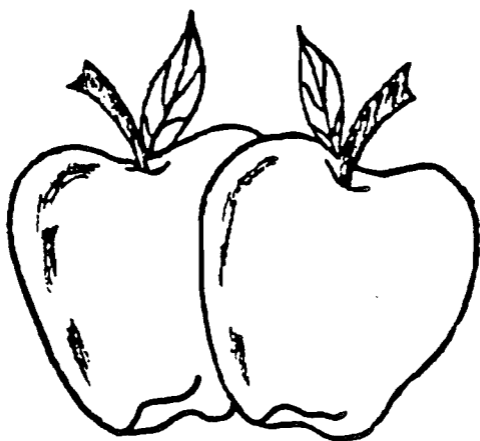


SANTA CRUZ COUNTY  
APPLE PRODUCTION COSTS



APRIL 1982

Ronald H. Tyler  
County Director/Farm Advisor  
Cooperative Extension  
Santa Cruz County

1981  
SANTA CRUZ COUNTY  
USE AND VALUE OF APPLES

Use	Tons	% of Total		Total Value	% of Total Value
		Tons	Value Per Ton		
Fresh	28,100	30.5	\$316.50	\$ 8,894,000	66.0
Dryer	5,200	5.6	76.00	395,000	2.9
Processing	22,000	23.9	91.90	2,022,000	15.0
Juice	<u>36,900</u>	<u>40.0</u>	<u>59.00</u>	<u>2,177,000</u>	<u>16.1</u>
All Uses	92,200	100.0%		\$ 13,488,000	100.0%

TREND OF APPLE ACREAGE

Major Varieties	Bearing Acres			Non-Bearing Acreage	Total Acreage
	1972	1976	1981	1 9 8 1	1 9 8 1
Newtown Pippin	3,337	3,404	3,118	211	3,329
Delicious - Red	3,376	3,319	3,108	106	3,214
McIntosh	223	234	225	59	284
Delicious - Std.	243	236	90	0	90
Winter Banana	106	120	89	0	89
Golden Delicious	78	83	83	0	83
W.W. Pearmain	73	66	61	0	61
Gravenstein	31	32	28	0	28
Other Varieties	<u>79</u>	<u>101</u>	<u>97</u>	<u>5</u>	<u>102</u>
Total	7,667	7,710	6,971	381	7,352

1972 - 1981  
APPLE TONNAGE AND PRICE PER TON

	Fresh		Dryer		Processing		Juice	
	Tons	\$/Ton	Tons	\$/Ton	Tons	\$/Ton	Tons	\$/Ton
1972	43,210	208.60	11,470	67.75	36,990	85.71	34,050	56.53
1973	31,570	261.62	14,990	121.48	40,570	136.75	21,340	79.19
1974	37,570	249.07	15,710	110.11	36,760	99.56	33,070	81.94
1975	35,870	222.89	8,820	70.00	33,390	81.00	32,000	64.65
1976	31,450	261.11	6,910	90.50	36,530	111.85	28,810	75.60
1977	25,490	340.60	8,300	134.17	24,340	162.05	36,120	111.90
1978	38,040	361.25	11,600	155.20	19,610	197.95	38,700	140.95
1979	30,000	391.30	10,100	85.00	24,200	151.00	37,400	122.00
1980	33,300	339.00	7,000	159.00	24,600	90.50	33,400	73.00
1981	28,100	316.50	5,200	76.00	22,000	91.90	36,900	59.00
Average		\$295.19		\$106.92		\$120.83		\$ 86.48

Source: Agricultural Commissioner's Report

## **County of Santa Cruz**

### APPLE PRODUCTION IN SANTA CRUZ COUNTY

Soil, water and climate are the principal factors affecting apple production. Trees are grown under a wide range of conditions in Santa Cruz County, however, the best production is achieved on deep, well drained, medium textured soils.

The main apple producing area is north and east of Watsonville on alluvial and old terrace soils. This is due to soils, climate and availability of irrigation water.

The few remaining dry land mountain orchards are generally on deeper soils with good water holding capacity. Many of these orchards bear alternately, heavy and light crops. Fruit quality from mountain orchards is often poor because of old trees, lack of irrigation water, and inability to justify adequate equipment for spraying.

Two varieties dominate the acreage, Newtown pippin and Red Delicious with 45% and 44% of the total acreage, respectively.

Most of the bearing acreage is on standard (seedling) rootstock planted on 24- to 30-foot square spacing, depending on variety and soil type.

Most of the new replacement plantings are on semi-dwarf rootstocks, such as MM-106 and M7. Because of the rising costs, many orchards are being rejuvenated by pulling a few acres and replanting to semi-dwarf with 200 to 300 trees per acre. This may be done annually or every few years in order to reduce the lost income.

Semi-dwarf trees will make the orchard more efficient and will come into production sooner than standard trees. Total yield per acre at full production may not be any greater than standard trees at full production, but will require less labor and smaller equipment.

Cultural practices will vary depending upon the market outlet. The accompanying cost studies are based on the fresh market outlet and assuming a packout of 70-75% for Red Delicious and 40% for Newtown pippin. Approximately 30% of all apples produced in this area go to the fresh market, 25% to processing, 40% to juice markets, and the remaining 5% are dried.

While returns to fresh market fruit are the highest, the costs to produce for this market are also the highest. More detailed pruning, thinning and spraying are required.



Ronald H. Tyler  
County Director/Farm Advisor

RHT:pb

## SAMPLE COST STUDIES

The two sample cost studies represent the major varieties grown and may be used as a guide in analyzing orchard costs and for budgeting. They are based on standard trees grown for fresh market fruit.

Certain assumptions were made in selecting the size and yield for the sample orchard. An acreage was selected to economically justify the equipment needed. The equipment investment follows closely what growers would need for this size operation.

The investment value for land and trees is based on assessed values of orchards capable of the sample yields. They do not reflect current prices or costs to establish an orchard.

Actual costs may vary considerably, based on yield, selection of spray materials, annual thinning requirements, size and amount of equipment, and other practices.

## TYPES OF COSTS

Cash costs are those annual expenses involving a flow of cash (monies paid for spray materials, pruning, thinning, fuel and oil, hired labor, etc.). These studies assume all labor hired, or a charge for the operator's labor if he does this himself.

Depreciation costs must be included if the operator is to continue operation at the present level. Equipment must be replaced, and if depreciation is not considered in the total cost, the business declines.

Interest costs are frequently ignored except when paid on borrowed capital. However, the capital investment in the farm and equipment has an opportunity cost of investment elsewhere, such as stocks or another business. Interest on operating capital is included in miscellaneous overhead.

Management costs are not included in these studies. The return to management is usually based on 5% of the gross income.

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Frequently farmers record their cash expenses and have a depreciation schedule. If these two items are deducted from gross income, then the remainder is the return to the operator's labor, capital and management. This is the sum left to pay for living expenses, mortgage expenses, enlarging or improving the business, and savings for retirement.

SAMPLE COSTS TO PRODUCE NEWTOWN PIPPIN APPLES IN SANTA CRUZ COUNTY  
1981

Based on a 50 acre mature orchard (25 acres Newtown Pippin and 25 acres Red Delicious) standard planting with 20 ton per acre production.

CULTURAL OPERATIONS	MAN		MACHINE			MATERIALS		Total Cost per Acre
	Rate/ Hour	Cost	Type/ Rate/Hours	Cost	Kind	Cost		
Prune	2/ 60.0	\$377.40					\$ 377.40	
Brush Disposal	1/ 2.0	15.18	6/ 2.0	\$12.06			27.24	
Fertilization	1/ 0.5	3.80	4/ 0.5	2.77	80#N	\$ 31.20	37.77	
Sprays, 3X @ ½ hr.	1/ 1.5	11.39	3/ 1.5	14.30	Insects,			
			5/ 1.5	13.25	Disease	115.66		
4X @ ½ hr.	1/ 2.0	15.18	4/ 2.0	11.08	Thin		198.52	
			5/ 2.0	17.66				
Irrigate 2X	2/ 6.0	37.74	7/ 2.0	11.44	Power to pump 1	22.00	71.18	
Cultivate 4X	1/ 3.0	22.77	3/ 3.0	28.59	acre ft.			
			11/ 3.0	4.83				
4X	1/ 3.0	22.77	4/ 2.0	11.08				
			12/ 2.0	2.94				
			4/ 1.0	5.54				
			13/ 1.0	.92			99.44	
Thinning 2 hrs/tree	2/ 96.0	603.84					603.84	
Prop	2/ 6.0	37.74			Twine	3.00	40.74	
Misc. Labor	1/ 5.0	37.95	8/ 1.0	6.98	Gopher Bait,			
	2/ 5.0	31.45			Misc., other	10.50	86.88	
<b>TOTAL CULTURAL COSTS</b>	<b>190.0</b>	<b>1217.21</b>	<b>23.5</b>	<b>143.44</b>		<b>182.36</b>	<b>\$1543.01</b>	
<b>HARVEST OPERATIONS</b>								
Pick, 20T @ \$28/T		560.00					560.00	
Move-Load Bins	1/ 6.5	49.34	9/ 6.5	48.36			97.70	
Haul	1/ 5.0	37.95	10/ 5.0	30.75			68.70	
Supervision	1/ 7.0	53.13				\$120.00		
Bin Rental					30 bins @ \$4/90 days		120.00	
<b>TOTAL HARVEST COSTS</b>	<b>18.5</b>	<b>700.42</b>	<b>11.5</b>	<b>79.11</b>		<b>120.00</b>	<b>\$ 899.53</b>	
<b>OVERHEAD COSTS</b>								
Taxes, Land:	\$ 2,500	(1,072 tax rate)					\$ 26.80	
Taxes, Trees:	\$ 550	" " "					5.90	
Taxes, Equipment:	\$ 1,269	" " "					13.60	
Taxes, Building:	\$ 240	" " "					2.57	
Taxes, Irrig.system	\$ 384	" " "					4.12	
General overhead - 12% of cultural and harvest costs							293.10	
<b>TOTAL OVERHEAD COSTS</b>							<b>\$ 346.09</b>	
<b>TOTAL CULTURAL, HARVEST, AND OVERHEAD</b>							<b>\$2788.63</b>	
<b>DEPRECIATION COSTS</b>								
Trees:	\$ 550	- 30 yr bearing life					\$ 18.33	
Buildings for equipment:	\$240	- 25 year life					9.60	
Irrigation System:	\$384	- 20 year life					19.20	
Equipment, Cultural:	\$2538	- 10 year life					253.80	
<b>TOTAL DEPRECIATION COSTS</b>							<b>\$ 300.93</b>	
<b>INTEREST ON INVESTMENT @ 12% on 1/2 of investment</b>								
Land @ \$2,500							\$ 150.00	
Trees @ 550							33.00	
Equipment @ 2538							152.28	
Irrigation system @ 384							23.04	
Buildings for equipment @ 240							14.40	
<b>TOTAL INTEREST ON INVESTMENT</b>							<b>\$ 372.72</b>	
<b>TOTAL COST OF PRODUCTION</b>							<b>\$3,462.28</b>	

COST PER TON AT VARYING YIELDS PER ACRE

	YIELD: Tons	<u>15</u>	<u>20</u>	<u>25</u>	<u>30</u>
Cultural		\$103	\$ 77	\$ 62	\$ 51
Harvest		45	45	43	42
Overhead		23	17	14	12
Depreciation		20	15	12	10
Interest on Investment		25	19	15	12
<b>TOTAL COST PER TON</b>		<b>\$216</b>	<b>\$173</b>	<b>\$146</b>	<b>\$127</b>

Legend:

	<u>Rate/Hr.</u>	
<u>1/</u>	\$ 7.59	Equipment operator labor cost including benefits.
<u>2/</u>	6.29	Other labor, including benefits.
<u>3/</u>	9.53	Tractor, 50 Drawbar HP crawler diesel.
<u>4/</u>	5.54	Tractor, 50 Drawbar HP wheel diesel.
<u>5/</u>	8.83	Sprayer, 500 gallon.
<u>6/</u>	6.03	Brush chopper with wheel tractor.
<u>7/</u>	5.72	Pipe trailer with wheel tractor.
<u>8/</u>	6.98	Gopher machine with wheel tractor.
<u>9/</u>	7.44	Forklift attached to wheel tractor.
<u>10/</u>	6.15	Truck, 2½ ton.
<u>11/</u>	1.61	Disc, 8' offset.
<u>12/</u>	1.47	Disc, 8' tandem.
<u>13/</u>	.92	Springtooth, 8'.

SAMPLE COSTS TO PRODUCE RED DELICIOUS APPLES IN SANTA CRUZ COUNTY  
1981

Based on 50 acre mature orchard (25 acres Red Delicious and 25 acres Newtown Pippin) standard planting, 55 trees/acre, with 15 ton per acre production.

CULTURAL OPERATIONS	MAN		MACHINE		MATERIALS		Total Cost per Acre
	Rate/Hours	Cost	Type/Rate/Hours	Cost	Kind	Cost	
Prune	2/	42.0					\$ 264.18
Brush Disposal	1/	2.0	6/	2.0			27.24
Fertilization	1/	0.5	4/	0.5	80# N	\$ 31.20	37.77
Spray 2X @ ½ hr.	1/	1.0	3/	1.0	Insects		
			5/	1.0	Disease	108.92	
4X @ ½ hr.	1/	2.0	4/	2.0	Thin		178.79
			5/	2.0	Power to pump 1		
Irrigate 2X	2/	6.0	7/	2.0	acre ft.	22.00	71.18
Cultivate 4X	1/	3.0	3/	3.0			
			11/	3.0			
4X	1/	3.0	4/	2.0			
			12/	2.0			
			4/	1.0			
			13/	1.0			99.44
Thin 1 hr./tree	2/	47.0					295.63
Prop	2/	10.0			Twine	3.20	66.10
Misc.	1/	5.0	8/	1.0	Gopher Bait		
	2/	5.0			Misc. other	10.50	86.88
<b>TOTAL CULTURAL COSTS</b>	<b>134.5</b>	<b>\$817.14</b>	<b>23.5</b>	<b>\$134.25</b>		<b>\$175.82</b>	<b>\$1127.21</b>
<b>HARVEST OPERATIONS</b>							
Pick, 15 T @ \$27.00		405.00					\$ 405.00
Move & Load Bins	1/	5.5	9/	5.5			82.67
Haul	1/	4.0	10/	4.0			54.96
Supervision	1/	6.0			23 bins @ 4.00		45.54
Bin Rental					90 days	\$92	92.00
<b>TOTAL HARVEST COSTS</b>	<b>15.5</b>	<b>\$522.65</b>	<b>9.5</b>	<b>\$65.52</b>		<b>\$ 92.00</b>	<b>\$ 680.17</b>
<b>OVERHEAD COSTS</b>							
Taxes, Land: \$2,500 (1.072 tax rate)							\$ 26.80
Taxes, Trees: \$ 970 " " "							10.40
Taxes, Equipment: \$1,269 " " "							13.60
Taxes, Building: \$ 240 " " "							2.57
Taxes, Irrig. system: \$384 " " "							4.12
General Overhead 12% of cultural and harvest costs							216.88
<b>TOTAL OVERHEAD COSTS</b>							<b>\$ 274.37</b>
<b>TOTAL CULTURAL, HARVEST AND OVERHEAD COSTS</b>							<b>\$ 2081.75</b>
<b>DEPRECIATION COSTS</b>							
Trees: @ \$970 - 30 year bearing life							32.33
Building for equipment: \$240 - 25 year life							9.60
Irrigation system: \$384 - 20 year life							19.20
Equipment, cultural: \$2,538 - 10 year life							253.80
<b>TOTAL DEPRECIATION COSTS</b>							<b>\$ 314.93</b>
<b>TOTAL CASH AND DEPRECIATION COSTS</b>							<b>\$2396.68</b>
<b>INTEREST ON INVESTMENT @ 12% on 1/2 of investment</b>							
Land @ \$2,500							\$ 150.00
Trees @ 970							58.20
Equipment @ 2,538							152.28
Irrigation system @ 384							23.04
Buildings for equipment @ 240							14.40
<b>TOTAL INTEREST ON INVESTMENT</b>							<b>\$ 397.92</b>
<b>TOTAL COST OF PRODUCTION</b>							<b>\$2794.60</b>

COSTS PER TON AT VARYING YIELDS PER ACRE

	YIELD: Tons	10	15	20	25
Cultural		\$113	\$ 75	\$ 56	\$ 45
Harvest		45	45	43	42
Overhead		27	18	14	11
Depreciation		32	21	16	13
Interest on Investment		40	27	20	16
<b>TOTAL COST PER TON</b>		<b>\$257</b>	<b>\$186</b>	<b>\$149</b>	<b>\$127</b>

EQUIPMENT INVENTORY FOR 50 ACRES

	Cost	Years of life
Tractor, 50 DBHP, crawler, diesel	\$ 50,000	15
Tractor, 50 DBHP, wheel, diesel	12,500	10
Truck, 2½ ton	18,000	8
Sprayer, air carrier, 500 gallon	25,000	15
Disc, 8' offset	3,300	10
Disc, 8' tandem	1,500	10
Forklift attachment	7,000	10
Pipe trailer	1,000	10
Ladders	1,590	10
Props	500	10
Brush chopper, 6'	1,200	10
Other tools	2,300	10
	<b>\$126,890</b>	