTABLISHMENT COST	ANN	1998	.00	.00	1627.22	.00	.00	.00	.00	.00	.00	1627.22
TOTAL PER ACRE				52.86	148.79	3146.05	361.84	1172.96	1463.66	761.71	89.32	3849.49	6995.54



**TABLE 2c5: MATERIALS AND SERVICES USED BY CONVENTIONAL PRACTICES  
- 1998.**

<b>OPERATION</b>		<b>MATERIAL AND/OR SERVICE</b>
Dormant Spray + Zinc	March	2.1 gals. of Superior Oil @ \$2.60/gal. 0.5 gal. of Zinc 10% @ \$8.25/gal. 4.0 pts. of Lorsban @ \$6.19/pt. 10.0 lbs. of Microthiol @ .93¢/lb.
Mildew Spray	April	10.0 lbs. of Microthiol @ .93¢/lb. 0.5 lb. of Procure @ \$51.90/lb.
Herbicide	April	0.5 gal. of Roundup @ \$59.15/gal.
Rent Beehive	April	1.0 beehive @ \$35.00/hive
Frost Control	April	Irrigation charge & electricity @ \$18.75/acre
Irrigate	Season	Irrigation charge & electricity @ \$150.00/acre
Hang Dispensers	Season	400 ties/acre @ 27.5¢/tie (\$110/acre)
Herbicide	May	0.5 gal. of Roundup @ \$59.15/gal.
Cover Spray	May	1.05 pts. of Lorsban @ \$6.19/pt.
Mildew Spray	May	10.0 lbs. of Microthiol @ .93¢/lb.
Thinning Spray	May	6.6 ozs. of Accel @ \$12.58/oz. <sup>a</sup>
Thinning Spray	May	6.6 ozs. of Accel @ \$12.58/oz. <sup>a</sup>
Foliar Fertilizer/ Mildew/Insecticide	May	2.0 gals. of 3-18-18 @ \$4.55/gal. 0.5 gal. of Zinc 10% @ \$8.25/gal. 5.0 lbs. of Solubor @ .80¢/lb. 5.0 ozs. of Rally @ \$5.20/oz. 2.0 lbs. of DiPel @ \$8.50/lb.
Cover Spray	June	2.0 lbs. of Guthion @ \$8.02/lb. 6.0 lbs. of calcium chloride @ .52¢/lb. 5.0 ozs. of Rally @ \$5.20/oz.
Herbicide	July	0.5 gal. of Roundup @ \$59.15/gal.
Tree Training	July	Tape & Twine @ \$50.00/acre
Cover Spray	July	2.0 gals. of 3-18-18 @ \$4.55/gal. 2.0 lbs. of Guthion @ \$8.02/lb. 6.0 lbs. of calcium chloride @ .52¢/lb. 1.0 pint of Trifol @ \$1.81/pt.
Herbicide	August	0.5 gal. of Roundup @ \$59.15/gal.
Harvest	September	27.2 bins of apples picked @ \$18.00/bin
Harvest	September	36.1 bins of apples picked @ \$11.00/bin
Haul Fruit	September	63.3 bins of apples @ \$3.00/bin

**TABLE 2c5: MATERIALS AND SERVICES USED BY CONVENTIONAL PRACTICES  
- 1998. (Continued)**

<b>OPERATION</b>		<b>MATERIAL AND/OR SERVICE</b>
Herbicide	October	0.5 gals. of Roundup @ \$59.15/gal. 2.5 lbs. of Solicam @ \$20.50/lb. 1.0 qt. of Simazine @ \$5.09/qt.
Gopher Control	Annual	1.0 lb. of Gopher Getter @ \$1.28/lb.
Overhead	Annual	5% variable cost.

<sup>a</sup>Accel may not be typically used in thinning Golden Delicious fruit, but was used at this site to achieve larger fruit size.

TABLE 3c5: ITEMIZED COST PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER CONVENTIONAL PRODUCTION PRACTICES - 1998.

	UNIT	PRICE OR COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
-----					
VARIABLE COSTS		\$		\$	
SUPERIOR OIL	GAL.	2.60	2.10	5.46	_____
ZINC 10%	GAL.	8.25	1.00	8.25	_____
LORSBAN	PINT	6.19	5.05	31.26	_____
MICROTHIOL	LB.	.93	30.00	27.90	_____
ROUNDUP	GAL.	59.15	2.50	147.88	_____
PROCURE	LB.	51.90	.50	25.95	_____
ACCEL	OZ.	12.58	13.20	166.06	_____
3-18-18	GAL.	4.55	4.00	18.20	_____
SOLUBOR	LB.	.80	5.00	4.00	_____
RALLY	OZ.	5.20	10.00	52.00	_____
DIPEL	LB.	8.50	2.00	17.00	_____
GUTHION	LB.	8.02	4.00	32.08	_____
CALCIUM CHLORIDE	LB.	.52	12.00	6.24	_____
TRIFOL	PT.	1.81	1.00	1.81	_____
SOLICAM	LB.	20.50	2.50	51.25	_____
SIMAZINE	QT.	5.09	1.00	5.09	_____
GOPHER GETTER	LB.	1.28	1.00	1.28	_____
RENT BEEHIVE	HIVE	35.00	1.00	35.00	_____
TAPE & TWINE	ACRE	50.00	1.00	50.00	_____
PHEROMONE DISPENSERS	DISP	.28	400.00	110.00	_____
CUSTOM PICKING	BIN	11.00	36.10	397.10	_____
CUSTOM PICKING	BIN	18.00	27.20	489.60	_____
CUSTOM HAULING	BIN	3.00	63.30	189.90	_____
IRR. CHG. & ELECT.	ACRE	168.75	1.00	168.75	_____
CASUAL LABOR	HOURL	7.50	103.16	773.70	_____
LABOR (TRAC/MACH)	HOURL	8.50	46.97	399.26	_____
TRACTOR REPAIR	ACRE	45.03	1.00	45.03	_____
TRACTOR FUEL/LUBE	ACRE	54.37	1.00	54.37	_____
MACHINERY REPAIRS	ACRE	171.66	1.00	171.66	_____
MACHINE FUEL/LUBE	ACRE	90.78	1.00	90.78	_____
INTEREST ON OP. CAP.	ACRE	89.33	1.00	89.33	_____
OVERHEAD	ACRE	183.31	1.00	183.31	_____
				-----	
TOTAL VARIABLE COST				3849.49	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	80.05	1.00	80.05	_____
TRACTOR INTEREST	ACRE	87.81	1.00	87.81	_____
TRACTOR INSURANCE	ACRE	5.85	1.00	5.85	_____
TRACTOR TAXES	ACRE	17.56	1.00	17.56	_____
MACHINE DEPRECIATION	ACRE	283.48	1.00	283.48	_____
MACHINE INTEREST	ACRE	302.06	1.00	302.06	_____
MACHINE INSURANCE	ACRE	20.08	1.00	20.08	_____
MACHINE TAXES	ACRE	49.88	1.00	49.88	_____
LAND TAX - YR 5	ACRE	72.05	1.00	72.05	_____
LAND COST	ACRE	350.00	1.00	350.00	_____
MANAGEMENT	ACRE	250.00	1.00	250.00	_____
INTEREST ON ESTAB.	ACRE	1627.22	1.00	1627.22	_____
				-----	
TOTAL FIXED COST				3146.05	_____
TOTAL COST				6995.54	_____
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TABLE 1c6: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER CONVENTIONAL PRODUCTION PRACTICES - 1999.

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
							\$	\$	\$	\$	\$	\$	\$
PRUNE	HAND LABOR	FEB	1999	.00	30.00	2.76	.00	225.00	.00	.00	13.50	238.50	241.26
DORM. SPY + ZINC	52HP-WT, BLAST SPRAYER	MAR	1999	.50	.60	8.38	4.78	5.25	.00	103.47	5.96	119.46	127.84
MILDEW/FOLIAR	52HP-WT, BLAST SPRAYER	APR	1999	.50	.60	8.38	4.78	5.25	.00	44.66	2.46	57.16	65.54
HERBICIDE	52HP-WT, 100 GAL SPRAYER	APR	1999	.40	.48	4.50	6.32	4.20	.00	29.58	1.80	41.90	46.40
RENT BEEHIVE	ONE BEEHIVE PER ACRE	APR	1999	.00	.00	.00	.00	.00	35.00	.00	1.58	36.58	36.58
FROST CONTROL	WIND MACHINE	APR	1999	.00	2.00	152.11	92.79	17.50	.00	.00	4.96	115.25	267.36
FROST CONTROL	FROST ALARM & THERMOMETERS	APR	1999	.00	.00	2.97	.00	.00	.00	.00	.00	.00	2.97
FROST CONTROL	UNDERTREE SPRINKLERS	APR	1999	.00	.00	74.90	10.00	.00	18.75	.00	1.29	30.04	104.94
IRRIGATE	SOLID SET UNDERTREE IRR SYSTEM	SEA	1999	.00	.00	203.03	50.00	.00	150.00	.00	9.00	209.00	412.03
IRRIGATE	4-WHEEL ATV W/ABOVE OPERATION	SEA	1999	10.00	10.00	21.94	10.08	87.50	.00	.00	4.39	101.97	123.90
HANG DISPENSERS	HAND LABOR	SEA	1999	.00	1.00	.00	.00	7.50	.00	110.00	5.29	122.79	122.79
HERBICIDE	52HP-WT, 100 GAL SPRAYER	MAY	1999	.40	.48	4.50	6.32	4.20	.00	29.58	1.50	41.60	46.10
MOW	52HP-WT, 9' ROTARY MOWER	MAY	1999	.50	.55	4.95	2.74	4.81	.00	.00	.28	7.83	12.78
COVER SPRAY	52HP-WT, BLAST SPRAYER	MAY	1999	.50	.60	8.38	4.78	5.25	.00	22.11	1.21	33.35	41.73
FOLIAR SPRAY	52HP-WT, BLAST SPRAYER	MAY	1999	.50	.60	8.38	4.78	5.25	.00	15.80	.97	26.80	35.18
THIN. SPRAY (2X)	52HP-WT, BLAST SPRAYER	MAY	1999	.50	.60	8.38	4.78	5.25	.00	166.06	6.60	182.69	191.07
INSECTICID SPRAY	52HP-WT, BLAST SPRAYER	MAY	1999	.50	.60	8.38	4.78	5.25	.00	40.42	1.89	52.35	60.73
MOW	52HP-WT, 9' ROTARY MOWER	JUN	1999	.50	.55	4.95	2.74	4.81	.00	.00	.23	7.78	12.72
HAND THINNING	HAND LABOR	JUN	1999	.00	32.50	.00	.00	243.75	.00	.00	7.31	251.06	251.06
COVER SPRAY	52HP-WT, BLAST SPRAYER	JUN	1999	.50	.60	8.38	4.78	5.25	.00	36.44	1.39	47.86	56.24
MOW	52HP-WT, 9' ROTARY MOWER	JUL	1999	.50	.55	4.95	2.74	4.81	.00	.00	.17	7.72	12.67
HERBICIDE	52HP-WT, 100 GAL SPRAYER	JUL	1999	.40	.48	4.50	6.32	4.20	.00	34.57	1.01	46.11	50.61
TREE TRAINING	HAND LABOR	JUL	1999	.00	25.00	.00	.00	187.50	.00	50.00	5.34	242.84	242.84
COVER SPRAY	52HP-WT, BLAST SPRAYER	JUL	1999	.50	.60	8.38	4.78	5.25	.00	61.04	1.60	72.67	81.05
MOW	52HP-WT, 9' ROTARY MOWER	AUG	1999	.50	.55	4.95	2.74	4.81	.00	.00	.11	7.66	12.61
HERBICIDE	52HP-WT, 100 GAL SPRAYER	AUG	1999	.40	.48	4.50	6.32	4.20	.00	29.58	.60	40.70	45.20
HARVEST(7.7 BIN)	PICKERS	SEP	1999	.00	.00	1.46	.00	.00	84.70	.00	.64	85.34	86.80
HARVEST(62.5 BN)	PICKERS	SEP	1999	.00	.00	11.81	.00	.00	1125.00	.00	8.44	1133.44	1145.25
HARVEST	52HP-WT, BACKFORK	SEP	1999	14.04	15.44	91.46	48.36	135.10	.00	.00	1.38	184.84	276.30
CHECK BINS	CHECKER FOR PICKING CREW	SEP	1999	.00	14.04	.00	.00	105.30	.00	.00	.79	106.09	106.09
BIN HANDLING	52HP-WT, BIN TRAILER	SEP	1999	7.02	7.72	55.15	29.26	67.55	.00	.00	.73	97.54	152.68
LOAD FRUIT	52HP-WT, FORKLIFT	SEP	1999	2.81	3.09	29.31	17.27	27.04	.00	.00	.33	44.64	73.94
HAUL FRUIT	CUSTOM HAULING	SEP	1999	.00	.00	.00	.00	.00	210.60	.00	1.58	212.18	212.18
MOW	52HP-WT, 9' ROTARY MOWER	OCT	1999	.50	.55	4.95	2.74	4.81	.00	.00	.00	7.55	12.50
HERBICIDE	52HP-WT, 100 GAL SPRAYER	OCT	1999	.40	.48	4.50	6.32	4.20	.00	85.92	.00	96.44	100.94
GOPHER CONTROL	HAND LABOR	ANN	1999	.00	2.00	.00	.00	15.00	.00	1.28	.73	17.01	17.01
MISC USE	1/2 TON PICKUP	ANN	1999	7.14	.00	36.45	23.42	.00	.00	.00	1.05	24.47	60.92
MISC USE	4-WHEEL ALL TERRAIN VEHICLE	ANN	1999	5.70	.00	12.50	5.74	.00	.00	.00	.26	6.00	18.51
MISC USE	MACHINE SHED & SHOP	ANN	1999	.00	.00	38.71	.71	.00	.00	.00	.03	.75	39.46
MISC USE	SHOP TOOLS	ANN	1999	.00	.00	15.29	.00	.00	.00	.00	.00	.00	15.29
LAND COST	INTEREST ON LAND	ANN	1999	.00	.00	350.00	.00	.00	.00	.00	.00	.00	350.00
OVERHEAD	UTILITIES, LEGAL, ACCTNG, ETC.	ANN	1999	.00	.00	.00	.00	.00	207.90	.00	.00	207.90	207.90
MANAGEMENT	OPERATOR MANAGEMENT	ANN	1999	.00	.00	250.00	.00	.00	.00	.00	.00	.00	250.00
TAXES	LAND	ANN	1999	.00	.00	98.25	.00	.00	.00	.00	.00	.00	98.25
INTEREST COST	INTEREST ON ESTABLISHMENT COST	ANN	1999	.00	.00	1930.15	.00	.00	.00	.00	.00	.00	1930.15
TOTAL PER ACRE				55.21	152.74	3492.51	371.19	1100.50	1937.25	860.51	96.42	4365.87	7858.38

**TABLE 2c6: MATERIALS AND SERVICES USED BY CONVENTIONAL PRACTICES  
- 1999.**

OPERATION		MATERIAL AND/OR SERVICE
Dormant Spray + Zinc	March	4.0 gals. of Superior Oil @ \$2.60/gal. 1.0 gals. of Zinc 10% @ \$8.25/gal. 8.0 pts. of Lorsban @ \$6.19/pt. 5.0 ozs. of Rally @ \$5.20/oz. 10.0 lbs. of Microthiol @ .93¢/lb.
Foliar Fertilizer/ Mildew Spray	April	0.5 gal. of Zinc 10% @ \$8.25/gal. 5.0 lbs. of Solubor @ 80¢/lb. 5.0 ozs. of Rally @ \$5.20/oz. 8.0 lbs. of urea @ 18¢/lb. 2.0 gals of 3-18-18 @ \$4.55/gal.
Herbicide	April	0.5 gal. of Roundup @ \$59.15/gal.
Rent Beehive	April	1.0 beehive @ \$35.00/hive
Frost Control	April	Irrigation charge & electricity @ \$18.75/acre
Irrigate	Season	Irrigation charge & electricity @ \$150.00/acre
Hang Dispensers	Season	400 ties/acre @ 27.5¢/tie (\$110/acre)
Herbicide	May	0.5 gal. of Roundup @ \$59.15/gal.
Cover Spray	May	2.0 lbs. of Guthion @ \$8.02/lb. 1.5 pints of Sevin @ \$4.05/pt.
Foliar Spray	May	4.0 gals. of lime sulfur @ \$3.95/gal.
Thinning Spray	May	6.6 ozs. of Accel @ \$12.58/oz. <sup>a</sup>
Thinning Spray	May	6.6 ozs. of Accel @ \$12.58/oz. <sup>a</sup>
Insecticide	May	1.5 gals. of Captan 4L @ \$26.95/gal.
Cover Spray	June	8.0 ozs. of Provado @ \$3.78/gal. 6.0 lbs. of calcium chloride @ .52¢/lb. 4.0 ozs. of Sylgard @ 77¢/oz.
Herbicide	July	0.5 gal. of Roundup @ \$59.15/gal. 20 ozs. of R-11 @ 12¢/gal. 20 ozs. of Cayuse @ 13¢/oz.
Tree Training	July	Tape & Twine @ \$50.00/acre
Cover Spray	July	6.0 ozs. of Success @ \$6.21/oz. 2.0 lbs. of Guthion @ \$8.02/lb. 6.0 lbs. of calcium chloride @ .52¢/lb. 6.0 ozs. of Sylgard @ 77¢/oz.
Herbicide	August	0.5 gal. of Roundup @ \$59.15/gal.
Harvest	September	7.7 bins of apples picked @ \$11.00/bin
Harvest	September	62.5 bins of apples picked @ \$18.00/bin

**TABLE 2c6: MATERIALS AND SERVICES USED BY CONVENTIONAL PRACTICES  
- 1999. (Continued)**

OPERATION		MATERIAL AND/OR SERVICE
Haul Fruit	September	70.2 bins of apples @ \$3.00/bin
Herbicide	October	0.5 gal. of Roundup @ \$59.15/gal. 2.5 lbs. of Solicam @ \$20.50/lb. 1.0 qt. of Simazine @ \$5.09/qt.
Gopher Control	Annual	1.0 lb. of Gopher Getter @ \$1.28/lb.
Overhead	Annual	5% variable cost.

<sup>a</sup>Accel may not be typically used in thinning Golden Delicious fruit, but was used at this site to achieve larger fruit size.

TABLE 3c6: ITEMIZED COST PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER CONVENTIONAL PRODUCTION PRACTICES - 1999.

	UNIT	PRICE OR COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
-----					
VARIABLE COSTS		\$		\$	
SUPERIOR OIL	GAL.	2.60	4.00	10.40	_____
ZINC 10%	GAL.	8.25	1.50	12.38	_____
LORSBAN	PINT	6.19	8.00	49.52	_____
MICROTHIOL	LB.	.93	10.00	9.30	_____
RALLY	OZ.	5.20	10.00	52.00	_____
ROUNDUP	GAL.	59.15	2.50	147.88	_____
SOLUBOR	LB.	.80	5.00	4.00	_____
UREA	LB.	.18	8.00	1.44	_____
3-18-18	GAL.	4.55	2.00	9.10	_____
ACCEL	OZ.	12.58	13.20	166.06	_____
GUTHION	LB.	8.02	4.00	32.08	_____
SEVIN	PINT	4.05	1.50	6.07	_____
CAPTAN 4L	GAL.	26.95	1.50	40.42	_____
LIME SULFUR	GAL.	3.95	4.00	15.80	_____
PROVADO	OZ.	3.78	8.00	30.24	_____
CALCIUM CHLORIDE	LB.	.52	12.00	6.24	_____
SYLGARD	OZ.	.77	10.00	7.70	_____
SUCCESS	OZ.	6.21	6.00	37.26	_____
R-11	OZ.	.12	20.00	2.40	_____
CAYUSE	OZ.	.13	20.00	2.60	_____
SOLICAM	LB.	20.50	2.50	51.25	_____
SIMAZINE	QT.	5.09	1.00	5.09	_____
GOPHER GETTER	LB.	1.28	1.00	1.28	_____
RENT BEEHIVE	HIVE	35.00	1.00	35.00	_____
TAPE & TWINE	ACRE	50.00	1.00	50.00	_____
PHEROMONE DISPENSERS	DISP	.28	400.00	110.00	_____
IRR. CHG. & ELECT.	ACRE	168.75	1.00	168.75	_____
CUSTOM PICKING	BIN	11.00	7.70	84.70	_____
CUSTOM PICKING	BIN	18.00	62.50	1125.00	_____
CUSTOM HAULING	BIN	3.00	70.20	210.60	_____
CASUAL LABOR	HOURL	7.50	104.54	784.05	_____
LABOR (TRAC/MACH)	HOURL	8.50	49.62	421.75	_____
TRACTOR REPAIR	ACRE	48.55	1.00	48.55	_____
TRACTOR FUEL/LUBE	ACRE	58.63	1.00	58.63	_____
MACHINERY REPAIRS	ACRE	173.22	1.00	173.22	_____
MACHINE FUEL/LUBE	ACRE	90.78	1.00	90.78	_____
INTEREST ON OP. CAP.	ACRE	96.42	1.00	96.42	_____
OVERHEAD	ACRE	207.90	1.00	207.90	_____
TOTAL VARIABLE COST				4365.87	_____
-----					
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	86.32	1.00	86.32	_____
TRACTOR INTEREST	ACRE	94.68	1.00	94.68	_____
TRACTOR INSURANCE	ACRE	6.31	1.00	6.31	_____
TRACTOR TAXES	ACRE	18.94	1.00	18.94	_____
MACHINE DEPRECIATION	ACRE	284.63	1.00	284.63	_____
MACHINE INTEREST	ACRE	303.02	1.00	303.02	_____
MACHINE INSURANCE	ACRE	20.14	1.00	20.14	_____
MACHINE TAXES	ACRE	50.07	1.00	50.07	_____
LAND TAX - MATURE	ACRE	98.25	1.00	98.25	_____
LAND COST	ACRE	350.00	1.00	350.00	_____
MANAGEMENT	ACRE	250.00	1.00	250.00	_____
INTEREST ON ESTAB.	ACRE	1930.15	1.00	1930.15	_____
TOTAL FIXED COST				3492.51	_____
TOTAL COST				7858.38	_____
-----					

Table 4c. Machinery and Building Complement

Machine Name	Purchase Price (\$)	Years of Use	Salvage Value (\$)	Annual Repair Cost (\$)	Annual Hours of Use	Gallons of Fuel Use Per Hour
55HP-Wheel Tractor	21,000	15	5,000	600	400	1.5 Diesel
4WD-ATV	6,000	10	1,500	150	400	.5 Gas
Pickup	25,000	15	3,000	450	600	2.0 Gas
6' Rototiller	3,500	10	350	580	150	
100 Gallon Sprayer	2,000	10	500	750	60	
Backfork	200	20	0	20	150	
PTO Blast Sprayer	14,000	10	2,800	1,250	200	
Front-end Loader	5,000	15	1,000	425	150	
Trailer	2,000	20	500	100	100	
Bin Trailer	3,500	10	700	300	350	
9' Rotary Mower	3,500	10	500	325	150	
Pruning Tools	30	4	0	0	100	
Picking Equipment	17	3	0	0	50	
Machine Shed & Shop	30,000	30	0	50	70 acres	
Shop Tools	10,000	20	0	0	70 acres	
Wind Machine	16,000	30	3,200	300	40 hours over 10 acres	13.0 Propane
Alarm & Thermometers	205	10	0	0	10 acres	
Pump & Mainline	1,000	30	0	20	1 acre	
Irrigation System	1,150	20	0	30	1 acre	
Holding Pond	7,000	20	0	100	10 acres	



TABLE 5c: HOURLY AND PER ACRE MACHINERY COSTS

MACHINERY	PURCHASE PRICE	YEARS TO TRADE	ANNUAL HOURS	DEPREC-IATION	INTER-EST	INSUR-ANCE	TAXES	HOUSING	TOTAL FIXED COST	REPAIR	FUEL AND LUBE	TOTAL VARIABLE COST	TOTAL COST
	\$								-----COST PER HOUR-----				
52HP-WHEEL TRACTOR	21,000.00	15	400	2.67	2.93	.20	.59	.00	6.37	1.50	1.81	3.31	9.68
4-WHEEL ATV	6,000.00	10	400	1.13	.84	.06	.17	.00	2.19	.38	.63	1.01	3.20
PICKUP	25,000.00	15	600	2.44	2.10	.14	.42	.00	5.10	.75	2.53	3.28	8.38
6' ROTOTILLER	3,500.00	10	150	2.10	1.16	.08	.23	.00	3.56	3.87	.00	3.87	7.43
100 GAL SPRAYER	2,000.00	10	60	2.50	1.88	.13	.38	.00	4.88	12.50	.00	12.50	17.37
BACKFORK	200.00	20	150	.07	.06	.00	.01	.00	.14	.13	.00	.13	.28
PTO BLAST SPRAYER	14,000.00	10	200	5.60	3.78	.25	.76	.00	10.39	6.25	.00	6.25	16.64
FRONT-END LOADER	5,000.00	15	150	1.78	1.80	.12	.36	.00	4.06	2.83	.00	2.83	6.89
TRAILER	2,000.00	20	100	.75	1.13	.08	.23	.00	2.18	1.00	.00	1.00	3.18
BIN TRAILER	3,500.00	10	350	.80	.54	.04	.11	.00	1.48	.86	.00	.86	2.34
9' ROTARY MOWER	3,500.00	10	150	2.00	1.20	.08	.24	.00	3.52	2.17	.00	2.17	5.69
PRUNING TOOLS	30.00	4	100	.08	.01	.00	.00	.00	.09	.00	.00	.00	.09
PICKING EQUIPMENT	17.00	3	50	.11	.02	.00	.00	.00	.13	.00	.00	.00	.13
									-----COST PER ACRE-----				
MACHINE SHED & SHOP	30,000.00	30	-	14.29	19.29	1.29	3.86	.00	38.71	.71	.00	.71	39.43
SHOP TOOLS	10,000.00	20	-	7.14	6.43	.43	1.29	.00	15.29	.00	.00	.00	15.29
WIND MACHINE	16,000.00	30	-	42.67	86.40	5.76	17.28	.00	152.11	30.00	62.79	92.79	244.90
ALARM & THEMOM.	205.00	10	-	2.05	.92	.00	.00	.00	2.97	.00	.00	.00	2.97
PUMP & MAINLINES	1,000.00	30	-	33.33	45.00	3.00	9.00	.00	90.33	20.00	.00	20.00	110.33
IRRIGATION SYSTEM	1,150.00	20	-	57.50	51.75	3.45	.00	.00	112.70	30.00	.00	30.00	142.70
HOLDING POND	7,000.00	20	-	35.00	31.50	2.10	6.30	.00	74.90	10.00	.00	10.00	84.90

## Appendix II

Cost of Establishing a High Density

Golden Delicious Apple Orchard

Using Integrated Production Practices

TABLE 111: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER INTEGRATED PRODUCTION PRACTICES - 1994.

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	VARIABLE COST						TOTAL VARIABLE COST	TOTAL COST
						TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
						\$	\$	\$	\$	\$	\$	\$	\$
SOIL SAMPLE	CUSTOM HIRE	FEB	1994	.00	.00	.00	.00	.00	12.00	.00	.72	12.72	12.72
RIP LAND	CUSTOM HIRE	FEB	1994	.00	.00	.00	.00	.00	100.00	.00	6.00	106.00	106.00
CLEAN UP & DISK	CUSTOM HIRE	FEB	1994	.00	.00	.00	.00	.00	150.00	.00	9.00	159.00	159.00
LAYOUT & STAKE	HAND LABOR	FEB	1994	.00	4.00	.00	.00	30.00	.00	5.00	2.10	37.10	37.10
FERTILIZE	52HP-WT, TRAILER W/HAND LABOR	MAR	1994	2.00	6.30	17.09	8.62	49.87	.00	51.43	5.77	115.69	132.79
FERTILIZE	52HP-WT, TRAILER W/HAND LABOR	MAR	1994	2.00	6.30	17.09	8.62	49.87	.00	35.00	4.91	98.41	115.50
PLANT TREES	CUSTOM PLANTED	MAR	1994	.00	.00	.00	.00	.00	363.20	3632.00	209.75	4204.95	4204.95
COVER CROP PREP	52HP-WT, ROTOTILLER	MAR	1994	2.50	2.75	24.84	17.94	24.06	.00	.00	2.21	44.21	69.05
SEED COVER CROP	52HP-WT, RENTED SEEDER	MAR	1994	1.10	1.21	7.01	3.64	10.59	10.00	18.75	2.26	45.24	52.25
PRUNE	HAND LABOR (1 PERSON)	MAR	1994	.00	1.00	.09	.00	7.50	.00	.00	.39	7.89	7.99
APPLY MULCH	52HP-WT, TRAILER W/HAND LABOR	MAR	1994	2.00	6.30	17.09	8.62	49.87	.00	1025.00	56.88	1140.38	1157.47
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	APR	1994	.50	.60	8.38	4.78	5.25	.00	26.00	1.62	37.65	46.03
TREE TRAINING	HAND LABOR	SEA	1994	.00	20.00	.00	.00	150.00	.00	24.00	7.83	181.83	181.83
IRRIGATE	SOLID SET UNDERTREE IRR SYSTEM	SEA	1994	.00	.00	203.03	50.00	.00	150.00	.00	9.00	209.00	412.03
IRRIGATE	4-WHEEL ATV W/ABOVE OPERATION	SEA	1994	10.00	10.00	21.94	10.08	87.50	.00	.00	4.39	101.97	123.90
INSTALL TRELLIS	HAND LABOR	MAY	1994	.00	60.00	.00	.00	468.75	.00	650.00	41.95	1160.70	1160.70
TIE LEADERS	HAND LABOR	MAY	1994	.00	15.00	.00	.00	.00	.00	6.00	4.44	122.94	122.94
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	MAY	1994	.50	.60	8.38	4.78	5.25	.00	25.95	1.35	37.33	45.71
HOE AROUND TREES	HAND LABOR	JUN	1994	.00	20.00	.00	.00	150.00	.00	.00	4.50	154.50	154.50
MOW ORCHARD	52HP-WT, 9' ROTARY MOWER	JUL	1994	.50	.55	4.95	2.74	4.81	.00	.00	.17	7.72	12.67
COVER SPRAY	52HP-WT, BLAST SPRAYER	JUL	1994	.50	.60	8.38	4.78	5.25	.00	3.78	.31	14.12	22.50
MOW ORCHARD	52HP-WT, 9' ROTARY MOWER	AUG	1994	.50	.55	4.95	2.74	4.81	.00	.00	.11	7.66	12.61
HERBICIDE	52HP-WT, 100 GAL. SPRAYER	AUG	1994	.40	.48	4.50	6.32	4.20	.00	29.58	.60	40.70	45.20
MOW ORCHARD	52HP-WT, 9' ROTARY MOWER	OCT	1994	.50	.55	4.95	2.74	4.81	.00	.00	.00	7.55	12.50
GOPHER CONTROL	HAND LABOR	ANN	1994	.00	2.00	.00	.00	15.00	.00	1.28	.73	17.01	17.01
MISC USE	1/2 TON PICKUP	ANN	1994	7.14	.00	36.45	23.42	.00	.00	.00	1.05	24.47	60.92
MISC USE	4-WHEEL ALL TERRAIN VEHICLE	ANN	1994	5.70	.00	12.50	5.74	.00	.00	.00	.26	6.00	18.51
MISC USE	MACH SHED & SHOP	ANN	1994	.00	.00	38.71	.71	.00	.00	.00	.03	.75	39.46
MISC USE	SHOP TOOLS	ANN	1994	.00	.00	15.29	.00	.00	.00	.00	.00	.00	15.29
OVERHEAD	UTILITIES, LEGAL, ACCTNG, ETC.	ANN	1994	.00	.00	.00	.00	.00	405.18	.00	.00	405.18	405.18
MANAGEMENT	OPERATOR MANAGEMENT	ANN	1994	.00	.00	250.00	.00	.00	.00	.00	.00	.00	250.00
LAND COST	INTEREST ON LAND	ANN	1994	.00	.00	350.00	.00	.00	.00	.00	.00	.00	350.00
TAXES	LAND	ANN	1994	.00	.00	47.16	.00	.00	.00	.00	.00	.00	47.16
TOTAL PER ACRE				35.84	158.79	1102.77	166.29	1239.91	1190.38	5533.77	378.34	8508.69	9611.46

**TABLE 2i1: MATERIALS AND SERVICES USED BY INTEGRATED PRACTICES  
- 1994.**

OPERATION		MATERIAL AND/OR SERVICE
Soil Sample	February	Custom hire @ \$12.00/acre
Rip Land	February	Custom hire @ \$100.00/acre
Cleanup & Disk	February	Custom hire @ \$150.00/acre
Layout & Stake	February	Layout & state material @ \$5.00/acre
Fertilize	March	302.5 lbs. calcium nitrate @ 17¢/lb
Fertilize	March	0.5 ton of compost @ \$70.00/ton
Plant Trees	March	908 Standard Golden Delicious trees @ \$4.00/tree Custom plant 908 trees @ 40¢/tree
Seed Cover Crop	March	Rented grass seeder @ \$10.00/acre 15.0 lbs. of Companion seed @ \$1.25/lb
Mulch	March	205 cubic yards of wood chips @ \$5.00/cubic yard
Mildew Spray	April	5.0 ozs. Rally @ \$5.20/oz.
Tree Training	Season	Tree training material @ \$24.00/acre
Irrigate	Season	Irrigation charge & electricity @ \$150.00/acre
Install Trellis	May	Trellis material @ \$650.00/acre
Tie Leaders	May	Tape & twine @ \$6.00/acre
Mildew Spray	May	0.5 lb. of Procure @ \$51.90/lb.
Cover Spray	July	1.0 oz. of Provado @ \$3.78/oz.
Herbicide	August	0.5 gal. of Roundup @ \$59.15/gal.
Gopher Control	Annual	1.0 lb. of Gopher Getter Bait @ \$1.28/lb.
Overhead	Annual	5% variable cost

TABLE 3i1: ITEMIZED COST PER ACRE FOR ESTABLISHING A HIGH DENSITY  
GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER INTEGRATED  
PRODUCTION PRACTICES - 1994.

	UNIT	PRICE OR COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
-----					
VARIABLE COSTS		\$		\$	
SOIL SAMPLE	ACRE	12.00	1.00	12.00	_____
CLEAN-UP & DISK	ACRE	150.00	1.00	150.00	_____
CUSTOM RIPPING	ACRE	100.00	1.00	100.00	_____
LAYOUT & STAKE MATER.	ACRE	5.00	1.00	5.00	_____
COMPOST	TON	70.00	.50	35.00	_____
GOLDEN TREES	TREE	4.00	908.00	3632.00	_____
CUSTOM PLANT TREES	TREE	.40	908.00	363.20	_____
COMPANION SEED	LB.	1.25	15.00	18.75	_____
RENT SEEDER	ACRE	10.00	1.00	10.00	_____
MULCH	CUYD	5.00	205.00	1025.00	_____
TRELLIS MATERIAL	ACRE	650.00	1.00	650.00	_____
CALCIUM NITRATE	LB.	.17	302.50	51.43	_____
RALLY	OZ.	5.20	5.00	26.00	_____
PROCURE	LB.	51.90	.50	25.95	_____
PROVADO	OZ.	3.78	1.00	3.78	_____
ROUNDUP	GAL.	59.15	.50	29.58	_____
GOPHER GETTER	LB.	1.28	1.00	1.28	_____
TREE TRAIN MATERIAL	ACRE	24.00	1.00	24.00	_____
TAPE & TWINE	ACRE	6.00	1.00	6.00	_____
IRR. CHG. & ELECT.	ACRE	150.00	1.00	150.00	_____
CASUAL LABOR	HOUR	7.50	119.60	897.00	_____
LABOR (TRAC/MACH)	HOUR	8.50	40.34	342.91	_____
TRACTOR REPAIR	ACRE	19.50	1.00	19.50	_____
TRACTOR FUEL/LUBE	ACRE	23.55	1.00	23.55	_____
MACHINERY REPAIRS	ACRE	95.25	1.00	95.25	_____
MACHINE FUEL/LUBE	ACRE	27.99	1.00	27.99	_____
INTEREST ON OP. CAP.	ACRE	378.35	1.00	378.35	_____
OVERHEAD	ACRE	405.18	1.00	405.18	_____
				-----	
TOTAL VARIABLE COST				8508.69	_____
-----					
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	34.67	1.00	34.67	_____
TRACTOR INTEREST	ACRE	38.03	1.00	38.03	_____
TRACTOR INSURANCE	ACRE	2.54	1.00	2.54	_____
TRACTOR TAXES	ACRE	7.61	1.00	7.61	_____
MACHINE DEPRECIATION	ACRE	169.60	1.00	169.60	_____
MACHINE INTEREST	ACRE	168.58	1.00	168.58	_____
MACHINE INSURANCE	ACRE	11.24	1.00	11.24	_____
MACHINE TAXES	ACRE	23.37	1.00	23.37	_____
LAND TAX - YR 1	ACRE	47.16	1.00	47.16	_____
LAND COST	ACRE	350.00	1.00	350.00	_____
MANAGEMENT	ACRE	250.00	1.00	250.00	_____
				-----	
TOTAL FIXED COST				1102.77	_____
				-----	
TOTAL COST				9611.46	_____
-----					

TABLE 1i2: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER INTEGRATED PRODUCTION PRACTICES - 1995.

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
PRUNE	HAND LABOR (1 PERSON)	FEB	1995	.00	6.20	.57	.00	46.50	.00	.00	2.79	49.29	49.86
DORM. SPY + ZINC	52HP-WT, BLAST SPRAYER	MAR	1995	.50	.60	8.38	4.78	5.25	.00	6.85	.89	17.77	26.15
FERTILIZE	52HP-WT, TRAILER W/HAND LABOR	APR	1995	2.00	6.30	17.09	8.62	49.87	.00	45.31	4.67	108.47	125.57
FERTILIZE	52HP-WT, TRAILER W/HAND LABOR	APR	1995	2.00	6.30	17.09	8.62	49.87	.00	35.00	4.21	97.70	114.80
FOLIAR SPRAY	52HP-WT, BLAST SPRAYER	APR	1995	.50	.60	8.38	4.78	5.25	.00	9.82	.89	20.74	29.12
IRRIGATE	SOLID SET UNDERTREE IRR SYSTEM	SEA	1995	.00	.00	203.03	50.00	.00	150.00	.00	9.00	209.00	412.03
IRRIGATE	4-WHEEL ATV W/ABOVE OPERATION	SEA	1995	10.00	10.00	21.94	10.08	87.50	.00	.00	4.39	101.97	123.90
MOW	52HP-WT, 9' ROTARY MOWER	MAY	1995	.50	.55	4.95	2.74	4.81	.00	.00	.28	7.83	12.78
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	MAY	1995	.50	.60	8.38	4.78	5.25	.00	26.00	1.35	37.38	45.76
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	MAY	1995	.50	.60	8.38	4.78	5.25	.00	9.30	.72	20.06	28.44
HERBICIDE	52HP-WT, 100 GAL SPRAYER	MAY	1995	.40	.48	4.50	6.32	4.20	.00	29.58	1.50	41.60	46.10
TREE TRAINING	HAND LABOR	MAY	1995	.00	60.00	.00	.00	468.75	.00	37.50	18.98	525.23	525.23
MOW	52HP-WT, 9' ROTARY MOWER	JUN	1995	.50	.55	4.95	2.74	4.81	.00	.00	.23	7.78	12.72
COVER SPRAY	52HP-WT, BLAST SPRAYER	JUN	1995	.50	.60	8.38	4.78	5.25	.00	16.04	.78	26.85	35.23
MOW	52HP-WT, 9' ROTARY MOWER	JUL	1995	.50	.55	4.95	2.74	4.81	.00	.00	.17	7.72	12.67
TREE TRAINING	HAND LABOR	JUL	1995	.00	20.00	.00	.00	156.25	.00	12.50	3.80	172.55	172.55
COVER SPRAY (2X)	52HP-WT, BLAST SPRAYER	JUL	1995	.50	.60	8.38	4.78	5.25	.00	32.08	.95	43.06	51.44
MOW	52HP-WT, 9' ROTARY MOWER	AUG	1995	.50	.55	4.95	2.74	4.81	.00	.00	.11	7.66	12.61
COVER SPRAY	52HP-WT, BLAST SPRAYER	AUG	1995	.50	.60	8.38	4.78	5.25	.00	16.04	.39	26.46	34.84
COVER SPRAY	52HP-WT, BLAST SPRAYER	SEP	1995	.50	.60	8.38	4.78	5.25	.00	16.04	.20	26.27	34.65
MOW	52HP-WT, 9' ROTARY MOWER	OCT	1995	.50	.55	4.95	2.74	4.81	.00	.00	.00	7.55	12.50
GOPHER CONTROL	HAND LABOR	ANN	1995	.00	2.00	.00	.00	15.00	.00	1.28	.73	17.01	17.01
MISC USE	1/2 TON PICKUP	ANN	1995	7.14	.00	36.45	23.42	.00	.00	.00	1.05	24.47	60.92
MISC USE	4-WHEEL ALL TERRAIN VEHICLE	ANN	1995	5.70	.00	12.50	5.74	.00	.00	.00	.26	6.00	18.51
MISC USE	MACHINE SHED & SHOP	ANN	1995	.00	.00	38.71	.71	.00	.00	.00	.03	.75	39.46
MISC USE	SHOP TOOLS	ANN	1995	.00	.00	15.29	.00	.00	.00	.00	.00	.00	15.29
OVERHEAD	UTILITIES, LEGAL, ACCTNG, ETC.	ANN	1995	.00	.00	.00	.00	.00	80.56	.00	.00	80.56	80.56
MANAGEMENT	OPERATOR MANAGEMENT	ANN	1995	.00	.00	250.00	.00	.00	.00	.00	.00	.00	250.00
LAND COST	INTEREST ON LAND	ANN	1995	.00	.00	350.00	.00	.00	.00	.00	.00	.00	350.00
TAXES	LAND	ANN	1995	.00	.00	49.78	.00	.00	.00	.00	.00	.00	49.78
INTEREST COST	INTEREST ON 1ST YR ESTAB COST	ANN	1995	.00	.00	865.03	.00	.00	.00	.00	.00	.00	865.03
TOTAL PER ACRE				34.74	135.50	1973.76	165.46	944.00	230.56	293.33	58.39	1691.74	3665.50

**TABLE 2i2: MATERIALS AND SERVICES USED BY INTEGRATED PRACTICES  
- 1995.**

OPERATION		MATERIAL AND/OR SERVICE
Dormant Spray + Zinc	March	1.05 gals. of Superior Oil @ \$2.60/gal. 0.5 gal. of Zinc 10% @ \$8.25/gal.
Fertilize	April	266.5 lbs. of calcium nitrate @ 17¢/lb.
Fertilize	April	0.5 ton of compost @ \$70.00/ton
Foliar Spray	April	2.0 gals. of 3-18-18 @ \$4.55/gal. 4.0 lbs. of urea @ 18¢/lb.
Irrigate	Season	Irrigation charge and electricity @ \$150.00/acre
Mildew Spray	May	5.0 ozs. of Rally @ \$5.20/oz.
Mildew Spray	May	10.0 lbs. of Microthiol @ 93¢/lb.
Herbicide	May	0.5 gal. of Roundup @ \$59.15/gal.
Tree Training	May	Tape & twine @ \$37.50/acre
Cover Spray	June	2.0 lbs. of Guthion @ \$8.02/lb.
Tree Training	July	Tape & twine @ \$12.50/acre
Cover Spray	July	2.0 lbs. of Guthion @ \$8.02/lb.
Cover Spray	July	2.0 lbs. of Guthion @ \$8.02/lb.
Cover Spray	August	2.0 lbs. of Guthion @ \$8.02/lb.
Cover Spray	September	2.0 lbs. of Guthion @ \$8.02/lb.
Gopher Control	Annual	1.0 lb. of Gopher Getter Bait @ \$1.28/lb.
Overhead	Annual	5% variable cost

TABLE 3i2: ITEMIZED COST PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER INTEGRATED PRODUCTION PRACTICES - 1995.

	UNIT	PRICE OR COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
-----					
VARIABLE COSTS		\$		\$	
SUPERIOR OIL	GAL.	2.60	1.05	2.73	_____
ZINC 10%	GAL.	8.25	.50	4.12	_____
COMPOST	TON	70.00	.50	35.00	_____
3-18-18	GAL.	4.55	2.00	9.10	_____
UREA	LB.	.18	4.00	.72	_____
CALCIUM NITRATE	LB.	.17	266.50	45.31	_____
MICROTHIOL	LB.	.93	10.00	9.30	_____
ROUNDUP	GAL.	59.15	.50	29.58	_____
RALLY	OZ.	5.20	5.00	26.00	_____
GUTHION	LB.	8.02	10.00	80.20	_____
GOPHER GETTER	LB.	1.28	1.00	1.28	_____
TAPE & TWINE	ACRE	50.00	1.00	50.00	_____
IRR. CHG. & ELECT.	ACRE	150.00	1.00	150.00	_____
CASUAL LABOR	HOUR	7.50	76.60	574.50	_____
LABOR (TRAC/MACH)	HOUR	8.50	43.47	369.50	_____
TRACTOR REPAIR	ACRE	16.35	1.00	16.35	_____
TRACTOR FUEL/LUBE	ACRE	19.74	1.00	19.74	_____
MACHINERY REPAIRS	ACRE	101.37	1.00	101.37	_____
MACHINE FUEL/LUBE	ACRE	27.98	1.00	27.98	_____
INTEREST ON OP. CAP.	ACRE	58.39	1.00	58.39	_____
OVERHEAD	ACRE	80.56	1.00	80.56	_____
				-----	
TOTAL VARIABLE COST				1691.74	_____
-----					
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	29.07	1.00	29.07	_____
TRACTOR INTEREST	ACRE	31.88	1.00	31.88	_____
TRACTOR INSURANCE	ACRE	2.13	1.00	2.13	_____
TRACTOR TAXES	ACRE	6.38	1.00	6.38	_____
MACHINE DEPRECIATION	ACRE	179.24	1.00	179.24	_____
MACHINE INTEREST	ACRE	174.16	1.00	174.16	_____
MACHINE INSURANCE	ACRE	11.61	1.00	11.61	_____
MACHINE TAXES	ACRE	24.48	1.00	24.48	_____
LAND TAX - YR 2	ACRE	49.78	1.00	49.78	_____
LAND COST	ACRE	350.00	1.00	350.00	_____
MANAGEMENT	ACRE	250.00	1.00	250.00	_____
INTEREST ON ESTAB.	ACRE	865.03	1.00	865.03	_____
				-----	
TOTAL FIXED COST				1973.76	_____
-----					
TOTAL COST				3665.50	_____
-----					





**TABLE 2i3: MATERIALS AND SERVICES USED BY INTEGRATED PRACTICES  
- 1996.**

<b>OPERATION</b>	<b>MATERIAL AND/OR SERVICE</b>	
Dormant Spray + Zinc	March	1.5 gals. of Superior Oil @ \$2.60/gal. 0.5 gal. of Zinc 10% @ 8.25/gal. 10.0 lbs. of Microthiol @ 93¢/lb.
Cover Spray	March	4.0 pints of Lorsban @ \$6.19/pint
Rent Beehive	April	1.0 bee hive @ \$35.00/hive
Irrigate	Season	Irrigation charge & electricity @ \$150.00/acre
Hang Dispensers	Season	400 ties @ 27.5¢/tie
Mildew/Fertilizer/ Cover Spray	May	2.0 lbs. of Guthion @ \$8.02/lb. 5.0 ozs. of Rally @ \$5.20/oz. 2.0 gals. of 3-18-18 @ \$4.55/gal.
Mildew Spray	May	5.0 ozs. of Rally @ \$5.20/oz.
Thinning Spray	May	6.6 ozs. of Accel @ \$12.58/oz. <sup>a</sup> 5.0 ozs. of Rally @ \$5.20/oz. 5.0 lbs. of Soulbor @ 80¢/lb. 0.5 gal. of Zinc 10% @ \$8.25/gal.
Tree Training	May	Tape & twine @ \$12.50/acre
Herbicide	May	0.5 gal. of Roundup @ \$59.15/gal.
Mildew/Cover Spray	June	2.0 lbs. of Guthion @ \$8.02/lb. 5.0 ozs. of Rally @ \$5.20/oz.
Herbicide	June	0.5 gal. of Roundup @ \$59.15/gal.
Tree Training	July	Tape & twine @ \$12.50/acre
Calcium/Cover Spray	July	6.0 lbs. of calcium chloride @ 52¢/lb. 2.0 lbs. of Guthion @ \$8.02/lb. 2.0 ozs. of Provado @ \$3.78/oz. 0.25 gal. of Sylgard @ \$98.90/gal.
Herbicide	July	0.5 gal. of Roundup @ \$59.15/gal.
Calcium/Cover Spray	August	6.0 lbs. of calcium chloride @ 52¢/lb. 2.0 lbs. of Guthion @ \$8.02/lb.
Harvest	September	27.7 bins of apples picked @ \$8/bin.
Haul Fruit	September	27.7 bins of apples hauled @ \$3.00/bin
Foliar Fertilizer	October	5.0 gals of zinc sulfate @ \$1.50/gal. 5.0 lbs. of Solubor @ 80¢/lb.
Gopher Control	Annual	1.0 lb. of Gopher Getter @ \$1.28/lb.
Overhead	Annual	5% variable cost

<sup>a</sup>Accel may not be typically used in thinning Golden Delicious fruit, but was used at this site to achieve larger fruit size.

TABLE 3i3: ITEMIZED COST PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER INTEGRATED PRODUCTION PRACTICES - 1996.

	UNIT	PRICE OR COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
-----					
VARIABLE COSTS		\$		\$	
SUPERIOR OIL	GAL.	2.60	1.50	3.90	_____
ZINC 10%	GAL.	8.25	1.00	8.25	_____
MICROTHIOL	LB.	.93	10.00	9.30	_____
LORSBAN	PINT	6.19	4.00	24.76	_____
ACCEL	OZ.	12.58	6.60	83.03	_____
RALLY	OZ.	5.20	20.00	104.00	_____
SOLUBOR	LB.	.80	10.00	8.00	_____
ROUNDUP	GAL.	59.15	1.50	88.73	_____
GUTHION	LB.	8.02	8.00	64.16	_____
3-18-18	GAL.	4.55	2.00	9.10	_____
CALCIUM CHLORIDE	LB.	.52	12.00	6.24	_____
PROVADO	OZ.	3.78	2.00	7.56	_____
SYLGARD	GAL.	98.90	.25	24.73	_____
ZINC SULFATE	GAL.	1.50	5.00	7.50	_____
GOPHER GETTER	LB.	1.28	1.00	1.28	_____
RENT BEEHIVE	HIVE	35.00	1.00	35.00	_____
TAPE & TWINE	ACRE	25.00	1.00	25.00	_____
PHEROMONE DISPENSERS	DISP	.28	400.00	110.00	_____
CUSTOM HAULING	BIN	3.00	27.70	83.10	_____
IRR. CHG. & ELECT.	ACRE	150.00	1.00	150.00	_____
CASUAL LABOR	HOUR	7.50	127.40	955.50	_____
LABOR (TRAC/MACH)	HOUR	8.50	42.98	365.31	_____
TRACTOR REPAIR	ACRE	38.28	1.00	38.28	_____
TRACTOR FUEL/LUBE	ACRE	46.22	1.00	46.22	_____
MACHINERY REPAIRS	ACRE	131.52	1.00	131.52	_____
MACHINE FUEL/LUBE	ACRE	27.99	1.00	27.99	_____
INTEREST ON OP. CAP.	ACRE	67.22	1.00	67.22	_____
OVERHEAD	ACRE	124.28	1.00	124.28	_____
				-----	
TOTAL VARIABLE COST				2609.95	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	68.05	1.00	68.05	_____
TRACTOR INTEREST	ACRE	74.65	1.00	74.65	_____
TRACTOR INSURANCE	ACRE	4.98	1.00	4.98	_____
TRACTOR TAXES	ACRE	14.93	1.00	14.93	_____
MACHINE DEPRECIATION	ACRE	199.25	1.00	199.25	_____
MACHINE INTEREST	ACRE	186.88	1.00	186.88	_____
MACHINE INSURANCE	ACRE	12.46	1.00	12.46	_____
MACHINE TAXES	ACRE	27.03	1.00	27.03	_____
LAND TAX - YR 3	ACRE	53.71	1.00	53.71	_____
LAND COST	ACRE	350.00	1.00	350.00	_____
MANAGEMENT	ACRE	250.00	1.00	250.00	_____
INTEREST ON ESTAB.	ACRE	1194.93	1.00	1194.93	_____
				-----	
TOTAL FIXED COST				2436.85	_____
TOTAL COST				5046.80	_____
-----					

TABLE 1i4: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR HIGH DENSITY GOLDEN DELICIOUS APPLES GROWN UNDER INTEGRATED PRODUCTION PRACTICES - 1997

		VARIABLE COST												
OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.	TOTAL VARIABLE COST	TOTAL COST	
								\$	\$	\$	\$	\$	\$	\$
PRUNE	HAND LABOR	FEB	1997	.00	25.00	2.30	.00	187.50	.00	.00	11.25	198.75	201.05	
DORM. SPY + ZINC	52HP-WT, BLAST SPRAYER	MAR	1997	.50	.60	8.38	4.78	5.25	.00	43.64	2.82	56.49	64.87	
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	APR	1997	.50	.60	8.38	4.78	5.25	.00	35.25	2.04	47.32	55.70	
RENT BEEHIVE	ONE BEE HIVE PER ACRE	APR	1997	.00	.00	.00	.00	.00	35.00	.00	1.58	36.58	36.58	
HERBICIDE	52HP-WT, 100 GAL SPRAYER	APR	1997	.40	.48	4.50	6.32	4.20	.00	29.58	1.80	41.90	46.40	
FROST CONTROL	WIND MACHINE	APR	1997	.00	2.00	152.11	92.79	17.50	.00	.00	4.96	115.25	267.36	
FROST CONTROL	FROST ALARM & THERMOMETERS	APR	1997	.00	.00	2.97	.00	.00	.00	.00	.00	.00	2.97	
FROST CONTROL	UNDERTREE SPRINKLERS	APR	1997	.00	.00	74.90	10.00	.00	18.75	.00	1.29	30.04	104.94	
IRRIGATE	SOLID SET UNDERTREE IRR SYSTEM	SEA	1997	.00	.00	203.03	50.00	.00	150.00	.00	9.00	209.00	412.03	
IRRIGATE	4-WHEEL ATV W/ABOVE OPERATION	SEA	1997	10.00	10.00	21.94	10.08	87.50	.00	.00	4.39	101.97	123.90	
HANG DISPENSERS	HAND LABOR	SEA	1997	.00	1.00	.00	.00	7.50	.00	110.00	5.29	122.79	122.79	
MOW	52HP-WT, 9' ROTARY MOWER	MAY	1997	.50	.55	4.95	2.74	4.81	.00	.00	.28	7.83	12.78	
HERBICIDE	52HP-WT, 100 GAL SPRAYER	MAY	1997	.40	.48	4.50	6.32	4.20	.00	29.58	1.50	41.60	46.10	
MILDEW/COVER SPY	52HP-WT, BLAST SPRAYER	MAY	1997	.50	.60	8.38	4.78	5.25	.00	21.35	1.18	32.56	40.94	
COVER SPRAY	52HP-WT, BLAST SPRAYER	MAY	1997	.50	.60	8.38	4.78	5.25	.00	6.50	.62	17.15	25.53	
FERT/MILDW/INSC	52HP-WT, BLAST SPRAYER	MAY	1997	.50	.60	8.38	4.78	5.25	.00	60.23	2.63	72.89	81.27	
COVER SPRAY	52HP-WT, BLAST SPRAYER	MAY	1997	.50	.60	8.38	4.78	5.25	.00	77.09	3.27	90.39	98.77	
THIN. SPRAY (2X)	52HP-WT, BLAST SPRAYER	MAY	1997	.50	.60	8.38	4.78	5.25	.00	166.06	6.60	182.69	191.07	
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	MAY	1997	.50	.60	8.38	4.78	5.25	.00	9.30	.72	20.06	28.44	
MOW	52HP-WT, 9' ROTARY MOWER	JUN	1997	.50	.55	4.95	2.74	4.81	.00	.00	.23	7.78	12.72	
COVER SPRAY	52HP-WT, BLAST SPRAYER	JUN	1997	.50	.60	8.38	4.78	5.25	.00	45.16	1.66	56.85	65.23	
HERBICIDE	52HP-WT, 100 GAL SPRAYER	JUL	1997	.40	.48	4.50	6.32	4.20	.00	29.58	.90	41.00	45.50	
MOW	52HP-WT, 9' ROTARY MOWER	JUL	1997	.50	.55	4.95	2.74	4.81	.00	.00	.17	7.72	12.67	
TREE TRAINING	HAND LABOR	JUL	1997	.00	25.00	.00	.00	187.50	.00	50.00	5.34	242.84	242.84	
COVER SPRAY	52HP-WT, BLAST SPRAYER	JUL	1997	.50	.60	8.38	4.78	5.25	.00	30.07	.90	41.00	49.38	
COVER SPRAY	52HP-WT, BLAST SPRAYER	AUG	1997	.50	.60	8.38	4.78	5.25	.00	19.16	.44	29.63	38.01	
MOW	52HP-WT, 9' ROTARY MOWER	AUG	1997	.50	.55	4.95	2.74	4.81	.00	.00	.11	7.66	12.61	
HARVEST(67.1 BN)	PICKERS	SEP	1997	.00	.00	13.27	.00	.00	536.80	.00	4.03	540.83	554.10	
HARVEST	52HP-WT, BACKFORK	SEP	1997	13.42	14.76	87.42	46.23	129.15	.00	.00	1.32	176.69	264.11	
CHECK BINS	CHECKER FOR PICKING CREW	SEP	1997	.00	13.50	.00	.00	101.25	.00	.00	.76	102.01	102.01	
BIN HANDLING	52HP-WT, BIN TRAILER	SEP	1997	6.71	7.38	52.71	27.97	64.58	.00	.00	.69	93.24	145.95	
LOAD FRUIT	52HP-WT, FORKLIFT	SEP	1997	2.70	2.97	28.16	16.59	25.99	.00	.00	.32	42.90	71.06	
HAUL FRUIT	CUSTOM HAULING	SEP	1997	.00	.00	.00	.00	.00	201.30	.00	1.51	202.81	202.81	
MOW	52HP-WT, 9' ROTARY MOWER	OCT	1997	.50	.55	4.95	2.74	4.81	.00	.00	.00	7.55	12.50	
GOPHER CONTROL	HAND LABOR	ANN	1997	.00	2.00	.00	.00	15.00	.00	1.28	.73	17.01	17.01	
MISC USE	1/2 TON PICKUP	ANN	1996	7.14	.00	36.45	23.42	.00	.00	.00	1.05	24.47	60.92	
MISC USE	4-WHEEL ALL TERRAIN VEHICLE	ANN	1997	5.70	.00	12.50	5.74	.00	.00	.00	.26	6.00	18.51	
MISC USE	MACHINE SHED & SHOP	ANN	1997	.00	.00	38.71	.71	.00	.00	.00	.03	.75	39.46	
MISC USE	SHOP TOOLS	ANN	1997	.00	.00	15.29	.00	.00	.00	.00	.00	.00	15.29	
OVERHEAD	UTILITIES, LEGAL, ACCTNG, ETC.	ANN	1997	.00	.00	.00	.00	.00	153.70	.00	.00	153.70	153.70	
MANAGEMENT	OPERATOR MANAGEMENT	ANN	1997	.00	.00	250.00	.00	.00	.00	.00	.00	.00	250.00	
LAND COST	INTEREST ON LAND	ANN	1997	.00	.00	350.00	.00	.00	.00	.00	.00	.00	350.00	
TAXES	LAND	ANN	1997	.00	.00	64.19	.00	.00	.00	.00	.00	.00	64.19	
INTEREST COST	INTEREST ON ESTABLISHMENT COST	ANN	1997	.00	.00	1529.10	.00	.00	.00	.00	.00	.00	1529.10	
TOTAL PER ACRE				54.87	114.40	3065.46	368.79	917.88	1095.55	763.80	81.69	3227.71	6293.17	

**TABLE 2i4: MATERIALS AND SERVICES USED BY INTEGRATED PRACTICES  
- 1997.**

OPERATION		MATERIAL AND/OR SERVICE
Dormant Spray + Zinc	March	2.1 gals. of Superior Oil @ \$2.60/gal. 0.5 gal. of Zinc 10% @ \$8.25/gal. 4.0 pints of Lorsban @ \$6.19/pt. 10.0 lbs. of Microthiol @ .93¢/lb.
Mildew Spray	April	10.0 lbs. of Microthiol @ .93¢/lb. 0.5 lb. of Procure @ \$51.90/lb.
Rent Beehives	April	1.0 beehive @ \$35.00/hive
Herbicide	April	0.5 gal. of Roundup @ \$59.15/gal.
Frost Control	April	Irrigation charge & electricity @ \$18.75/acre
Irrigate	Season	Irrigation charge & electricity @ \$150.00/acre
Hang Dispensers	Season	400 ties @ 27.5¢/tie
Herbicide	May	0.5 gal. of Roundup @ \$59.15/gal.
Mildew/Cover Spray	May	4.2 ozs. of Rubigan @ \$2.25/oz. 1.4 lbs. of DiPel @ \$8.50/lb.
Cover Spray	May	1.05 pints of Lorsban @ \$6.19/pt.
Foliar Fertilizer/ Mildew/Insecticide	May	2.0 gals. of 3-18-18 @ \$4.55/gal. 0.5 gal. of Zinc 10% @ \$8.25/gal. 5.0 lbs. of Solubor @ .80¢/lb. 5.0 ozs. of Rally @ \$5.20/oz. 2.0 lbs. of DiPel @ \$8.50/lb.
Cover Spray	May	2.0 lbs. of Guthion @ \$8.02/lb. 5.0 ozs. of Rally @ \$5.20/oz. 0.5 lb. of Procure @ \$51.90/lb. 2.0 gals. of 3-18-18 @ \$4.55/gal.
Thinning Spray	May	6.6 ozs. of Accel @ \$12.58/oz. <sup>a</sup>
Thinning Spray	May	6.6 ozs. of Accel @ \$12.58/oz. <sup>a</sup>
Mildew Spray	May	10.0 lbs. of Microthiol @ .93¢/lb.
Cover Spray	June	2.0 lbs. of Guthion @ \$8.02/lb. 6.0 lbs. of calcium chloride @ .52¢/lb. 5.0 ozs. of Rally @ \$5.20/oz.
Herbicide	July	0.5 gal. of Roundup @ \$59.15/gal.
Tree Training	July	Tape & Twine @ \$50.00/acre
Cover Spray	July	2.0 gals. of 3-18-18 @ \$4.55/gal. 2.0 lbs. of Guthion @ \$8.02/lb. 6.0 lbs. of calcium chloride @ .52¢/lb. 1.0 pint of Trifol @ \$1.81/pt.

**TABLE 2i4: MATERIALS AND SERVICES USED BY INTEGRATED PRACTICES  
- 1997. (Continued)**

OPERATIONS		MATERIAL AND/OR SERVICE
Cover Spray	August	2.0 lbs. of Guthion @ \$8.02/lb. 6.0 lbs. of calcium chloride @ .52¢/lb.
Harvest	September	67.1 bins of apples picked @ \$8.00/bin
Haul Fruit	September	67.1 bins of apples @ \$3.00/bin
Gopher Control	Annual	1.0 lb. of Gopher Getter @ \$1.28/lb.
Overhead	Annual	5% variable cost.

<sup>a</sup>Accel may not be typically used in thinning Golden Delicious fruit but was used at this site to achieve larger fruit size.

TABLE 3i4: ITEMIZED COST PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER INTEGRATED PRODUCTION PRACTICES - 1997.

	UNIT	PRICE OR COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
-----					
VARIABLE COSTS		\$		\$	
SUPERIOR OIL	GAL.	2.60	2.10	5.46	_____
ZINC 10%	GAL.	8.25	1.00	8.25	_____
LORSBAN	PINT	6.19	5.05	31.26	_____
MICROTHIOL	LB.	.93	30.00	27.90	_____
ROUNDUP	GAL.	59.15	1.50	88.72	_____
PROCURE	LB.	51.90	.50	25.95	_____
ACCEL	OZ.	12.58	13.20	166.06	_____
3-18-18	GAL.	4.55	6.00	27.30	_____
SOLUBOR	LB.	.80	5.00	4.00	_____
RALLY	OZ.	5.20	15.00	78.00	_____
DIPEL	LB.	8.50	3.40	28.90	_____
GUTHION	LB.	8.02	8.00	64.16	_____
PROCURE	LB.	51.90	.50	25.95	_____
RUBIGAN	OZ.	2.25	4.20	9.45	_____
CALCIUM CHLORIDE	LB.	.52	18.00	9.36	_____
TRIFOL	PT.	1.81	1.00	1.81	_____
GOPHER GETTER	LB.	1.28	1.00	1.28	_____
RENT BEEHIVE	HIVE	35.00	1.00	35.00	_____
TAPE & TWINE	ACRE	50.00	1.00	50.00	_____
PHEROMONE DISPENSERS	DISP	.28	400.00	110.00	_____
IRR. CHG. & ELECT.	ACRE	165.75	1.00	168.75	_____
CUSTOM PICKING	BIN	8.00	67.10	536.80	_____
CUSTOM HAULING	BIN	3.00	67.10	201.30	_____
CASUAL LABOR	HOUR	7.50	66.50	498.75	_____
LABOR (TRAC/MACH)	HOUR	8.50	49.31	419.13	_____
TRACTOR REPAIR	ACRE	48.05	1.00	48.05	_____
TRACTOR FUEL/LUBE	ACRE	58.01	1.00	58.01	_____
MACHINERY REPAIRS	ACRE	171.94	1.00	171.94	_____
MACHINE FUEL/LUBE	ACRE	90.78	1.00	90.78	_____
OVERHEAD	ACRE	153.70	1.00	153.70	_____
INTEREST ON OP. CAP.	ACRE	81.69	1.00	81.69	_____
				-----	
TOTAL VARIABLE COST				3227.71	_____
-----					
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	85.41	1.00	85.41	_____
TRACTOR INTEREST	ACRE	93.69	1.00	93.69	_____
TRACTOR INSURANCE	ACRE	6.25	1.00	6.25	_____
TRACTOR TAXES	ACRE	18.74	1.00	18.74	_____
MACHINE DEPRECIATION	ACRE	290.17	1.00	290.17	_____
MACHINE INTEREST	ACRE	306.72	1.00	306.72	_____
MACHINE INSURANCE	ACRE	20.39	1.00	20.39	_____
MACHINE TAXES	ACRE	50.81	1.00	50.81	_____
LAND TAX - YR 4	ACRE	64.19	1.00	64.19	_____
LAND COST	ACRE	350.00	1.00	350.00	_____
MANAGEMENT	ACRE	250.00	1.00	250.00	_____
INTEREST ON ESTAB.	ACRE	1529.10	1.00	1529.10	_____
				-----	
TOTAL FIXED COST				3065.46	_____
				-----	
TOTAL COST				6293.17	_____
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TABLE 115: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR HIGH DENSITY GOLDEN DELICIOUS APPLES GROWN UNDER INTEGRATED PRODUCTION PRACTICES - 1998

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	VARIABLE COST						TOTAL VARIABLE COST	TOTAL COST
						TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
						\$	\$	\$	\$	\$	\$	\$	\$
PRUNE	HAND LABOR	FEB	1998	.00	30.00	2.76	.00	225.00	.00	.00	13.50	238.50	241.26
DORM. SPY + ZINC	52HP-WT, BLAST SPRAYER	MAR	1998	.50	.60	8.38	4.78	5.25	.00	43.64	2.82	56.49	64.87
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	APR	1998	.50	.60	8.38	4.78	5.25	.00	35.25	2.04	47.32	55.70
HERBICIDE	52HP-WT, 100 GAL SPRAYER	APR	1998	.40	.48	4.50	6.32	4.20	.00	29.58	1.80	41.90	46.40
RENT BEEHIVE	ONE BEEHIVE PER ACRE	APR	1998	.00	.00	.00	.00	.00	35.00	.00	1.58	36.58	36.58
FROST CONTROL	WIND MACHINE	APR	1998	.00	2.00	152.11	92.79	17.50	.00	.00	4.96	115.25	267.36
FROST CONTROL	FROST ALARM & THERMOMETERS	APR	1998	.00	.00	2.97	.00	.00	.00	.00	.00	.00	2.97
FROST CONTROL	UNDERTREE SPRINKLERS	APR	1998	.00	.00	74.90	10.00	.00	18.75	.00	1.29	30.04	104.94
IRRIGATE	SOLID SET UNDERTREE IRR SYSTEM	SEA	1998	.00	.00	203.03	50.00	.00	150.00	.00	9.00	209.00	412.03
IRRIGATE	4-WHEEL ATV W/ABOVE OPERATION	SEA	1998	10.00	10.00	21.94	10.08	87.50	.00	.00	4.39	101.97	123.90
HANG DISPENSERS	HAND LABOR	SEA	1998	.00	1.00	.00	.00	7.50	.00	110.00	5.29	122.79	122.79
MOW	52HP-WT, 9' ROTARY MOWER	MAY	1998	.50	.55	4.95	2.74	4.81	.00	.00	.28	7.83	12.78
COVER SPRAY	52HP-WT, BLAST SPRAYER	MAY	1998	.50	.60	8.38	4.78	5.25	.00	6.50	.62	17.15	25.53
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	MAY	1998	.50	.60	8.38	4.78	5.25	.00	9.30	.72	20.06	28.44
THIN. SPRAY (2X)	52HP-WT, BLAST SPRAYER	MAY	1998	.50	.60	8.38	4.78	5.25	.00	166.06	6.60	182.69	191.07
FERT/MILDW/INSCCT	52HP-WT, BLAST SPRAYER	MAY	1998	.50	.60	8.38	4.78	5.25	.00	60.23	2.63	72.89	81.27
HERBICIDE	52HP-WT, 100 GAL SPRAYER	JUN	1998	.40	.48	4.50	6.32	4.20	.00	29.58	1.20	41.30	45.80
MOW	52HP-WT, 9' ROTARY MOWER	JUN	1998	.50	.55	4.95	2.74	4.81	.00	.00	.23	7.78	12.72
COVER SPRAY	52HP-WT, BLAST SPRAYER	JUN	1998	.50	.60	8.38	4.78	5.25	.00	45.16	1.66	56.85	65.23
HAND THINNING	HAND LABOR	JUN	1998	.00	32.50	.00	.00	243.75	.00	.00	7.31	251.06	251.06
MOW	52HP-WT, 9' ROTARY MOWER	JUL	1998	.50	.55	4.95	2.74	4.81	.00	.00	.17	7.72	12.67
TREE TRAINING	HAND LABOR	JUL	1998	.00	25.00	.00	.00	187.50	.00	50.00	5.34	242.84	242.84
COVER SPRAY	52HP-WT, BLAST SPRAYER	JUL	1998	.50	.60	8.38	4.78	5.25	.00	30.07	.90	41.00	49.38
MOW	52HP-WT, 9' ROTARY MOWER	AUG	1998	.50	.55	4.95	2.74	4.81	.00	.00	.11	7.66	12.61
HARVEST(24.2 BN)	PICKERS	SEP	1998	.00	.00	4.38	.00	.00	435.60	.00	3.27	438.87	443.25
HARVEST(41.1 BN)	PICKERS	SEP	1998	.00	.00	8.89	.00	.00	452.10	.00	3.39	455.49	464.38
HARVEST	52HP-WT, BACKFORK	SEP	1998	13.06	14.37	85.08	44.99	125.74	.00	.00	1.28	172.00	257.08
CHECK BINS	CHECKER FOR PICKING CREW	SEP	1998	.00	13.06	.00	.00	97.95	.00	.00	.73	98.68	98.68
BIN HANDLING	52HP-WT, BIN TRAILER	SEP	1998	6.53	7.18	51.30	27.22	62.82	.00	.00	.68	90.72	142.02
LOAD FRUIT	52HP-WT, FORKLIFT	SEP	1998	2.61	2.87	27.32	16.04	25.11	.00	.00	.31	41.46	68.68
HAUL FRUIT	CUSTOM HAULING	SEP	1998	.00	.00	.00	.00	.00	195.90	.00	1.47	197.37	197.37
MOW	52HP-WT, 9' ROTARY MOWER	OCT	1998	.50	.55	4.95	2.74	4.81	.00	.00	.00	7.55	12.50
GOPHER CONTROL	HAND LABOR	ANN	1998	.00	2.00	.00	.00	15.00	.00	1.28	.73	17.01	17.01
MISC USE	1/2 TON PICKUP	ANN	1996	7.14	.00	36.45	23.42	.00	.00	.00	1.05	24.47	60.92
MISC USE	4-WHEEL ALL TERRAIN VEHICLE	ANN	1998	5.70	.00	12.50	5.74	.00	.00	.00	.26	6.00	18.51
MISC USE	MACHINE SHED & SHOP	ANN	1998	.00	.00	38.71	.71	.00	.00	.00	.03	.75	39.46
MISC USE	SHOP TOOLS	ANN	1998	.00	.00	15.29	.00	.00	.00	.00	.00	.00	15.29
OVERHEAD	UTILITIES, LEGAL, ACCTNG, ETC.	ANN	1998	.00	.00	.00	.00	.00	175.35	.00	.00	175.35	175.35
MANAGEMENT	OPERATOR MANAGEMENT	ANN	1998	.00	.00	250.00	.00	.00	.00	.00	.00	.00	250.00
LAND COST	INTEREST ON LAND	ANN	1998	.00	.00	350.00	.00	.00	.00	.00	.00	.00	350.00
TAXES	LAND	ANN	1998	.00	.00	72.05	.00	.00	.00	.00	.00	.00	72.05
INTEREST COST	INTEREST ON ESTABLISHMENT COST	ANN	1998	.00	.00	1804.71	.00	.00	.00	.00	.00	.00	1804.71
TOTAL PER ACRE				52.34	148.49	3315.06	345.57	1169.83	1462.70	616.64	87.67	3682.41	6997.47



**TABLE 2i5: MATERIALS AND SERVICES USED BY INTEGRATED PRACTICES  
- 1998.**

<b>OPERATION</b>		<b>MATERIAL AND/OR SERVICE</b>
Dormant Spray + Zinc	March	2.1 gals. of Superior Oil @ \$2.60/gal. 0.5 gal. of Zinc 10% @ \$8.25/gal. 4.0 pts. of Lorsban @ \$6.19/pt. 10.0 lbs. of Microthiol @ .93¢/lb.
Mildew Spray	April	10.0 lbs. of Microthiol @ .93¢/lb. 0.5 lb. of Procure @ \$51.90/lb.
Herbicide	April	0.5 gal. of Roundup @ \$59.15/gal.
Rent Beehive	April	1.0 beehive @ \$35.00/hive
Frost Control	April	Irrigation charge & electricity @ \$18.75/acre
Irrigate	Season	Irrigation charge & electricity @ \$150.00/acre
Hang Dispensers	Season	400 ties/acre @ 27.5¢/tie (\$110/acre)
Cover Spray	May	1.05 pts. of Lorsban @ \$6.19/pt.
Mildew Spray	May	10.0 lbs. of Microthiol @ .93¢/lb.
Thinning Spray	May	6.6 ozs. of Accel @ \$12.58/oz. <sup>a</sup>
Thinning Spray	May	6.6 ozs. of Accel @ \$12.58/oz. <sup>a</sup>
Foliar Fertilizer/ Mildew/Insecticide	May	2.0 gals. of 3-18-18 @ \$4.55/gal. 0.5 gal. of Zinc 10% @ \$8.25/gal. 5.0 lbs. of Solubor @ .80¢/lb. 5.0 ozs. of Rally @ \$5.20/oz. 2.0 lbs. of DiPel @ \$8.50/lb.
Herbicide	June	0.5 gal. of Roundup @ \$59.15/gal.
Cover Spray	June	2.0 lbs. of Guthion @ \$8.02/lb. 6.0 lbs. of calcium chloride @ .52¢/lb. 5.0 ozs. of Rally @ \$5.20/oz.
Tree Training	July	Tape & Twine @ \$50.00/acre
Cover Spray	July	2.0 gals. of 3-18-18 @ \$4.55/gal. 2.0 lbs. of Guthion @ \$8.02/lb. 6.0 lbs. of calcium chloride @ .52¢/lb. 1.0 pint of Trifol @ \$1.81/pt.
Harvest	September	24.2 bins of apples picked @ \$18.00/bin
Harvest	September	41.1 bins of apples picked @ \$11.00/bin
Haul Fruit	September	65.3 bins of apples @ \$3.00/bin
Gopher Control	Annual	1.0 lb. of Gopher Getter @ \$1.28/lb.
Overhead	Annual	5% variable cost.

<sup>a</sup>Accel may not be typically used in thinning Golden Delicious fruit, but was used at this site to achieve larger fruit size.

TABLE 3i5: ITEMIZED COST PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER INTEGRATED PRODUCTION PRACTICES - 1998.

	UNIT	PRICE OR COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
-----					
VARIABLE COSTS		\$		\$	
SUPERIOR OIL	GAL.	2.60	2.10	5.46	_____
ZINC 10%	GAL.	8.25	1.00	8.25	_____
LORSBAN	PINT	6.19	5.05	31.26	_____
MICROTHIOL	LB.	.93	30.00	27.90	_____
ROUNDUP	GAL.	59.15	1.00	59.15	_____
PROCURE	LB.	51.90	.50	25.95	_____
ACCEL	OZ.	12.58	13.20	166.06	_____
3-18-18	GAL.	4.55	4.00	18.20	_____
SOLUBOR	LB.	.80	5.00	4.00	_____
RALLY	OZ.	5.20	10.00	52.00	_____
DIPEL	LB.	8.50	2.00	17.00	_____
GUTHION	LB.	8.02	4.00	32.08	_____
CALCIUM CHLORIDE	LB.	.52	12.00	6.24	_____
TRIFOL	PT.	1.81	1.00	1.81	_____
GOPHER GETTER	LB.	1.28	1.00	1.28	_____
RENT BEEHIVE	HIVE	35.00	1.00	35.00	_____
TAPE & TWINE	ACRE	50.00	1.00	50.00	_____
PHEROMONE DISPENSERS	DISP	.28	400.00	110.00	_____
IRR. CHG. & ELECT.	ACRE	168.75	1.00	168.75	_____
CUSTOM PICKING	BIN	11.00	41.10	452.10	_____
CUSTOM PICKING	BIN	18.00	24.20	435.60	_____
CUSTOM HAULING	BIN	3.00	65.30	195.90	_____
CASUAL LABOR	HOURL	7.50	103.56	776.70	_____
LABOR (TRAC/MACH)	HOURL	8.50	46.25	393.14	_____
TRACTOR REPAIR	ACRE	44.25	1.00	44.25	_____
TRACTOR FUEL/LUBE	ACRE	53.43	1.00	53.43	_____
MACHINERY REPAIRS	ACRE	157.11	1.00	157.11	_____
MACHINE FUEL/LUBE	ACRE	90.78	1.00	90.78	_____
INTEREST ON OP. CAP.	ACRE	87.67	1.00	87.67	_____
OVERHEAD	ACRE	175.35	1.00	175.35	_____
				-----	
TOTAL VARIABLE COST				3682.41	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	78.67	1.00	78.67	_____
TRACTOR INTEREST	ACRE	86.29	1.00	86.29	_____
TRACTOR INSURANCE	ACRE	5.75	1.00	5.75	_____
TRACTOR TAXES	ACRE	17.26	1.00	17.26	_____
MACHINE DEPRECIATION	ACRE	280.81	1.00	280.81	_____
MACHINE INTEREST	ACRE	300.09	1.00	300.09	_____
MACHINE INSURANCE	ACRE	19.94	1.00	19.94	_____
MACHINE TAXES	ACRE	49.48	1.00	49.48	_____
LAND TAX - YR 5	ACRE	72.05	1.00	72.05	_____
LAND COST	ACRE	350.00	1.00	350.00	_____
MANAGEMENT	ACRE	250.00	1.00	250.00	_____
INTEREST ON ESTAB.	ACRE	1804.71	1.00	1804.71	_____
				-----	
TOTAL FIXED COST				3315.06	_____
TOTAL COST				6997.47	_____
-----					

TABLE 1i6: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR HIGH DENSITY GOLDEN DELICIOUS APPLES GROWN UNDER INTEGRATED PRODUCTION PRACTICES - 1999

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
						\$	\$	\$	\$	\$	\$	\$	
PRUNE	HAND LABOR	FEB	1999	.00	30.00	2.76	.00	225.00	.00	.00	13.50	238.50	241.26
DORM. SPY + ZINC	52HP-WT, BLAST SPRAYER	MAR	1999	.50	.60	8.38	4.78	5.25	.00	103.47	5.96	119.46	127.84
MILDEW/FOLIAR	52HP-WT, BLAST SPRAYER	APR	1999	.50	.60	8.38	4.78	5.25	.00	44.66	2.46	57.16	65.54
HERBICIDE	52HP-WT, 100 GAL SPRAYER	APR	1999	.40	.48	4.50	6.32	4.20	.00	29.58	1.80	41.90	46.40
RENT BEEHIVE	ONE BEEHIVE PER ACRE	APR	1999	.00	.00	.00	.00	.00	35.00	.00	1.58	36.58	36.58
FROST CONTROL	WIND MACHINE	APR	1999	.00	2.00	152.11	92.79	17.50	.00	.00	4.96	115.25	267.36
FROST CONTROL	FROST ALARM & THERMOMETERS	APR	1999	.00	.00	2.97	.00	.00	.00	.00	.00	.00	2.97
FROST CONTROL	UNDERTREE SPRINKLERS	APR	1999	.00	.00	74.90	10.00	.00	18.75	.00	1.29	30.04	104.94
IRRIGATE	SOLID SET UNDERTREE IRR SYSTEM	SEA	1999	.00	.00	203.03	50.00	.00	150.00	.00	9.00	209.00	412.03
IRRIGATE	4-WHEEL ATV W/ABOVE OPERATION	SEA	1999	10.00	10.00	21.94	10.08	87.50	.00	.00	4.39	101.97	123.90
HANG DISPENSERS	HAND LABOR	SEA	1999	.00	1.00	.00	.00	7.50	.00	110.00	5.29	122.79	122.79
MOW	52HP-WT, 9' ROTARY MOWER	MAY	1999	.50	.55	4.95	2.74	4.81	.00	.00	.28	7.83	12.78
COVER SPRAY	52HP-WT, BLAST SPRAYER	MAY	1999	.50	.60	8.38	4.78	5.25	.00	22.11	1.21	33.35	41.73
FOLIAR SPRAY	52HP-WT, BLAST SPRAYER	MAY	1999	.50	.60	8.38	4.78	5.25	.00	15.80	.97	26.80	35.18
THIN. SPRAY (2X)	52HP-WT, BLAST SPRAYER	MAY	1999	.50	.60	8.38	4.78	5.25	.00	166.06	6.60	182.69	191.07
INSECTICID SPRAY	52HP-WT, BLAST SPRAYER	MAY	1999	.50	.60	8.38	4.78	5.25	.00	40.42	1.89	52.35	60.73
HERBICIDE	52HP-WT, 100 GAL SPRAYER	JUN	1999	.40	.48	4.50	6.32	4.20	.00	29.58	1.20	41.30	45.80
MOW	52HP-WT, 9' ROTARY MOWER	JUN	1999	.50	.55	4.95	2.74	4.81	.00	.00	.23	7.78	12.72
HAND THINNING	HAND LABOR	JUN	1999	.00	32.50	.00	.00	243.75	.00	.00	7.31	251.06	251.06
COVER SPRAY	52HP-WT, BLAST SPRAYER	JUN	1999	.50	.60	8.38	4.78	5.25	.00	36.44	1.39	47.86	56.24
MOW	52HP-WT, 9' ROTARY MOWER	JUL	1999	.50	.55	4.95	2.74	4.81	.00	.00	.17	7.72	12.67
TREE TRAINING	HAND LABOR	JUL	1999	.00	25.00	.00	.00	187.50	.00	50.00	5.34	242.84	242.84
COVER SPRAY	52HP-WT, BLAST SPRAYER	JUL	1999	.50	.60	8.38	4.78	5.25	.00	61.04	1.60	72.67	81.05
MOW	52HP-WT, 9' ROTARY MOWER	AUG	1999	.50	.55	4.95	2.74	4.81	.00	.00	.11	7.66	12.61
HARVEST(4.1 BIN)	PICKERS	SEP	1999	.00	.00	.80	.00	.00	45.10	.00	.34	45.44	46.23
HARVEST(64.2 BN)	PICKERS	SEP	1999	.00	.00	12.48	.00	.00	1155.60	.00	8.67	1164.27	1176.74
HARVEST	52HP-WT, BACKFORK	SEP	1999	13.66	15.03	88.99	47.05	131.51	.00	.00	1.34	179.90	268.89
CHECK BINS	CHECKER FOR PICKING CREW	SEP	1999	.00	13.66	.00	.00	102.45	.00	.00	.77	103.22	103.22
BIN HANDLING	52HP-WT, BIN TRAILER	SEP	1999	6.83	7.51	53.65	28.47	65.71	.00	.00	.71	94.89	148.54
LOAD FRUIT	52HP-WT, FORKLIFT	SEP	1999	2.73	3.01	28.47	16.77	26.34	.00	.00	.32	43.44	71.91
HAUL FRUIT	CUSTOM HAULING	SEP	1999	.00	.00	.00	.00	.00	204.90	.00	1.54	206.44	206.44
MOW	52HP-WT, 9' ROTARY MOWER	OCT	1999	.50	.55	4.95	2.74	4.81	.00	.00	.00	7.55	12.50
GOPHER CONTROL	HAND LABOR	ANN	1999	.00	2.00	.00	.00	15.00	.00	1.28	.73	17.01	17.01
MISC USE	1/2 TON PICKUP	ANN	1999	7.14	.00	36.45	23.42	.00	.00	.00	1.05	24.47	60.92
MISC USE	4-WHEEL ALL TERRAIN VEHICLE	ANN	1999	5.70	.00	12.50	5.74	.00	.00	.00	.26	6.00	18.51
MISC USE	MACHINE SHED & SHOP	ANN	1999	.00	.00	38.71	.71	.00	.00	.00	.03	.75	39.46
MISC USE	SHOP TOOLS	ANN	1999	.00	.00	15.29	.00	.00	.00	.00	.00	.00	15.29
LAND COST	INTEREST ON LAND	ANN	1999	.00	.00	350.00	.00	.00	.00	.00	.00	.00	350.00
OVERHEAD	UTILITIES, LEGAL, ACCTNG, ETC.	ANN	1999	.00	.00	.00	.00	.00	197.40	.00	.00	197.40	197.40
MANAGEMENT	OPERATOR MANAGEMENT	ANN	1999	.00	.00	250.00	.00	.00	.00	.00	.00	.00	250.00
TAXES	LAND	ANN	1999	.00	.00	98.25	.00	.00	.00	.00	.00	.00	98.25
INTEREST COST	INTEREST ON ESTABLISHMENT COST	ANN	1999	.00	.00	2099.61	.00	.00	.00	.00	.00	.00	2099.61
TOTAL PER ACRE				53.36	150.22	3643.67	349.63	1078.92	1912.05	710.44	94.31	4145.35	7789.02

**TABLE 2i6: MATERIALS AND SERVICES USED BY INTEGRATED PRACTICES  
- 1999.**

<b>OPERATION</b>		<b>MATERIAL AND/OR SERVICE</b>
Dormant Spray + Zinc	March	4.0 gals. of Superior Oil @ \$2.60/gal. 1.0 gals. of Zinc 10% @ \$8.25/gal. 8.0 pts. of Lorsban @ \$6.19/pt. 5.0 ozs. of Rally @ \$5.20/oz. 10.0 lbs. of Microthiol @ .93¢/lb.
Foliar Fertilizer/ Mildew Spray	April	0.5 gal. of Zinc 10% @ \$8.25/gal. 5.0 lbs. of Solubor @ 80¢/lb. 5.0 ozs. of Rally @ \$5.20/oz. 8.0 lbs. of urea @ 18¢/lb. 2.0 gals. of 3-18-18 @ \$4.55/gal.
Herbicide	April	0.5 gal. of Roundup @ \$59.15/gal.
Rent Beehives	April	1.0 beehive @ \$35.00/hive
Frost Control	April	Irrigation charge & electricity @ \$18.75/acre
Irrigate	Season	Irrigation charge & electricity @ \$150.00/acre
Hang Dispensers	Season	400 ties/acre @ 27.5¢/tie (\$110/acre)
Cover Spray	May	2.0 lbs. of Guthion @ \$8.02/lb. 1.5 pints of Sevin @ \$4.05/pt.
Foliar Spray	May	4.0 gals. of lime sulfur @ \$3.95/gal.
Thinning Spray	May	6.6 ozs. of Accel @ \$12.58/oz. <sup>a</sup>
Thinning Spray	May	6.6 ozs. of Accel @ \$12.58/oz. <sup>a</sup>
Insecticide	May	1.5 gals. of Captan 4L @ \$26.95/gal.
Herbicide	June	0.5 gals. of Roundup @ \$59.15/gal.
Cover Spray	June	8.0 ozs. of Provado @ \$3.78/gal. 6.0 lbs. of calcium chloride @ .52¢/lb. 4.0 ozs. of Sylgard @ 77¢/oz.
Tree Training	July	Tape & Twine @ \$50.00/acre
Cover Spray	July	6.0 ozs. of Success @ \$6.21/oz. 2.0 lbs. of Guthion @ \$8.02/lb. 6.0 lbs. of calcium chloride @ .52¢/lb. 6.0 ozs. of Sylgard @ 77¢/oz.
Harvest	September	4.1 bins of apples picked @ \$11.00/bin
Harvest	September	64.2 bins of apples picked @ \$18.00/bin
Haul Fruit	September	68.3 bins of apples @ \$3.00/bin
Gopher Control	Annual	1.0 lb. of Gopher Getter @ \$1.28/lb.
Overhead	Annual	5% variable cost.

<sup>a</sup>Accel may not be typically used in thinning Golden Delicious fruit, but was used at this site to achieve larger fruit size.

TABLE 3i6: ITEMIZED COST PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER INTEGRATED PRODUCTION PRACTICES - 1999.

	UNIT	PRICE OR COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
VARIABLE COSTS		\$		\$	
SUPERIOR OIL	GAL.	2.60	4.00	10.40	_____
ZINC 10%	GAL.	8.25	1.50	12.38	_____
LORSBAN	PINT	6.19	8.00	49.52	_____
MICROTHIOL	LB.	.93	10.00	9.30	_____
RALLY	OZ.	5.20	10.00	52.00	_____
ROUNDUP	GAL.	59.15	1.00	59.15	_____
SOLUBOR	LB.	.80	5.00	4.00	_____
UREA	LB.	.18	8.00	1.44	_____
3-18-18	GAL.	4.55	2.00	9.10	_____
ACCEL	OZ.	12.58	13.20	166.06	_____
LIME SULFUR	GAL.	3.95	4.00	15.80	_____
CAPTAN 4L	GAL.	26.95	1.50	40.42	_____
GUTHION	LB.	8.02	4.00	32.08	_____
SEVIN	PINT	4.05	1.50	6.07	_____
PROVADO	OZ.	3.78	8.00	30.24	_____
CALCIUM CHLORIDE	LB.	.52	12.00	6.24	_____
SYLGARD	OZ.	.77	10.00	7.70	_____
SUCCESS	OZ.	6.21	6.00	37.26	_____
GOPHER GETTER	LB.	1.28	1.00	1.28	_____
RENT BEEHIVE	HIVE	35.00	1.00	35.00	_____
TAPE & TWINE	ACRE	50.00	1.00	50.00	_____
PHEROMONE DISPENSERS	DISP	.28	400.00	110.00	_____
IRR. CHG. & ELECT.	ACRE	168.75	1.00	168.75	_____
CUSTOM PICKING	BIN	11.00	4.10	45.10	_____
CUSTOM PICKING	BIN	18.00	64.20	1155.60	_____
CUSTOM HAULING	BIN	3.00	68.30	204.90	_____
CASUAL LABOR	HOURL	7.50	104.16	781.20	_____
LABOR (TRAC/MACH)	HOURL	8.50	47.41	403.02	_____
TRACTOR REPAIR	ACRE	45.78	1.00	45.78	_____
TRACTOR FUEL/LUBE	ACRE	55.28	1.00	55.28	_____
MACHINERY REPAIRS	ACRE	157.78	1.00	157.78	_____
MACHINE FUEL/LUBE	ACRE	90.78	1.00	90.78	_____
INTEREST ON OP. CAP.	ACRE	94.31	1.00	94.31	_____
OVERHEAD	ACRE	197.40	1.00	197.40	_____
TOTAL VARIABLE COST				4145.35	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	81.39	1.00	81.39	_____
TRACTOR INTEREST	ACRE	89.27	1.00	89.27	_____
TRACTOR INSURANCE	ACRE	5.95	1.00	5.95	_____
TRACTOR TAXES	ACRE	17.85	1.00	17.85	_____
MACHINE DEPRECIATION	ACRE	281.31	1.00	281.31	_____
MACHINE INTEREST	ACRE	300.50	1.00	300.50	_____
MACHINE INSURANCE	ACRE	19.97	1.00	19.97	_____
MACHINE TAXES	ACRE	49.57	1.00	49.57	_____
LAND TAX - MATURE	ACRE	98.25	1.00	98.25	_____
LAND COST	ACRE	350.00	1.00	350.00	_____
MANAGEMENT	ACRE	250.00	1.00	250.00	_____
INTEREST ON ESTAB.	ACRE	2099.61	1.00	2099.61	_____
TOTAL FIXED COST				3643.67	_____
TOTAL COST				7789.02	_____

Table 4i: Machinery and Building Complement

Machine Name	Purchase Price (\$)	Years of Use	Salvage Value (\$)	Annual Repair Cost (\$)	Annual Hours of Use	Gallons of Fuel Use Per Hour
55HP-Wheel Tractor	21,000	15	5,000	600	400	1.5 Diesel
4WD-ATV	6,000	10	1,500	150	400	.5 Gas
Pickup	25,000	15	3,000	450	600	2.0 Gas
6' Rototiller	3,500	10	350	580	150	
100 Gallon Sprayer	2,000	10	500	750	60	
Backfork	200	20	0	20	150	
PTO Blast Sprayer	14,000	10	2,800	1,250	200	
Front-end Loader	5,000	15	1,000	425	150	
Trailer	2,000	20	500	100	100	
Bin Trailer	3,500	10	700	300	350	
9' Rotary Mower	3,500	10	500	325	150	
Pruning Tools	30	4	0	0	100	
Picking Equipment	17	3	0	0	50	
Machine Shed & Shop	30,000	30	0	50	70 acres	
Shop Tools	10,000	20	0	0	70 acres	
Wind Machine	16,000	30	3,200	300	40 hours over 10 acres	13.0 Propane
Alarm & Thermometers	205	10	0	0	10 acres	
Pump & Mainline	1,000	30	0	20	1 acre	
Irrigation System	1,150	20	0	30	1 acre	
Holding Pond	7,000	20	0	100	10 acres	

TABLE 5i: HOURLY AND PER ACRE MACHINERY COSTS

MACHINERY	PURCHASE PRICE	YEARS TO TRADE	ANNUAL HOURS	DEPREC-IATION	INTER-EST	INSUR-ANCE	TAXES	HOUSING	TOTAL FIXED COST	REPAIR	FUEL AND LUBE	TOTAL VARIABLE COST	TOTAL COST
	\$								-----COST PER HOUR-----				
52HP-WHEEL TRACTOR	21,000.00	15	400	2.67	2.93	.20	.59	.00	6.37	1.50	1.81	3.31	9.68
4-WHEEL ATV	6,000.00	10	400	1.13	.84	.06	.17	.00	2.19	.38	.63	1.01	3.20
PICKUP	25,000.00	15	600	2.44	2.10	.14	.42	.00	5.10	.75	2.53	3.28	8.38
6' ROTOTILLER	3,500.00	10	150	2.10	1.16	.08	.23	.00	3.56	3.87	.00	3.87	7.43
100 GAL SPRAYER	2,000.00	10	60	2.50	1.88	.13	.38	.00	4.88	12.50	.00	12.50	17.37
BACKFORK	200.00	20	150	.07	.06	.00	.01	.00	.14	.13	.00	.13	.28
PTO BLAST SPRAYER	14,000.00	10	200	5.60	3.78	.25	.76	.00	10.39	6.25	.00	6.25	16.64
FRONT-END LOADER	5,000.00	15	150	1.78	1.80	.12	.36	.00	4.06	2.83	.00	2.83	6.89
TRAILER	2,000.00	20	100	.75	1.13	.08	.23	.00	2.18	1.00	.00	1.00	3.18
BIN TRAILER	3,500.00	10	350	.80	.54	.04	.11	.00	1.48	.86	.00	.86	2.34
9' ROTARY MOWER	3,500.00	10	150	2.00	1.20	.08	.24	.00	3.52	2.17	.00	2.17	5.69
PRUNING TOOLS	30.00	4	100	.08	.01	.00	.00	.00	.09	.00	.00	.00	.09
PICKING EQUIPMENT	17.00	3	50	.11	.02	.00	.00	.00	.13	.00	.00	.00	.13
									-----COST PER ACRE-----				
MACHINE SHED & SHOP	30,000.00	30	-	14.29	19.29	1.29	3.86	.00	38.71	.71	.00	.71	39.43
SHOP TOOLS	10,000.00	20	-	7.14	6.43	.43	1.29	.00	15.29	.00	.00	.00	15.29
WIND MACHINE	16,000.00	30	-	42.67	86.40	5.76	17.28	.00	152.11	30.00	62.79	92.79	244.90
ALARM & THEMOM.	205.00	10	-	2.05	.92	.00	.00	.00	2.97	.00	.00	.00	2.97
PUMP & MAINLINES	1,000.00	30	-	33.33	45.00	3.00	9.00	.00	90.33	20.00	.00	20.00	110.33
IRRIGATION SYSTEM	1,150.00	20	-	57.50	51.75	3.45	.00	.00	112.70	30.00	.00	30.00	142.70
HOLDING POND	7,000.00	20	-	35.00	31.50	2.10	6.30	.00	74.90	10.00	.00	10.00	84.90

## Appendix III

Cost of Establishing a High Density

Golden Delicious Apple Orchard

Using Organic Production Practices



TABLE 1o1: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER ORGANIC PRODUCTION PRACTICES - 1994.

OPERATION	TOOLING	MTH YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
						FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
						\$	\$	\$	\$	\$	\$	\$
SOIL SAMPLE	CUSTOM HIRE	FEB 1994	.00	.00	.00	.00	.00	12.00	.00	.72	12.72	12.72
RIP LAND	CUSTOM HIRE	FEB 1994	.00	.00	.00	.00	.00	100.00	.00	6.00	106.00	106.00
CLEAN UP & DISK	CUSTOM HIRE	FEB 1994	.00	.00	.00	.00	.00	150.00	.00	9.00	159.00	159.00
LAYOUT & STAKE	HAND LABOR	FEB 1994	.00	4.00	.00	.00	30.00	.00	5.00	2.10	37.10	37.10
FERTILIZE	52HP-WT, TRAILER W/HAND LABOR	MAR 1994	4.00	12.60	34.19	17.25	99.75	.00	70.00	9.82	196.81	231.00
PLANT TREES	CUSTOM PLANTED	MAR 1994	.00	.00	.00	.00	.00	363.20	3632.00	209.75	4204.95	4204.95
COVER CROP PREP	52HP-WT, ROTOTILLER	MAR 1994	2.50	2.75	24.84	17.94	24.06	.00	.00	2.21	44.21	69.05
SEED COVER CROP	52HP-WT, RENTED SEEDER	MAR 1994	1.10	1.21	7.01	3.64	10.59	10.00	18.75	2.26	45.24	52.25
PRUNE	HAND LABOR (1 PERSON)	MAR 1994	.00	1.00	.09	.00	7.50	.00	.00	.39	7.89	7.99
APPLY MULCH	52HP-WT, TRAILER W/HAND LABOR	MAR 1994	2.00	6.30	17.09	8.62	49.87	.00	1025.00	56.88	1140.38	1157.47
TREE TRAINING	HAND LABOR	SEA 1994	.00	20.00	.00	.00	150.00	.00	24.00	7.83	181.83	181.83
IRRIGATE	SOLID SET UNDERTREE IRR SYSTEM	SEA 1994	.00	.00	203.03	50.00	.00	150.00	.00	9.00	209.00	412.03
IRRIGATE	4-WHEEL ATV W/ABOVE OPERATION	SEA 1994	10.00	10.00	21.94	10.08	87.50	.00	.00	4.39	101.97	123.90
INSTALL TRELLIS	HAND LABOR	MAY 1994	.00	60.00	.00	.00	468.75	.00	650.00	41.95	1160.70	1160.70
TIE LEADERS	HAND LABOR	MAY 1994	.00	15.00	.00	.00	.00	.00	6.00	4.44	122.94	122.94
HOE AROUND TREES	HAND LABOR	JUN 1994	.00	30.00	.00	.00	225.00	.00	.00	6.75	231.75	231.75
MOW ORCHARD	52HP-WT, 9' ROTARY MOWER	JUL 1994	.50	.55	4.95	2.74	4.81	.00	.00	.17	7.72	12.67
MOW ORCHARD	52HP-WT, 9' ROTARY MOWER	AUG 1994	.50	.55	4.95	2.74	4.81	.00	.00	.11	7.66	12.61
MOW ORCHARD	52HP-WT, 9' ROTARY MOWER	OCT 1994	.50	.55	4.95	2.74	4.81	.00	.00	.00	7.55	12.50
GOPHER CONTROL	HAND LABOR	ANN 1994	.00	2.00	.00	.00	15.00	.00	1.28	.73	17.01	17.01
MISC USE	1/2 TON PICKUP	ANN 1994	7.14	.00	36.45	23.42	.00	.00	.00	1.05	24.47	60.92
MISC USE	4-WHEEL ALL TERRAIN VEHICLE	ANN 1994	5.70	.00	12.50	5.74	.00	.00	.00	.26	6.00	18.51
MISC USE	MACH SHED & SHOP	ANN 1994	.00	.00	38.71	.71	.00	.00	.00	.03	.75	39.46
MISC USE	SHOP TOOLS	ANN 1994	.00	.00	15.29	.00	.00	.00	.00	.00	.00	15.29
OVERHEAD	UTILITIES, LEGAL, ACCTNG, ETC.	ANN 1994	.00	.00	.00	.00	.00	401.68	.00	.00	401.68	401.68
MANAGEMENT	OPERATOR MANAGEMENT	ANN 1994	.00	.00	250.00	.00	.00	.00	.00	.00	.00	250.00
LAND COST	INTEREST ON LAND	ANN 1994	.00	.00	350.00	.00	.00	.00	.00	.00	.00	350.00
TAXES	LAND	ANN 1994	.00	.00	47.16	.00	.00	.00	.00	.00	.00	47.16
TOTAL PER ACRE			33.44	166.51	1073.14	145.62	1294.96	1186.88	5432.03	375.85	8435.34	9508.48

**TABLE 201: MATERIALS AND SERVICES USED BY ORGANIC PRACTICES  
- 1994.**

<b>OPERATION</b>		<b>MATERIAL AND/OR SERVICE</b>
Soil Sample	February	Custom hire @ \$12.00/acre
Rip Land	February	Custom hire @ \$100.00/acre
Cleanup & Disk	February	Custom hire @ \$150.00/acre
Layout & Stake	February	Layout & state material @ \$5.00/acre
Fertilize	March	1.0 ton of compost @ \$70.00/ton
Plant Trees	March	908 Standard Golden Delicious trees @ \$4.00/tree Custom plant 908 trees @ 40¢/tree
Seed Cover Crop	March	Rented grass seeder @ \$10.00/acre 15.0 lbs. of Companion seed @ \$1.25/lb
Mulch	March	205 cubic yards of wood chips @ \$5.00/cubic yard
Tree Training	Season	Tree training material @ \$24.00/acre
Irrigate	Season	Irrigation charge & electricity @ \$150.00/acre
Install Trellis	May	Trellis material @ \$650.00/acre
Tie Leaders	May	Tape & twine @ \$6.00/acre
Gopher Control	Annual	1.0 lb. of Gopher Getter Bait @ \$1.28/lb.
Overhead	Annual	5% variable cost

TABLE 301: ITEMIZED COST PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER ORGANIC PRODUCTION PRACTICES - 1994.

	UNIT	PRICE OR COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
-----					
VARIABLE COSTS		\$		\$	
SOIL SAMPLE	ACRE	12.00	1.00	12.00	_____
CLEAN-UP & DISK	ACRE	150.00	1.00	150.00	_____
CUSTOM RIPPING	ACRE	100.00	1.00	100.00	_____
LAYOUT & STAKE MATER.	ACRE	5.00	1.00	5.00	_____
GOLDEN TREES	TREE	4.00	908.00	3632.00	_____
CUSTOM PLANT TREES	TREE	.40	908.00	363.20	_____
COMPANION SEED	LB.	1.25	15.00	18.75	_____
RENT SEEDER	ACRE	10.00	1.00	10.00	_____
MULCH	CUYD	5.00	205.00	1025.00	_____
COMPOST	TON	70.00	1.00	70.00	_____
GOPHER GETTER	LB.	1.28	1.00	1.28	_____
TRELLIS MATERIAL	ACRE	650.00	1.00	650.00	_____
TAPE & TWINE	ACRE	6.00	1.00	6.00	_____
TREE TRAIN MATERIAL	ACRE	24.00	1.00	24.00	_____
IRR. CHG. & ELECT.	ACRE	150.00	1.00	150.00	_____
CASUAL LABOR	HOUR	7.50	129.60	972.00	_____
LABOR (TRAC/MACH)	HOUR	322.96	38.00	322.96	_____
TRACTOR REPAIR	ACRE	16.65	1.00	16.65	_____
TRACTOR FUEL/LUBE	ACRE	20.10	1.00	20.10	_____
MACHINERY REPAIRS	ACRE	80.87	1.00	80.87	_____
MACHINE FUEL/LUBE	ACRE	27.99	1.00	27.99	_____
INTEREST ON OP. CAP.	ACRE	375.85	1.00	375.85	_____
OVERHEAD	ACRE	401.68	1.00	401.68	_____
				-----	
TOTAL VARIABLE COST				8435.34	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	29.60	1.00	29.60	_____
TRACTOR INTEREST	ACRE	32.47	1.00	32.47	_____
TRACTOR INSURANCE	ACRE	2.16	1.00	2.16	_____
TRACTOR TAXES	ACRE	6.49	1.00	6.49	_____
MACHINE DEPRECIATION	ACRE	160.20	1.00	160.20	_____
MACHINE INTEREST	ACRE	162.16	1.00	162.16	_____
MACHINE INSURANCE	ACRE	10.81	1.00	10.81	_____
MACHINE TAXES	ACRE	22.08	1.00	22.08	_____
LAND TAX - YR 1	ACRE	47.16	1.00	47.16	_____
LAND COST	ACRE	350.00	1.00	350.00	_____
MANAGEMENT	ACRE	250.00	1.00	250.00	_____
				-----	
TOTAL FIXED COST				1073.14	_____
TOTAL COST				9508.48	_____
-----					

TABLE 1o2: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER ORGANIC PRODUCTION PRACTICES - 1995.

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
						\$	\$	\$	\$	\$	\$	\$	
PRUNE	HAND LABOR (1 PERSON)	FEB	1995	.00	6.20	.57	.00	46.50	.00	.00	2.79	49.29	49.86
DORM. SPY + ZINC	52HP-WT, BLAST SPRAYER	MAR	1995	.50	.60	8.38	4.78	5.25	.00	2.73	.67	13.43	21.81
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	APR	1995	.50	.60	8.38	4.78	5.25	.00	9.30	.87	20.20	28.58
FERTILIZE	52HP-WT, TRAILER W/HAND LABOR	APR	1995	4.00	12.60	34.19	17.25	99.75	.00	70.00	8.41	195.41	229.60
INSTALL FABRIC	52HP-WT, TRAILER W/HAND LABOR	APR	1995	2.00	40.00	17.09	8.62	305.00	.00	949.00	56.82	1319.44	1336.53
IRRIGATE	SOLID SET UNDERTREE IRR SYSTEM	SEA	1995	.00	.00	203.03	50.00	.00	150.00	.00	9.00	209.00	412.03
IRRIGATE	4-WHEEL ATV W/ABOVE OPERATION	SEA	1995	10.00	10.00	21.94	10.08	87.50	.00	.00	4.39	101.97	123.90
MOW	52HP-WT, 9' ROTARY MOWER	MAY	1995	.50	.55	4.95	2.74	4.81	.00	.00	.28	7.83	12.78
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	MAY	1995	.50	.60	8.38	4.78	5.25	.00	9.30	.72	20.06	28.44
TREE TRAINING	HAND LABOR	MAY	1995	.00	60.00	.00	.00	468.75	.00	37.50	18.98	525.23	525.23
MOW	52HP-WT, 9' ROTARY MOWER	JUN	1995	.50	.55	4.95	2.74	4.81	.00	.00	.23	7.78	12.72
MOW	52HP-WT, 9' ROTARY MOWER	JUL	1995	.50	.55	4.95	2.74	4.81	.00	.00	.17	7.72	12.67
TREE TRAINING	HAND LABOR	JUL	1995	.00	20.00	.00	.00	156.25	.00	12.50	3.80	172.55	172.55
MOW	52HP-WT, 9' ROTARY MOWER	AUG	1995	.50	.55	4.95	2.74	4.81	.00	.00	.11	7.66	12.61
MOW	52HP-WT, 9' ROTARY MOWER	OCT	1995	.50	.55	4.95	2.74	4.81	.00	.00	.00	7.55	12.50
GOPHER CONTROL	HAND LABOR	ANN	1995	.00	2.00	.00	.00	15.00	.00	1.28	.73	17.01	17.01
MISC USE	1/2 TON PICKUP	ANN	1995	7.14	.00	36.45	23.42	.00	.00	.00	1.05	24.47	60.92
MISC USE	4-WHEEL ALL TERRAIN VEHICLE	ANN	1995	5.70	.00	12.50	5.74	.00	.00	.00	.26	6.00	18.51
MISC USE	MACHINE SHED & SHOP	ANN	1995	.00	.00	38.71	.71	.00	.00	.00	.03	.75	39.46
MISC USE	SHOP TOOLS	ANN	1995	.00	.00	15.29	.00	.00	.00	.00	.00	.00	15.29
OVERHEAD	UTILITIES, LEGAL, ACCTNG, ETC.	ANN	1995	.00	.00	.00	.00	.00	135.67	.00	.00	135.67	135.67
MANAGEMENT	OPERATOR MANAGEMENT	ANN	1995	.00	.00	250.00	.00	.00	.00	.00	.00	.00	250.00
LAND COST	INTEREST ON LAND	ANN	1995	.00	.00	350.00	.00	.00	.00	.00	.00	.00	350.00
TAXES	LAND	ANN	1995	.00	.00	49.78	.00	.00	.00	.00	.00	.00	49.78
INTEREST COST	INTEREST ON 1ST YR ESTAB COST	ANN	1995	.00	.00	855.76	.00	.00	.00	.00	.00	.00	855.76
TOTAL PER ACRE				35.34	172.62	1935.18	143.86	1218.56	285.67	1091.61	109.33	2849.03	4784.21

**TABLE 2o1: MATERIALS AND SERVICES USED BY ORGANIC PRACTICES  
- 1995.**

<b>OPERATION</b>		<b>MATERIAL AND/OR SERVICE</b>
Dormant Spray	March	1.05 gals. of Superior Oil @ \$2.60/gal.
Mildew Spray	April	10.0 lbs. of Microthiol @ 93¢/lb.
Fertilize	April	1.0 ton of compost @ \$70.00/ton
Install Landscape Fabric	April	3650 feet @ 26¢/ft.
Irrigate	Season	Irrigation charge and electricity @ \$150.00/acre
Mildew Spray	May	10.0 lbs. of Microthiol @ 93¢/lb.
Tree Training	May	Tape & twine @ \$37.50/acre
Tree Training	July	Tape & twine @ \$12.50/acre
Gopher Control	Annual	1.0 lb. of Gopher Getter Bait @ \$1.28/lb.
Overhead	Annual	5% variable cost

TABLE 302: ITEMIZED COST PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER ORGANIC PRODUCTION PRACTICES - 1995.

	UNIT	PRICE OR COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
-----					
VARIABLE COSTS		\$		\$	
SUPERIOR OIL	GAL.	2.60	1.05	2.73	_____
COMPOST	TON	70.00	1.00	70.00	_____
MICROTHIOL	LB.	.93	20.00	18.60	_____
GOPHER GETTER	LB.	1.28	1.00	1.28	_____
LANDSCAPE FABRIC	FOOT	.26	3650.00	949.00	_____
TAPE & TWINE	ACRE	50.00	1.00	50.00	_____
IRR. CHG. & ELECT.	ACRE	150.00	1.00	150.00	_____
CASUAL LABOR	HOUR	7.50	112.60	844.50	_____
LABOR (TRAC/MACH)	HOUR	8.50	44.01	374.06	_____
TRACTOR REPAIR	ACRE	15.00	1.00	15.00	_____
TRACTOR FUEL/LUBE	ACRE	18.11	1.00	18.11	_____
MACHINERY REPAIRS	ACRE	82.75	1.00	82.75	_____
MACHINE FUEL/LUBE	ACRE	27.99	1.00	27.99	_____
INTEREST ON OP. CAP.	ACRE	109.33	1.00	109.33	_____
OVERHEAD	ACRE	135.67	1.00	135.67	_____
				-----	
TOTAL VARIABLE COST				2849.03	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	26.67	1.00	26.67	_____
TRACTOR INTEREST	ACRE	29.25	1.00	29.25	_____
TRACTOR INSURANCE	ACRE	1.95	1.00	1.95	_____
TRACTOR TAXES	ACRE	5.85	1.00	5.85	_____
MACHINE DEPRECIATION	ACRE	165.74	1.00	165.74	_____
MACHINE INTEREST	ACRE	166.21	1.00	166.21	_____
MACHINE INSURANCE	ACRE	11.08	1.00	11.08	_____
MACHINE TAXES	ACRE	22.89	1.00	22.89	_____
LAND TAX - YR 2	ACRE	49.78	1.00	49.78	_____
LAND COST	ACRE	350.00	1.00	350.00	_____
MANAGEMENT	ACRE	250.00	1.00	250.00	_____
INTEREST ON ESTAB.	ACRE	855.76	1.00	855.76	_____
				-----	
TOTAL FIXED COST				1935.18	_____
TOTAL COST				4784.21	_____
-----					

TABLE 1o3: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER ORGANIC PRODUCTION PRACTICES - 1996.

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	VARIABLE COST						TOTAL VARIABLE COST	TOTAL COST
						TOTAL FIXED COST	FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
PRUNE	HAND LABOR (2 PEOPLE)	FEB	1996	.00	15.00	\$ 1.38	\$ .00	\$ 112.50	\$ .00	\$ .00	\$ 6.75	\$ 119.25	\$ 120.63
DORMANT SPRAY	52HP-WT, BLAST SPRAYER	MAR	1996	.50	.60	8.38	4.78	5.25	.00	13.20	1.22	24.45	32.83
RENT BEEHIVE	ONE BEEHIVE PER ACRE	APR	1996	.00	.00	.00	.00	.00	35.00	.00	1.58	36.58	36.58
IRRIGATE	SOLID SET UNDERTREE IRR SYSTEM	SEA	1996	1.00	.00	203.03	50.00	.00	150.00	.00	9.00	209.00	412.03
IRRIGATE	4-WHEEL ATV W/ABOVE OPERATION	SEA	1996	10.00	10.00	21.94	10.08	87.50	.00	.00	4.39	101.97	123.90
HANG DISPENSERS	HAND LABOR	SEA	1996	.00	1.00	.00	.00	7.50	.00	110.00	5.29	122.79	122.79
HAND HOEING (8X)	HAND LABOR	SEA	1996	.00	48.00	.00	.00	360.00	.00	.00	16.20	376.20	376.20
MOW	52HP-WT, 9' ROTARY MOWER	MAY	1996	.50	.55	4.95	2.74	4.81	.00	.00	.28	7.83	12.78
MILDEW/FOLIAR	52HP-WT, BLAST SPRAYER	MAY	1996	.50	.60	8.38	4.78	5.25	.00	13.30	.87	24.21	32.59
TREE TRAINING	HAND LABOR	MAY	1996	.00	20.00	.00	.00	150.00	.00	12.50	6.09	168.59	168.59
MOW	52HP-WT, 9' ROTARY MOWER	JUN	1996	.50	.55	4.95	2.74	4.81	.00	.00	.23	7.78	12.72
HAND THINNING	HAND LABOR	JUN	1996	.00	20.00	.00	.00	150.00	.00	.00	4.50	154.50	154.50
INSECTICIDE	52HP-WT, BLAST SPRAYER	JUN	1996	.50	.60	8.38	4.78	5.25	.00	11.90	.66	22.59	30.97
MOW	52HP-WT, 9' ROTARY MOWER	JUL	1996	.50	.55	4.95	2.74	4.81	.00	.00	.17	7.72	12.67
TREE TRAINING	HAND LABOR	JUL	1996	.00	20.00	.00	.00	150.00	.00	12.50	3.66	166.16	166.16
CALCIUM SPRAY	52HP-WT, BLAST SPRAYER	JUL	1996	.50	.60	8.38	4.78	5.25	.00	3.12	.30	13.45	21.83
MOW	52HP-WT, 9' ROTARY MOWER	AUG	1996	.50	.55	4.95	2.74	4.81	.00	.00	.11	7.66	12.61
CALCIUM SPRAY	52HP-WT, BLAST SPRAYER	JUL	1996	.50	.60	8.38	4.78	5.25	.00	3.12	.20	13.35	21.73
HARVEST(20.9 BN)	PICKERS (4 PEOPLE)	SEP	1996	.00	41.80	5.31	.00	313.50	.00	.00	2.35	315.85	321.16
HARVEST	52HP-WT, BACKFORK	SEP	1996	7.84	10.45	51.07	27.01	91.44	.00	.00	.89	119.33	170.40
BIN HANDLING	52HP-WT, FORKLIFT	SEP	1996	5.23	6.27	54.55	32.14	54.86	.00	.00	.65	87.65	142.20
HAUL FRUIT	CUSTOM HAULING	SEP	1996	.00	.00	.00	.00	.00	62.70	.00	.47	63.17	63.17
FOLIAR SPRAY	52HP-WT, BLAST SPRAYER	SEP	1996	.50	.60	8.38	4.78	5.25	.00	11.50	.16	21.69	30.07
MOW	52HP-WT, 9' ROTARY MOWER	OCT	1996	.50	.55	4.95	2.74	4.81	.00	.00	.00	7.55	12.50
GOPHER CONTROL	HAND LABOR	ANN	1996	.00	2.00	.00	.00	15.00	.00	1.28	.73	17.01	17.01
MISC USE	1/2 TON PICKUP	ANN	1996	7.14	.00	36.45	23.42	.00	.00	.00	1.05	24.47	60.92
MISC USE	4-WHEEL ALL TERRAIN VEHICLE	ANN	1996	5.70	.00	12.50	5.74	.00	.00	.00	.26	6.00	18.51
MISC USE	MACHINE SHED & SHOP	ANN	1996	1.00	.00	38.71	.71	.00	.00	.00	.03	.75	39.46
MISC USE	SHOP TOOLS	ANN	1996	1.00	.00	15.29	.00	.00	.00	.00	.00	.00	15.29
OVERHEAD	UTILITIES, LEGAL, ACCTNG, ETC.	ANN	1996	.00	.00	.00	.00	.00	112.38	.00	.00	112.38	112.38
MANAGEMENT	OPERATOR MANAGEMENT	ANN	1996	.00	.00	250.00	.00	.00	.00	.00	.00	.00	250.00
LAND COST	INTEREST ON LAND	ANN	1996	.00	.00	350.00	.00	.00	.00	.00	.00	.00	350.00
TAXES	LAND	ANN	1996	.00	.00	53.71	.00	.00	.00	.00	.00	.00	53.71
INTEREST COST	INTEREST ON ESTABLISHMENT COST	ANN	1996	.00	.00	1286.34	.00	.00	.00	.00	.00	.00	1286.34
TOTAL PER ACRE				59.41	200.87	2455.29	191.48	1547.85	360.08	192.42	68.09	2359.92	4815.21

**TABLE 2o3: MATERIALS AND SERVICES USED BY ORGANIC PRACTICES  
- 1996.**

<b>OPERATION</b>	<b>MATERIAL AND/OR SERVICE</b>	
Dormant Spray	March	1.5 gals. of Superior Oil @ \$2.60/gal. 10.0 lbs. of Microthiol @ 93¢/lb.
Rent Beehive	April	1.0 beehive @ \$35.00/hive
Irrigate	Season	Irrigation charge & electricity @ \$150.00/acre
Hang Dispensers	Season	400 ties @ 27.5¢/tie
Mildew/Foliar Fertilize Spray	May	10.0 lbs. Microthiol @ 93¢/lb. 5.0 lbs. Solubor @ 80¢/lb.
Tree Training	May	Tape & twine @ \$12.50/acre
Insecticide	June	1.4 lbs. of DiPel @9.08/lb.
Tree Training	July	Tape & twine @ \$12.50/acre
Calcium Spray	July	6.0 lbs. calcium chloride @ 52¢/lb.
Calcium Spray	August	6.0 lbs. calcium chloride @ 52¢/lb.
Foliar Fertilize Spray	September	5.0 gals. of zinc sulfate @ \$1.50/gal. 5.0 lbs. Solubor @ 80¢/lb.
Harvest	September	20.9 bins of apples picked @ \$8.00/bin
Haul Fruit	September	20.9 bins of apples hauled @ \$3.00/bin
Gopher Control	Annual	1.0 lb. of Gopher Getter @ \$1.28/lb.
Overhead	Annual	5% variable cost



TABLE 303: ITEMIZED COST PER ACRE FOR ESTABLISHING A HIGH DENSITY  
 GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER ORGANIC  
 PRODUCTION PRACTICES - 1996.

		PRICE OR		VALUE OR	YOUR
	UNIT	COST/UNIT	QUANTITY	COST	FARM
-----					
VARIABLE COSTS		\$		\$	
SUPERIOR OIL	GAL.	2.60	1.50	3.90	_____
MICROTHIOL	LB.	.93	20.00	18.60	_____
SOLUBOR	LB.	.80	10.00	8.00	_____
DIPEL	LB.	8.50	1.40	11.90	_____
CALCIUM CHLORIDE	LB.	.52	12.00	6.24	_____
ZINC SULFATE	GAL.	1.50	5.00	7.50	_____
GOPHER GETTER	LB.	1.28	1.00	1.28	_____
RENT BEEHIVE	HIVE	35.00	1.00	35.00	_____
TAPE & TWINE	ACRE	25.00	1.00	25.00	_____
PHEROMONE DISPENSERS	DISP	.28	400.00	110.00	_____
IRR. CHG. & ELECT.	ACRE	150.00	1.00	150.00	_____
CUSTOM HAULING	BIN	3.00	20.90	62.70	_____
CASUAL LABOR	HOUR	7.50	167.80	1258.50	_____
LABOR (TRAC/MACH)	HOUR	8.50	34.04	289.36	_____
TRACTOR REPAIR	ACRE	27.85	1.00	27.85	_____
TRACTOR FUEL/LUBE	ACRE	33.63	1.00	33.63	_____
MACHINERY REPAIRS	ACRE	101.99	1.00	101.99	_____
MACHINE FUEL/LUBE	ACRE	27.99	1.00	27.99	_____
INTEREST ON OP. CAP.	ACRE	68.09	1.00	68.09	_____
OVERHEAD	ACRE	112.38	1.00	112.38	_____
				-----	
TOTAL VARIABLE COST				2359.92	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	49.52	1.00	49.52	_____
TRACTOR INTEREST	ACRE	54.32	1.00	54.32	_____
TRACTOR INSURANCE	ACRE	3.62	1.00	3.62	_____
TRACTOR TAXES	ACRE	10.86	1.00	10.86	_____
MACHINE DEPRECIATION	ACRE	184.66	1.00	184.66	_____
MACHINE INTEREST	ACRE	175.74	1.00	175.74	_____
MACHINE INSURANCE	ACRE	11.72	1.00	11.72	_____
MACHINE TAXES	ACRE	24.80	1.00	24.80	_____
LAND TAX - YR 3	ACRE	53.71	1.00	53.71	_____
LAND COST	ACRE	350.00	1.00	350.00	_____
MANAGEMENT	ACRE	250.00	1.00	250.00	_____
INTEREST ON ESTAB.	ACRE	1286.34	1.00	1286.34	_____
				-----	
TOTAL FIXED COST				2455.29	_____
TOTAL COST				4815.21	_____
-----					

TABLE 1o4: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER ORGANIC PRODUCTION PRACTICES - 1997.

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
						\$	\$	\$	\$	\$	\$	\$	
PRUNE	HAND LABOR (2 PEOPLE)	FEB	1997	.00	25.00	2.30	.00	187.50	.00	.00	11.25	198.75	201.05
DORMANT SPRAY	52HP-WT, BLAST SPRAYER	MAR	1997	.50	.60	8.38	4.78	5.25	.00	14.76	1.30	26.09	34.47
RENT BEEHIVE	ONE BEEHIVE PER ACRE	APR	1997	.00	.00	.00	.00	.00	35.00	.00	1.58	36.58	36.58
FROST CONTROL	FROST ALARM & THERMOMETERS	APR	1997	.00	.00	2.97	.00	.00	.00	.00	.00	.00	2.97
FROST CONTROL	WIND MACHINE	APR	1997	.00	2.00	152.11	92.79	17.50	.00	.00	4.96	115.25	267.36
FROST CONTROL	UNDERTREE SPRINKLERS	APR	1997	.00	.00	74.90	10.00	.00	18.75	.00	1.29	30.04	104.94
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	APR	1997	.50	.60	8.38	4.78	5.25	.00	9.30	.87	20.20	28.58
REMOVE FABRIC	52HP-WT, TRAILER W/HAND LABOR	APR	1997	2.00	24.00	17.09	8.62	185.00	.00	.00	8.71	202.34	219.43
IRRIGATE	4-WHEEL ATV W/ABOVE OPERATION	SEA	1997	10.00	10.00	21.94	10.08	87.50	.00	.00	4.39	101.97	123.90
IRRIGATE	SOLID SET UNDERTREE IRR SYSTEM	SEA	1997	.00	.00	203.03	50.00	.00	150.00	.00	9.00	209.00	412.03
CULTIVATE (8X)	52HP-WT, GRAPE SPADE CULTIVAT.	SEA	1997	8.00	8.80	66.67	28.49	77.00	.00	.00	4.75	110.24	176.91
HAND HOEING (8X)	HAND LABOR	SEA	1997	.00	32.00	.00	.00	240.00	.00	.00	10.80	250.80	250.80
HANG DISPENSERS	HAND LABOR	SEA	1997	.00	1.00	.00	.00	7.50	.00	110.00	5.29	122.79	122.79
MOW	52HP-WT, 9' ROTARY MOWER	MAY	1997	.50	.55	4.95	2.74	4.81	.00	.00	.28	7.83	12.78
INSECT/FOLIAR	52HP-WT, BLAST SPRAYER	MAY	1997	.50	.60	8.38	4.78	5.25	.00	15.90	.97	26.90	35.28
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	MAY	1997	.50	.60	8.38	4.78	5.25	.00	9.30	.72	20.06	28.44
INSECTICIDE	52HP-WT, BLAST SPRAYER	JUN	1997	.50	.60	8.38	4.78	5.25	.00	11.90	.66	22.59	30.97
MOW	52HP-WT, 9' ROTARY MOWER	JUN	1997	.50	.55	4.95	2.74	4.81	.00	.00	.23	7.78	12.72
CALCIUM SPRAY	52HP-WT, BLAST SPRAYER	JUN	1997	.50	.60	8.38	4.78	5.25	.00	3.12	.39	13.55	21.92
HAND THINNING	HAND LABOR	JUN	1997	.00	23.00	.00	.00	172.50	.00	.00	5.18	177.67	177.67
TREE TRAINING	HAND LABOR	JUL	1997	.00	25.00	.00	.00	187.50	.00	50.00	5.34	242.84	242.84
MOW	52HP-WT, 9' ROTARY MOWER	JUL	1997	.50	.55	4.95	2.74	4.81	.00	.00	.17	7.72	12.67
CALCIUM SPRAY	52HP-WT, BLAST SPRAYER	JUL	1997	.50	.60	8.38	4.78	5.25	.00	3.12	.30	13.45	21.83
MOW	52HP-WT, 9' ROTARY MOWER	AUG	1997	.50	.55	4.95	2.74	4.81	.00	.00	.11	7.66	12.61
CALCIUM SPRAY	52HP-WT, BLAST SPRAYER	JUN	1997	.50	.60	8.38	4.78	5.25	.00	3.12	.20	13.35	21.73
HARVEST	52HP-WT, BACKFORK	SEP	1997	15.02	16.52	97.85	51.74	144.55	.00	.00	1.47	197.76	295.61
BIN HANDLING	52HP-WT, BIN TRAILER	SEP	1997	7.51	8.26	59.00	31.30	72.27	.00	.00	.78	104.36	163.35
HARVEST(75.1 BN)	PICKERS (10 PEOPLE)	SEP	1997	.00	.00	13.27	.00	.00	600.80	.00	4.51	605.31	618.58
CHECK BINS	CHECKER FOR PICKING CREW	SEP	1997	.00	15.02	.00	.00	114.00	.00	.00	.86	114.85	114.85
LOAD FRUIT	52HP-WT, FORKLIFT	SEP	1997	3.00	3.30	31.29	18.43	28.88	.00	.00	.35	47.66	78.95
HAUL FRUIT	CUSTOM HAULING	SEP	1997	.00	.00	.00	.00	.00	225.30	.00	1.69	226.99	226.99
MOW	52HP-WT, 9' ROTARY MOWER	OCT	1997	.50	.55	4.95	2.74	4.81	.00	.00	.00	7.55	12.50
GOPHER CONTROL	HAND LABOR	ANN	1997	.00	2.00	.00	.00	15.00	.00	1.28	.73	17.01	17.01
LAND COST	INTEREST ON LAND	ANN	1997	.00	.00	350.00	.00	.00	.00	.00	.00	.00	350.00
MISC USE	4-WHEEL ALL TERRAIN VEHICLE	ANN	1997	5.70	.00	12.50	5.74	.00	.00	.00	.26	6.00	18.51
MISC USE	1/2 TON PICKUP	ANN	1997	7.14	.00	36.45	23.42	.00	.00	.00	1.05	24.47	60.92
MISC USE	MACHINE SHED & SHOP	ANN	1997	.00	.00	38.71	.71	.00	.00	.00	.03	.75	39.46
MISC USE	SHOP TOOLS	ANN	1997	.00	.00	15.29	.00	.00	.00	.00	.00	.00	15.29
TAXES	LAND	ANN	1997	.00	.00	64.19	.00	.00	.00	.00	.00	.00	64.19
MANAGEMENT	OPERATOR MANAGEMENT	ANN	1997	.00	.00	250.00	.00	.00	.00	.00	.00	.00	250.00
OVERHEAD	UTILITIES, LEGAL, ACCTNG, ETC.	ANN	1997	.00	.00	.00	.00	.00	166.91	.00	.00	166.91	166.91
INTEREST COST	INTEREST ON ESTABLISHMENT COST	ANN	1997	.00	.00	1629.14	.00	.00	.00	.00	.00	.00	1629.14
TOTAL PER ACRE				64.87	203.45	3230.47	383.27	1602.76	1196.76	231.80	90.48	3505.07	6735.54

**TABLE 2o4: MATERIALS AND SERVICES USED BY ORGANIC PRACTICES  
- 1997.**

<b>OPERATION</b>		<b>MATERIAL AND/OR SERVICE</b>
Dormant Spray	March	2.1 gals. of Superior Oil @ \$2.60/gal. 10.0 lbs. of Microthiol @ .93¢/lb.
Rent Beehive	April	1.0 beehive @ \$35.00/hive
Frost Control	April	Irrigation charge & electricity @ \$18.75/acre
Mildew Spray	April	10.0 lbs. of Microthiol @ .93¢/lb.
Irrigate	Season	Irrigation charge & electricity @ \$150.00/acre
Hang Dispensers	Season	400 ties @ 27.5¢/tie
Insecticide/Foliar Spray	May	1.4 lbs. of DiPel @ \$8.50/lb. 5.0 lbs. of Solubor @ .80¢/lb.
Mildew Spray	May	10.0 lbs. of Microthiol @ .93¢/lb.
Insecticide Spray	June	1.4 lbs. of DiPel @ \$8.50/lb.
Calcium Spray	June	6.0 lbs. of calcium chloride @ 52¢/lb.
Tree Training	July	Tape & Twine @ \$50.00/acre
Calcium Spray	July	6.0 lbs. of calcium chloride @ 52¢/lb.
Calcium Spray	August	6.0 lbs. of calcium chloride @ 52¢/lb.
Harvest	September	75.1 bins of apples picked @ \$8.00/bin
Haul Fruit	September	75.1 bins of apples @ \$3.00/bin
Gopher Control	Annual	1.0 lb. of Gopher Getter @ \$1.28/lb.
Overhead	Annual	5% variable cost.

TABLE 304: ITEMIZED COST PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER ORGANIC PRODUCTION PRACTICES - 1997.

	UNIT	PRICE OR COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
-----					
VARIABLE COSTS		\$		\$	
SUPERIOR OIL	GAL.	2.60	2.10	5.46	_____
MICROTHIOL	LB.	.93	30.00	27.90	_____
DIPEL	LB.	8.50	2.80	23.80	_____
SOLUBOR	LB.	.80	5.00	4.00	_____
CALCIUM CHLORIDE	LB.	.52	18.00	9.36	_____
GOPHER GETTER	LB.	1.28	1.00	1.28	_____
RENT BEEHIVE	HIVE	35.00	1.00	35.00	_____
TAPE & TWINE	ACRE	50.00	1.00	50.00	_____
PHEROMONE DISPENSERS	DISP	.28	400.00	110.00	_____
IRR. CHG. & ELECT.	ACRE	168.75	1.00	168.75	_____
CUSTOM PICKING	BIN	8.00	75.10	600.80	_____
CUSTOM HAULING	BIN	3.00	75.10	225.30	_____
CASUAL LABOR	HOUR	7.50	143.20	1074.00	_____
LABOR (TRAC/MACH)	HOUR	8.50	62.21	528.76	_____
TRACTOR REPAIR	ACRE	63.05	1.00	63.05	_____
TRACTOR FUEL/LUBE	ACRE	76.13	1.00	76.13	_____
MACHINERY REPAIRS	ACRE	153.31	1.00	153.31	_____
MACHINE FUEL/LUBE	ACRE	90.78	1.00	90.78	_____
INTEREST ON OP. CAP.	ACRE	90.48	1.00	90.48	_____
OVERHEAD	ACRE	166.91	1.00	166.91	_____
				-----	
TOTAL VARIABLE COST				3505.07	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	112.08	1.00	112.08	_____
TRACTOR INTEREST	ACRE	122.94	1.00	122.94	_____
TRACTOR INSURANCE	ACRE	8.20	1.00	8.20	_____
TRACTOR TAXES	ACRE	24.59	1.00	24.59	_____
MACHINE DEPRECIATION	ACRE	291.55	1.00	291.55	_____
MACHINE INTEREST	ACRE	306.62	1.00	306.62	_____
MACHINE INSURANCE	ACRE	20.38	1.00	20.38	_____
MACHINE TAXES	ACRE	50.79	1.00	50.79	_____
LAND TAX - YR 4	ACRE	64.19	1.00	64.19	_____
LAND COST	ACRE	350.00	1.00	350.00	_____
MANAGEMENT	ACRE	250.00	1.00	250.00	_____
INTEREST ON ESTAB.	ACRE	1629.14	1.00	1629.14	_____
				-----	
TOTAL FIXED COST				3230.47	_____
TOTAL COST				6735.54	_____
-----					

TABLE 1o5: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER ORGANIC PRODUCTION PRACTICES - 1998.

OPERATION	TOOLING	MTH	YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
							FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
						\$	\$	\$	\$	\$	\$	\$	
PRUNE	HAND LABOR (2 PEOPLE)	FEB	1998	.00	30.00	2.76	.00	225.00	.00	.00	13.50	238.50	241.26
DORMANT SPRAY	52HP-WT, BLAST SPRAYER	MAR	1998	.50	.60	8.38	4.78	5.25	.00	14.76	1.30	26.09	34.47
RENT BEEHIVE	ONE BEEHIVE PER ACRE	APR	1998	.00	.00	.00	.00	.00	35.00	.00	1.58	36.58	36.58
FROST CONTROL	FROST ALARM & THERMOMETERS	APR	1998	.00	.00	2.97	.00	.00	.00	.00	.00	.00	2.97
FROST CONTROL	WIND MACHINE	APR	1998	.00	2.00	152.11	92.79	17.50	.00	.00	4.96	115.25	267.36
FROST CONTROL	UNDERTREE SPRINKLERS	APR	1998	.00	.00	74.90	10.00	.00	18.75	.00	1.29	30.04	104.94
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	APR	1998	.50	.60	8.38	4.78	5.25	.00	9.30	.87	20.20	28.58
IRRIGATE	4-WHEEL ATV W/ABOVE OPERATION	SEA	1998	10.00	10.00	21.94	10.08	87.50	.00	.00	4.39	101.97	123.90
IRRIGATE	SOLID SET UNDERTREE IRR SYSTEM	SEA	1998	.00	.00	203.03	50.00	.00	150.00	.00	9.00	209.00	412.03
CULTIVATE (8X)	52HP-WT, GRAPE SPADE CULTIVAT.	SEA	1998	8.00	8.80	66.67	28.49	77.00	.00	.00	4.75	110.24	176.91
HAND HOEING (8X)	HAND LABOR	SEA	1998	.00	32.00	.00	.00	240.00	.00	.00	10.80	250.80	250.80
HANG DISPENSERS	HAND LABOR	SEA	1998	.00	1.00	.00	.00	7.50	.00	110.00	5.29	122.79	122.79
MOW	52HP-WT, 9' ROTARY MOWER	MAY	1998	.50	.55	4.95	2.74	4.81	.00	.00	.28	7.83	12.78
INSECT/FOLIAR	52HP-WT, BLAST SPRAYER	MAY	1998	.50	.60	8.38	4.78	5.25	.00	21.00	1.16	32.19	40.57
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	MAY	1998	.50	.60	8.38	4.78	5.25	.00	9.30	.72	20.06	28.44
MOW	52HP-WT, 9' ROTARY MOWER	JUN	1998	.50	.55	4.95	2.74	4.81	.00	.00	.23	7.78	12.72
CALCIUM SPRAY	52HP-WT, BLAST SPRAYER	JUN	1998	.50	.60	8.38	4.78	5.25	.00	3.12	.39	13.55	21.92
HAND THINNING	HAND LABOR	JUN	1998	.00	48.00	.00	.00	360.00	.00	.00	10.80	370.80	370.80
MOW	52HP-WT, 9' ROTARY MOWER	JUL	1998	.50	.55	4.95	2.74	4.81	.00	.00	.17	7.72	12.67
TREE TRAINING	HAND LABOR	JUL	1998	.00	25.00	.00	.00	187.50	.00	50.00	5.34	242.84	242.84
CALCIUM SPRAY	52HP-WT, BLAST SPRAYER	JUL	1998	.50	.60	8.38	4.78	5.25	.00	3.12	.30	13.45	21.83
MOW	52HP-WT, 9' ROTARY MOWER	AUG	1998	.50	.55	4.95	2.74	4.81	.00	.00	.11	7.66	12.61
HARVEST	52HP-WT, BACKFORK	SEP	1998	14.74	16.21	96.02	50.77	141.84	.00	.00	1.44	194.06	290.08
BIN HANDLING	52HP-WT, BIN TRAILER	SEP	1998	7.37	8.11	57.90	30.72	70.96	.00	.00	.76	102.45	160.34
HARVEST(51.6 BN)	PICKERS	SEP	1998	.00	.00	9.29	.00	.00	567.60	.00	4.26	571.86	581.15
HARVEST(22.1 BN)	PICKERS	SEP	1998	.00	.00	3.98	.00	.00	397.80	.00	2.98	400.78	404.76
CHECK BINS	CHECKER FOR PICKING CREW	SEP	1998	.00	14.74	.00	.00	110.55	.00	.00	.83	111.38	111.38
LOAD FRUIT	52HP-WT, FORKLIFT	SEP	1998	3.00	3.30	31.29	18.43	28.88	.00	.00	.35	47.66	78.95
HAUL FRUIT	CUSTOM HAULING	SEP	1998	.00	.00	.00	.00	.00	221.10	.00	1.66	222.76	222.76
MOW	52HP-WT, 9' ROTARY MOWER	OCT	1998	.50	.55	4.95	2.74	4.81	.00	.00	.00	7.55	12.50
GOPHER CONTROL	HAND LABOR	ANN	1998	.00	2.00	.00	.00	15.00	.00	1.28	.73	17.01	17.01
LAND COST	INTEREST ON LAND	ANN	1998	.00	.00	350.00	.00	.00	.00	.00	.00	.00	350.00
MISC USE	4-WHEEL ALL TERRAIN VEHICLE	ANN	1998	5.70	.00	12.50	5.74	.00	.00	.00	.26	6.00	18.51
MISC USE	1/2 TON PICKUP	ANN	1998	7.14	.00	36.45	23.42	.00	.00	.00	1.05	24.47	60.92
MISC USE	MACHINE SHED & SHOP	ANN	1998	.00	.00	38.71	.71	.00	.00	.00	.03	.75	39.46
MISC USE	SHOP TOOLS	ANN	1998	.00	.00	15.29	.00	.00	.00	.00	.00	.00	15.29
TAXES	LAND	ANN	1998	.00	.00	72.05	.00	.00	.00	.00	.00	.00	72.05
MANAGEMENT	OPERATOR MANAGEMENT	ANN	1998	.00	.00	250.00	.00	.00	.00	.00	.00	.00	250.00
OVERHEAD	UTILITIES, LEGAL, ACCTNG, ETC.	ANN	1998	.00	.00	.00	.00	.00	184.60	.00	.00	184.60	184.60
INTEREST COST	INTEREST ON ESTABLISHMENT COST	ANN	1998	.00	.00	1783.30	.00	.00	.00	.00	.00	.00	1783.30
TOTAL PER ACRE				61.45	208.51	3356.18	363.53	1624.79	1574.85	221.88	91.61	3876.66	7232.84

**TABLE 2o5: MATERIALS AND SERVICES USED BY ORGANIC PRACTICES  
- 1998.**

<b>OPERATION</b>		<b>MATERIAL AND/OR SERVICE</b>
Dormant Spray	March	2.1 gals. of Superior Oil @ \$2.60/gal. 10.0 lbs. of Microthiol @ 93¢/lb.
Rent Beehive	April	1.0 beehive @ \$35.00/hive
Frost Control	April	Irrigation charge & electricity @ \$18.75/acre
Mildew Spray	April	10.0 lbs. of Microthiol @ .93¢/lb.
Irrigate	Season	Irrigation charge & electricity @ \$150.00/acre
Hang Dispensers	Season	400 ties @ 27.5¢/tie
Insect/Foliar Spray	May	2.0 lbs. of DiPel @ \$8.50/lb. 5.0 lbs. Solubor @ 80¢/lb.
Mildew Spray	May	10.0 lbs. of Microthiol @ .93¢/lb.
Calcium Spray	June	6.0 lbs. calcium chloride @ 52¢/lb.
Tree Training	July	Tape & twine @ \$50/acre.
Calcium Spray	July	6.0 lbs. calcium chloride @ 52¢/lb.
Harvest	September	22.1 bins of apples picked @ \$18.00/bin 51.6 bins of apples picked @ \$11.00/bin
Haul Fruit	September	73.7 bins of apples @ \$3.00/bin
Gopher Control	Annual	1.0 lb. of Gopher Getter @ \$1.28/lb.
Overhead	Annual	5% variable cost.

TABLE 305: ITEMIZED COST PER ACRE FOR ESTABLISHING A HIGH DENSITY  
GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER ORGANIC  
PRODUCTION PRACTICES - 1998.

	UNIT	PRICE OR COST/UNIT	QUANTITY	VALUE OR COST	YOUR FARM
-----					
VARIABLE COSTS		\$		\$	
SUPERIOR OIL	GAL.	2.60	2.10	5.46	_____
MICROTHIOL	LB.	.93	30.00	27.90	_____
DIPEL	LB.	8.50	2.00	17.00	_____
SOLUBOR	LB.	.80	5.00	4.00	_____
CALCIUM CHLORIDE	LB.	.52	12.00	6.24	_____
GOPHER GETTER	LB.	1.28	1.00	1.28	_____
RENT BEEHIVE	HIVE	35.00	1.00	35.00	_____
TAPE & TWINE	ACRE	50.00	1.00	50.00	_____
PHEROMONE DISPENSERS	DISP	.28	400.00	110.00	_____
IRR. CHG. & ELECT.	ACRE	168.75	1.00	168.75	_____
CUSTOM PICKING	BIN	11.00	51.60	567.60	_____
CUSTOM PICKING	BIN	18.00	22.10	397.80	_____
CUSTOM HAULING	BIN	3.00	73.70	221.10	_____
CASUAL LABOR	HOUR	7.50	152.74	1145.55	_____
LABOR (TRAC/MACH)	HOUR	8.50	56.38	479.24	_____
TRACTOR REPAIR	ACRE	57.91	1.00	57.91	_____
TRACTOR FUEL/LUBE	ACRE	69.93	1.00	69.93	_____
MACHINERY REPAIRS	ACRE	144.91	1.00	144.91	_____
MACHINE FUEL/LUBE	ACRE	90.78	1.00	90.78	_____
INTEREST ON OP. CAP.	ACRE	91.61	1.00	91.61	_____
OVERHEAD	ACRE	184.60	1.00	184.60	_____
				-----	
TOTAL VARIABLE COST				3876.66	_____
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	102.96	1.00	102.96	_____
TRACTOR INTEREST	ACRE	112.93	1.00	112.93	_____
TRACTOR INSURANCE	ACRE	7.53	1.00	7.53	_____
TRACTOR TAXES	ACRE	22.59	1.00	22.59	_____
MACHINE DEPRECIATION	ACRE	284.69	1.00	284.69	_____
MACHINE INTEREST	ACRE	300.57	1.00	300.57	_____
MACHINE INSURANCE	ACRE	19.98	1.00	19.98	_____
MACHINE TAXES	ACRE	49.58	1.00	49.58	_____
LAND COST	ACRE	350.00	1.00	350.00	_____
LAND TAX - YR 5	ACRE	72.05	1.00	72.05	_____
MANAGEMENT	ACRE	250.00	1.00	250.00	_____
INTEREST ON ESTAB.	ACRE	1783.30	1.00	1783.30	_____
				-----	
TOTAL FIXED COST				3356.18	_____
TOTAL COST				7232.84	_____
-----					

TABLE 1o6: SCHEDULE OF OPERATIONS AND ESTIMATED COSTS PER ACRE FOR ESTABLISHING A HIGH DENSITY GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER ORGANIC PRODUCTION PRACTICES - 1999.

OPERATION	TOOLING	MTH YEAR	MACH HOURS	LABOR HOURS	TOTAL FIXED COST	VARIABLE COST					TOTAL VARIABLE COST	TOTAL COST
						FUEL, LUBE, & REPAIRS	LABOR	SERVICE	MATER.	INTER.		
						\$	\$	\$	\$	\$	\$	\$
PRUNE	HAND LABOR (2 PEOPLE)	FEB 1999	.00	30.00	2.76	.00	225.00	.00	.00	13.50	238.50	241.26
DORMANT SPRAY	52HP-WT, BLAST SPRAYER	MAR 1999	.50	.60	8.38	4.78	5.25	.00	14.76	1.30	26.09	34.47
RENT BEEHIVE	ONE BEE HIVE PER ACRE	APR 1999	.00	.00	.00	.00	.00	35.00	.00	1.58	36.58	36.58
FROST CONTROL	FROST ALARM & THERMOMETERS	APR 1999	.00	.00	2.97	.00	.00	.00	.00	.00	.00	2.97
FROST CONTROL	WIND MACHINE	APR 1999	.00	2.00	152.11	92.79	17.50	.00	.00	4.96	115.25	267.36
FROST CONTROL	UNDERTREE SPRINKLERS	APR 1999	.00	.00	74.90	10.00	.00	18.75	.00	1.29	30.04	104.94
MILDEW SPRAY	52HP-WT, BLAST SPRAYER	APR 1999	.50	.60	8.38	4.78	5.25	.00	9.30	.87	20.20	28.58
IRRIGATE	4-WHEEL ATV W/ABOVE OPERATION	SEA 1999	10.00	10.00	21.94	10.08	87.50	.00	.00	4.39	101.97	123.90
IRRIGATE	SOLID SET UNDERTREE IRR SYSTEM	SEA 1999	.00	.00	203.03	50.00	.00	150.00	.00	9.00	209.00	412.03
CULTIVATE (8X)	52HP-WT, GRAPE SPADE CULTIVAT.	SEA 1999	8.00	8.80	66.67	28.49	77.00	.00	.00	4.75	110.24	176.91
HAND HOEING (8X)	HAND LABOR	SEA 1999	.00	32.00	.00	.00	240.00	.00	.00	10.80	250.80	250.80
HANG DISPENSERS	HAND LABOR	SEA 1999	.00	1.00	.00	.00	7.50	.00	110.00	5.29	122.79	122.79
MOW	52HP-WT, 9' ROTARY MOWER	MAY 1999	.50	.55	4.95	2.74	4.81	.00	.00	.28	7.83	12.78
INSECT/FOLIAR	52HP-WT, BLAST SPRAYER	MAY 1999	.50	.60	8.38	4.78	5.25	.00	21.00	1.16	32.19	40.57
FOLIAR SPRAY	52HP-WT, BLAST SPRAYER	MAY 1999	.50	.60	8.38	4.78	5.25	.00	15.80	.97	21.80	35.18
MOW	52HP-WT, 9' ROTARY MOWER	JUN 1999	.50	.55	4.95	2.74	4.81	.00	.00	.23	7.78	12.72
CALCIUM SPRAY	52HP-WT, BLAST SPRAYER	JUN 1999	.50	.60	8.38	4.78	5.25	.00	3.12	.39	13.55	21.92
HAND THINNING	HAND LABOR	JUN 1999	.00	48.00	.00	.00	360.00	.00	.00	10.80	370.80	370.80
MOW	52HP-WT, 9' ROTARY MOWER	JUL 1999	.50	.55	4.95	2.74	4.81	.00	.00	.17	7.72	12.67
TREE TRAINING	HAND LABOR	JUL 1999	.00	25.00	.00	.00	187.50	.00	50.00	5.34	242.84	242.84
CALCIUM SPRAY	52HP-WT, BLAST SPRAYER	JUL 1999	.50	.60	8.38	4.78	5.25	.00	3.12	.30	13.45	21.83
MOW	52HP-WT, 9' ROTARY MOWER	AUG 1999	.50	.55	4.95	2.74	4.81	.00	.00	.11	7.66	12.61
HARVEST	52HP-WT, BACKFORK	SEP 1999	9.96	10.96	64.88	34.31	95.90	.00	.00	.98	131.18	196.07
BIN HANDLING	52HP-WT, BIN TRAILER	SEP 1999	4.98	5.48	39.12	20.76	47.95	.00	.00	.52	69.22	108.35
HARVEST(9.3 BIN)	PICKERS	SEP 1999	.00	.00	2.47	.00	.00	102.30	.00	.77	103.07	105.54
HARVEST(40.5 BN)	PICKERS	SEP 1999	.00	.00	10.75	.00	.00	729.00	.00	5.47	734.47	745.22
CHECK BINS	CHECKER FOR PICKING CREW	SEP 1999	.00	10.16	.00	.00	76.20	.00	.00	.57	76.77	76.77
LOAD FRUIT	52HP-WT, FORKLIFT	SEP 1999	1.96	2.15	20.44	12.04	18.81	.00	.00	.23	31.09	51.53
HAUL FRUIT	CUSTOM HAULING	SEP 1999	.00	.00	.00	.00	.00	149.40	.00	1.12	150.52	150.52
MOW	52HP-WT, 9' ROTARY MOWER	OCT 1999	.50	.55	4.95	2.74	4.81	.00	.00	.00	7.55	12.50
GOPHER CONTROL	HAND LABOR	ANN 1999	.00	2.00	.00	.00	15.00	.00	1.28	.73	17.01	17.01
LAND COST	INTEREST ON LAND	ANN 1999	.00	.00	350.00	.00	.00	.00	.00	.00	.00	350.00
MISC USE	4-WHEEL ALL TERRAIN VEHICLE	ANN 1999	5.70	.00	12.50	5.74	.00	.00	.00	.26	6.00	18.51
MISC USE	1/2 TON PICKUP	ANN 1999	7.14	.00	36.45	23.42	.00	.00	.00	1.05	24.47	60.92
MISC USE	MACHINE SHED & SHOP	ANN 1999	.00	.00	38.71	.71	.00	.00	.00	.03	.75	39.46
MISC USE	SHOP TOOLS	ANN 1999	.00	.00	15.29	.00	.00	.00	.00	.00	.00	15.29
TAXES	LAND	ANN 1999	.00	.00	98.25	.00	.00	.00	.00	.00	.00	98.25
MANAGEMENT	OPERATOR MANAGEMENT	ANN 1999	.00	.00	250.00	.00	.00	.00	.00	.00	.00	250.00
OVERHEAD	UTILITIES, LEGAL, ACCTNG, ETC.	ANN 1999	.00	.00	.00	.00	.00	167.21	.00	.00	167.21	167.21
INTEREST COST	INTEREST ON ESTABLISHMENT COST	ANN 1999	.00	.00	1833.54	.00	.00	.00	.00	.00	.00	1833.54
TOTAL PER ACRE			53.25	194.90	3371.80	330.72	1511.42	1351.66	228.38	89.23	3511.40	6883.20



**TABLE 206: MATERIALS AND SERVICES USED BY ORGANIC PRACTICES  
- 1999.**

<b>OPERATION</b>		<b>MATERIAL AND/OR SERVICE</b>
Dormant Spray	March	2.1 gals. of Superior Oil @ \$2.60/gal. 10.0 lbs. of Microthiol @ 93¢/lb.
Rent Beehive	April	1.0 beehive @ \$35.00/hive
Frost Control	April	Irrigation charge & electricity @ \$18.75/acre
Mildew Spray	April	10.0 lbs. of Microthiol @ .93¢/lb.
Irrigate	Season	Irrigation charge & electricity @ \$150.00/acre
Hang Dispensers	Season	400 ties @ 27.5¢/tie
Insect/Foliar Spray	May	2.0 lbs. of DiPel @ \$8.50/lb. 5.0 lbs. Solubor @ 80¢/lb.
Foliar Spray	May	4.0 gals. of lime sulfur @ \$3.95/gal.
Calcium Spray	June	6.0 lbs. calcium chloride @ 52¢/lb.
Tree Training	July	Tape & twine @ \$50/acre.
Calcium Spray	July	6.0 lbs. calcium chloride @ 52¢/lb.
Harvest	September	40.5 bins of apples picked @ \$18.00/bin 9.3 bins of apples picked @ \$11.00/bin
Haul Fruit	September	49.8 bins of apples @ \$3.00/bin
Gopher Control	Annual	1.0 lb. of Gopher Getter @ \$1.28/lb.
Overhead	Annual	5% variable cost.

TABLE 306: ITEMIZED COST PER ACRE FOR ESTABLISHING A HIGH DENSITY  
GOLDEN DELICIOUS APPLE ORCHARD GROWN UNDER ORGANIC  
PRODUCTION PRACTICES - 1999.

		PRICE OR		VALUE OR	YOUR
	UNIT	COST/UNIT	QUANTITY	COST	FARM
-----					
VARIABLE COSTS		\$		\$	
SUPERIOR OIL	GAL.	2.60	2.10	5.46	_____
MICROTHIOL	LB.	.93	20.00	18.60	_____
LIME SULFUR	GAL.	3.95	4.00	15.80	_____
DIPEL	LB.	8.50	2.00	17.00	_____
SOLUBOR	LB.	.80	5.00	4.00	_____
CALCIUM CHLORIDE	LB.	.52	12.00	6.24	_____
GOPHER GETTER	LB.	1.28	1.00	1.28	_____
RENT BEEHIVE	HIVE	35.00	1.00	35.00	_____
TAPE & TWINE	ACRE	50.00	1.00	50.00	_____
PHEROMONE DISPENSERS	DISP	.28	400.00	110.00	_____
IRR. CHG. & ELECT.	ACRE	168.75	1.00	168.75	_____
CUSTOM PICKING	BIN	11.00	9.30	102.30	_____
CUSTOM PICKING	BIN	18.00	40.50	729.00	_____
CUSTOM HAULING	BIN	3.00	49.80	149.40	_____
CASUAL LABOR	HOUR	7.50	148.16	1111.20	_____
LABOR (TRAC/MACH)	HOUR	8.50	47.08	400.22	_____
TRACTOR REPAIR	ACRE	45.60	1.00	45.60	_____
TRACTOR FUEL/LUBE	ACRE	55.06	1.00	55.06	_____
MACHINERY REPAIRS	ACRE	139.27	1.00	139.29	_____
MACHINE FUEL/LUBE	ACRE	90.78	1.00	90.78	_____
INTEREST ON OP. CAP.	ACRE	89.22	1.00	89.22	_____
OVERHEAD	ACRE	167.21	1.00	167.21	_____
TOTAL VARIABLE COST				3511.40	_____
-----					
FIXED COSTS		\$		\$	
TRACTOR DEPRECIATION	ACRE	81.07	1.00	81.07	_____
TRACTOR INTEREST	ACRE	88.92	1.00	88.92	_____
TRACTOR INSURANCE	ACRE	5.93	1.00	5.93	_____
TRACTOR TAXES	ACRE	17.78	1.00	17.78	_____
MACHINE DEPRECIATION	ACRE	280.56	1.00	280.56	_____
MACHINE INTEREST	ACRE	297.11	1.00	297.11	_____
MACHINE INSURANCE	ACRE	19.75	1.00	19.75	_____
MACHINE TAXES	ACRE	48.89	1.00	48.89	_____
LAND TAX - MATURE	ACRE	98.25	1.00	98.25	_____
LAND COST	ACRE	350.00	1.00	350.00	_____
MANAGEMENT	ACRE	250.00	1.00	250.00	_____
INTEREST ON ESTAB.	ACRE	1833.54	1.00	1833.54	_____
TOTAL FIXED COST				3371.80	_____
TOTAL COST				6883.20	_____
-----					

Table 40. Machinery and Building Complement

Machine Name	Purchase Price (\$)	Years of Use	Salvage Value (\$)	Annual Repair Cost (\$)	Annual Hours of Use	Gallons of Fuel Use Per Hour
55HP-Wheel Tractor	21,000	15	5,000	600	400	1.5 Diesel
4WD-ATV	6,000	10	1,500	150	400	.5 Gas
Pickup	25,000	15	3,000	450	600	2.0 Gas
6' Rototiller	3,500	10	350	580	150	
Backfork	200	20	0	20	150	
PTO Blast Sprayer	14,000	10	2,800	1,250	200	
Front-end Loader	5,000	15	1,000	425	150	
Trailer	2,000	20	500	100	100	
Bin Trailer	3,500	10	700	300	350	
9' Rotary Mower	3,500	10	500	325	150	
Grape Spade Cultivator	5,000	10	0	100	400	
Pruning Tools	30	4	0	0	100	
Picking Equipment	17	3	0	0	50	
Machine Shed & Shop	30,000	30	0	50	70 acres	
Shop Tools	10,000	20	0	0	70 acres	
Wind Machine	16,000	30	3,200	300	40 hours over 10 acres	13.0 Propane
Alarm & Thermometers	205	10	0	0	10 acres	
Pump & Mainline	1,000	30	0	20	1 acre	
Irrigation System	1,150	20	0	30	1 acre	
Holding Pond	7,000	20	0	100	10 acres	



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**Warning.** Use pesticides with care. Apply them only to plants, animals, or sites listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is a violation of the law to disregard label directions. If pesticides are spilled on skin or clothing, remove clothing and wash skin thoroughly. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

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