

# FRUIT FINDINGS

## COST ANALYSIS FOR SEMI-DWARF APPLES

### SONOMA COUNTY 1983

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This cost study is based on the ideal. As you know, the ideal is not always possible and actual costs may vary considerably based on yield, selection of spray materials, thinning requirements, size and amount of equipment, land, terrain and other practices. The cultural methods listed are intended to promote productivity and produce fruit first for the fresh market then for processing while trying to be competitive in a very demanding marketplace.

1. Pre-Plant Investment - Land purchased at \$10,000./acre plus new machinery, deer fencing, irrigation systems, well, and buildings. Property taxes are 1%/year.
2. Planting - 300 trees/acre; tree replacement 6/acre/year.
3. Irrigation - A drip irrigation system is used including well, run-off storage pond and filters. Drip irrigation water is applied every other day at the following schedule:

<u>YEAR</u>	<u>AGRE-INCHES/ACRE</u>	<u>GALLONS/ACRE</u>
1st	1 inch	27,154
2nd	3 inches	81,462
3rd	5 inches	113,770
4th	8 inches	217,232
Mature	12 inches	325,848

4. Fertilizer - Soil pH should be checked by soil tests and amendments added prior to planting; thereafter tissue (leaf) analysis is used to determine nutrient needs. The fertilizer application used in this study is:





Pre-plant Investment  
50 Acres

	INVESTMENT	ANNUAL COSTS PER ACRE	ANNUAL COSTS PER ACRE	ANNUAL COSTS PER ACRE
	50 Acres	Per Acre	Depreciation at 12%	DEPRECIATION + INTEREST Per Acre
			Interest	50 Acres
<b>Land</b>				
Site conversion	500000.00	10000.00	1200.00	1200.00
Buildings	75000.00	1500.00	90.00	140.00
Deer fence	25000.00	500.00	16.67	46.67
	14920.00	298.40	19.89	37.80
<b>SUBTOTAL</b>	<b>614920.00</b>	<b>12298.40</b>	<b>86.56</b>	<b>1424.46</b>
<b>Irrigation systems:</b>				
well-6", 225'	4600.00	92.00	6.13	11.65
pond	20000.00	400.00	13.33	37.33
10 HP pump	1300.00	26.00	1.75	3.29
pumping system	2213.00	44.26	2.95	5.61
drip system	40000.00	800.00	53.33	101.33
<b>SUBTOTAL</b>	<b>68113.00</b>	<b>1362.26</b>	<b>77.48</b>	<b>159.22</b>
<b>Machinery (new):</b>				
50 HP tractor 4WD	17000.00	340.00	34.00	54.40
50 HP crawler	20000.00	400.00	40.00	64.00
trailer	1500.00	30.00	3.00	4.80
rotovator-PTO	6000.00	120.00	12.00	19.20
disc, 8' offset	3500.00	70.00	7.00	11.20
sprayer, 500 gal. SP	9000.00	180.00	18.00	28.80
fertilizer spreader	1080.00	20.00	2.00	3.20
forer	700.00	14.00	1.40	2.24
forklift attachment	7000.00	140.00	14.00	22.40
handgun sprayer, 200 gal	2000.00	40.00	4.00	6.40
ladders	1590.00	31.80	6.36	8.27
2 ton truck	18000.00	360.00	72.00	93.60
props, spreaders & ties	600.00	12.00	2.40	3.12
<b>SUBTOTAL</b>	<b>87890.00</b>	<b>1757.80</b>	<b>216.16</b>	<b>321.63</b>
<b>TOTAL</b>	<b>770923.00</b>	<b>15418.46</b>	<b>380.20</b>	<b>1905.31</b>
				<b>95265.56</b>

**SAMPLE COSTS TO ESTABLISH SEMI-DWARF APPLES**  
**Sonoma County 1983**

Costs are on a per acre basis for a 50 acre orchard.  
 300 trees per acre. Drip irrigation.  
 Unskilled labor rate is \$3.90 per hour. Skilled labor rate is \$4.25.

Operation	1st Year	2nd Year	3rd Year	4th Year
<b>Cultural costs</b>				
disking (2x)	44.25	44.25		
layout & mark	19.50			
planting labor	300.00			
trees (\$5 ea.)	1500.00			
tree replacement (6/yr @ \$6)+labor		42.00	42.00	42.00
paint	22.50		22.50	
hand hoeing	30.00			
chemical weed control		14.80	14.80	14.80
insect & disease control application	10.44	10.44	10.44	10.44
materials	14.80	14.80	14.80	14.80
mow 3x			30.15	30.15
cover crop establishment		38.16		
irrigation				
water @ \$30/ac.ft.	2.50	7.50	12.50	20.00
labor	1.63	4.88	8.13	13.00
fertilize				
materials	57.50	29.38	35.25	35.25
application	5.33	5.33	5.33	5.33
pruning & suckering	39.35	43.25	54.95	66.65
spread, tie and prop		58.85	102.10	109.90
hand thinning			75.00	100.00
flower & fruit removal	25.00	25.00		
gopher control	12.12	12.12	12.12	12.12
interest on capital (6 mo. @ 12% annual rate)	125.09	21.05	26.40	28.47
<b>TOTAL CULTURAL COSTS</b>	<b>2210.01</b>	<b>371.80</b>	<b>466.47</b>	<b>502.91</b>
<b>HARVEST COSTS (\$30 per ton)</b>			<b>60.00</b>	<b>150.00</b>
<b>Overhead costs</b>				
land taxes	100.00	100.00	100.00	100.00
office & business	176.80	29.74	42.12	52.23
<b>TOTAL OVERHEAD COSTS</b>	<b>276.80</b>	<b>129.74</b>	<b>142.12</b>	<b>152.23</b>
<b>TOTAL CASH COSTS</b>	<b>2486.81</b>	<b>501.54</b>	<b>668.59</b>	<b>805.14</b>
<b>LESS CREDIT FOR FRUIT (yrs 3 &amp; 4)</b>			<b>-400.00</b>	<b>-1000.00</b>
<b>TOTAL ACCUMULATED CASH COSTS</b>	<b>2486.81</b>	<b>2988.35</b>	<b>3256.94</b>	<b>3062.07</b>
<b>TOTAL ACCUMULATED CASH COSTS (50 ACRES)</b>				<b>153103.73</b>

**SAMPLE COSTS TO ESTABLISH SEMI-DWARF APPLES (continued)**

<b>Investment costs</b>	<b>1st Year</b>	<b>2nd Year</b>	<b>3rd Year</b>	<b>4th Year</b>
<b>Interest (12%)</b>				
land	1200.00	1200.00	1200.00	1200.00
site prep, bldgs, fence	137.90	137.90	137.90	137.90
irrigation system	81.74	81.74	81.74	81.74
machinery	105.47	105.47	105.47	105.47
accumulated cash costs	149.21	179.30	195.42	183.72
<b>TOTAL INTEREST</b>	<b>1674.32</b>	<b>1704.41</b>	<b>1720.53</b>	<b>1708.83</b>
<b>Depreciation</b>				
site prep, bldgs, fence	86.56	86.56	86.56	86.56
irrigation system	77.48	77.48	77.48	77.48
machinery	216.16	216.16	216.16	216.16
<b>TOTAL DEPRECIATION</b>	<b>380.20</b>	<b>380.20</b>	<b>380.20</b>	<b>380.20</b>
<b>TOTAL ANNUAL COST (cash+int+dep)</b>	<b>4541.33</b>	<b>2586.15</b>	<b>2769.31</b>	<b>2894.17</b>
<b>ACCUMULATED COSTS</b>	<b>4541.33</b>	<b>7127.48</b>	<b>9896.79</b>	<b>12790.96</b>
<b>Pre-plant investment</b>	<b>per acre</b>			
land and site conversion	11500.00			
buildings & fence	798.40			
irrigation system	1362.26			
machinery (new)	1757.80			
<b>TOTAL PRE-PLANT INVESTMENT</b>	<b>15418.46</b>			
<b>TOTAL ORCHARD ESTABLISHMENT COST INCLUDING PRE-PLANT INVESTMENT</b>	<b>19959.79</b>	<b>22545.94</b>	<b>25315.25</b>	<b>28209.42</b>
<b>TOTAL ORCHARD ESTABLISHMENT COST INCLUDING PRE-PLANT INVESTMENT (50 ACRES)</b>				<b>1410471.24</b>

**SAMPLE COSTS TO PRODUCE SEMI-DWARF APPLES**  
**Senoma County 1983**

Costs are on a per acre basis for a 50 acre orchard.  
 300 trees per acre.  
 20 tons per acre yield. Unskilled labor rate is \$3.90 per hour.  
 Skilled labor is \$4.25 per hour.  
 Drip irrigation.

Operation	Hrs. per Acre	Labor	Fuel & Repairs	Materials	Total Cost	Your Cost
<b>Pre-harvest costs</b>						
tree replacement	1.54	6.00		36.00	42.00	
pruning	55.00	214.50			214.50	
brush disposal	2.00	7.80	2.20		10.00	
fertilize	0.50	2.13	3.20	23.50	28.83	
insect & disease control	2.80	11.90	24.64	102.00	138.54	
chemical thin (3 men) *	0.50	7.98	4.40	9.00	21.38	
supplemental hand thin	20.00	78.70			78.70	
weed control	0.33	1.40	2.90	10.50	14.80	
gopher control	0.66	2.81	7.00	2.40	12.21	
mow (3x)	3.00	12.75	17.40		30.15	
irrigation	5.00	19.50		30.00	49.50	
interest on operating costs (6 mo. @ 12% annual rate)					38.44	
<b>Total pre-harvest costs</b>		<b>359.46</b>	<b>61.74</b>	<b>177.40</b>	<b>637.03</b>	
<b>Harvest cost</b>						
pick, supervision & hauling		20 tons @ \$30/ton			600.00	
<b>Overhead costs</b>						
real property taxes		1% of assessed value			100.00	
office & business		8% of operating costs			98.96	
<b>Total overhead cost</b>					<b>198.96</b>	
<b>TOTAL CASH COSTS</b>					<b>1436.00</b>	
<b>CASH COSTS PER TON @ 20 TONS PER ACRE</b>					<b>71.80</b>	

Investment costs	Depreciation	Interest	
land		1200.00	
orchard trees	426.37	767.40	
site conversion, bldgs, fence	86.56	137.90	
irrigation system	77.48	81.74	
machinery	216.16	105.47	
<b>Total investment cost</b>	<b>806.57</b>	<b>2292.51</b>	<b>3099.08</b>
<b>TOTAL COST PER ACRE</b>			<b>4535.07</b>
<b>TOTAL COST PER TON @ 20 TONS PER ACRE</b>			<b>226.75</b>

\* Mature trees can also be thinned by hand. The time required is about 64 hours per acre for trees seven years and older.

**Costs to Produce Apples at Varying Yields**

	TONS PER ACRE				
	10.00	15.00	20.00	25.00	30.00
Pre-harvest costs	637.03	637.03	637.03	637.03	637.03
Harvest costs	300.00	450.00	600.00	750.00	900.00
Overhead costs	174.96	186.96	198.96	210.96	222.96
Total cash costs	1111.99	1273.99	1435.99	1597.99	1759.99
Cash cost per ton	111.20	84.93	71.80	63.92	58.67
Investment costs	3094.32	3094.32	3094.32	3094.32	3094.32
Total costs	4206.31	4368.31	4530.31	4692.31	4854.31
Cost per ton	420.63	291.22	226.52	187.69	161.81

**Income Above Cash Costs at Varying Yields and Prices**

\$ PER TON	TONS PER ACRE				
	10.00	15.00	20.00	25.00	30.00
100.00	-111.99	226.01	564.01	902.01	1240.01
150.00	388.01	976.01	1564.01	2152.01	2740.01
200.00	888.01	1726.01	2564.01	3402.01	4240.01
250.00	1388.01	2476.01	3564.01	4652.01	5740.01
300.00	1888.01	3226.01	4564.01	5902.01	7240.01
350.00	2388.01	3976.01	5564.01	7152.01	8740.01
400.00	2888.01	4726.01	6564.01	8402.01	10240.01

**Income Above Total Costs at Varying Yields and Prices**

\$ PER TON	TONS PER ACRE				
	10.00	15.00	20.00	25.00	30.00
100.00	-3206.31	-2706.31	-2530.31	-2192.31	-1854.31
150.00	-4206.31	-1956.31	-1530.31	-942.31	-354.31
200.00	-4206.31	-1206.31	-530.31	307.69	1145.69
250.00	-1706.31	-456.31	469.69	1557.69	2645.69
300.00	-1206.31	293.69	1469.69	2807.69	4145.69
350.00	-706.31	1043.69	2469.69	4057.69	5645.69
400.00	-206.31	1793.69	3469.69	5307.69	7145.69