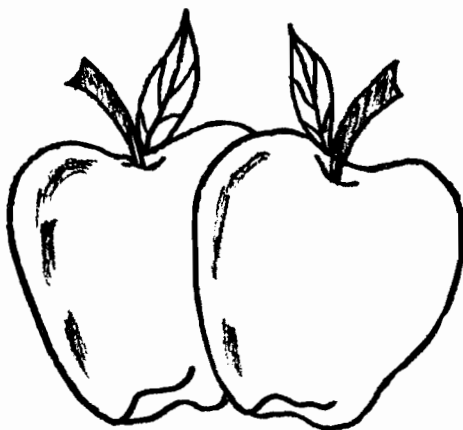


SANTA CRUZ COUNTY
APPLE PRODUCTION COSTS



JUNE 1976

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1975
SANTA CRUZ COUNTY
USE AND VALUE OF APPLES

Use	Tons	% of Total Tons	Value Per Ton	Total Value	% of Total Value
Fresh	35,870	32.6	\$222.89	\$ 7,995,000	59.7
Dryer	8,820	8.0	70.00	617,000	4.6
Processing	33,390	30.3	81.00	2,705,000	20.2
Juice	<u>32,000</u>	<u>29.1</u>	64.65	<u>2,069,000</u>	<u>15.5</u>
All Uses	110,080	100.0%		\$13,386,000	100.0%

TREND OF APPLE CROPS IN SANTA CRUZ COUNTY - 10 YEARS

Major Varieties	Total Acreage	Non-Bearing Acreage	Bearing Acres		
	1 9 7 5	1 9 7 5	1975	1970	1966
Newtown Pippin	3,659	236	3,423	3,716	3,649
Delicious - Red	3,706	310	3,396	3,608	2,631
Delicious - Std.	239	0	239	305	363
Bellefleur	116	0	116	193	213
Winter Banana	125	6	119	132	141
W. W. Pearmain	66	0	66	84	95
Gravenstein	35	3	32	53	61
Golden Delicious	102	19	83	96	88
McIntosh	288	57	231	200	50
Other Varieties	<u>107</u>	<u>6</u>	<u>101</u>	<u>111</u>	<u>284</u>
Total	8,443	637	7,806	8,498	7,575

1966 - 1975
APPLE TONNAGE AND PRICE PER TON--VARIOUS USES

	Fresh		Dryer		Processing		Juice	
	Tons	\$/Ton	Tons	\$/Ton	Tons	\$/Ton	Tons	\$/Ton
1966	54,235	\$140.50	16,040	\$62.50	36,520	\$67.00	17,840	\$41.00
1967	25,700	175.00	10,900	65.00	40,800	74.10	21,000	40.80
1968	61,300	260.00	12,600	73.70	42,000	83.00	16,200	49.80
1969	35,000	139.00	19,000	55.00	38,600	60.00	27,200	41.20
1970	38,460	150.35	8,990	42.00	34,490	51.17	30,210	30.03
1971	38,960	170.60	8,570	58.50	35,730	65.35	35,330	47.83
1972	43,210	208.60	11,470	67.65	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	<u>222.89</u>	8,820	<u>70.00</u>	33,390	<u>81.00</u>	32,000	<u>64.65</u>
Average		\$197.76		\$72.59		\$80.36		\$53.30

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 43% and 44% of the total acreage, respectively.

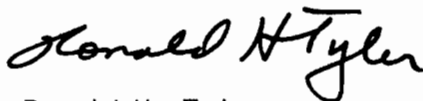
Most of the bearing acreage is on standard (seedling) rootstock planted on 24- to 30-foot square spacing, depending on variety and soil type.

Most of the new replacement plantings are on semi-dwarf rootstocks, such as MM-106. Because of 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% for Red Delicious and 55% for Newtown pippin. Historically, approximately 30% of all apples produced in this area go to each of the fresh, processing and juice markets, and the remaining 10% 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:pr

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 APPLES IN SANTA CRUZ COUNTY
1976

Based on a 50-acre mature orchard (25 acres Newtowns and 25 acres Red Delicious) planted 48 trees per acre with 20 ton production. Labor costs per hour to the grower are \$4.87 for equipment operator and \$3.90 for other labor. Tractor cash costs per hour are \$3.20 for 40 DBHP crawler diesel and \$2.25 for a 40 DBHP wheel gasoline. Speed sprayer cost is \$6.40 per hour.

CULTURAL OPERATIONS	MAN		MACHINE		MATERIALS		Sample Total Cost per Acre
	Rate/ Hour	Cost	Type/ Rate/Hours	Cost	Kind	Cost	
Prune	2/	60.0					\$234.00
Brush Disposal	1/	2.0	6/	2.0	\$5.30		15.04
Fertilization	1/	.5	4/	.5	1.22	80# N @ 30¢/lb.	\$24.00
Sprays, 3X @ ½ hr.	1/	1.5	3/	1.5	4.80)	Insects, Disease, Thin	118.00
4x @ ½ hr.	1/	2.0	5/	1.5	9.60)		
			4/	2.0	4.50)		
Irrigate 2X @ ½ hr.	2/	4.0	7/	4.0	9.50	Power for 1.0 Ac.Ft.	12.00
Cultivate 3X @ ½ hr.	1/	1.5	3/	1.5	4.80		
3X @ ½ hr.	1/	1.5	11/	1.5	1.32		
			4/	1.0	2.25		
			12/	1.0	.55		
			4/	.5	1.13		
			13/	.5	.28		24.95
Thin 1½ hr./tree	2/	72.0					280.80
Prop	2/	6.0				Twine	3.00
Misc. Labor, Power	1/	2.0	8/	2.0	6.30	Gopher Bait, Other	6.50
	2/	3.0					34.24
TOTAL CULTURAL COSTS	156.0	619.09	15.0	64.35		163.50	\$846.94
HARVEST OPERATIONS							
Pick, 20% @\$14.00		280.00					\$280.00
Move-Load Bins	1/	6.0	9/	6.0	18.30		47.52
Haul	1/	5.0	10/	5.0	12.50		36.85
Supervision	1/	7.0					34.09
Bin Rental						30 Bins @ \$3.25/90 days; Harvest-Storage	97.50
							97.50
TOTAL HARVEST COSTS	18.0	367.66	11.0	30.80		97.50	\$495.96
OVERHEAD COSTS							
Taxes, Land: \$2,500 @ \$9.78/\$100 assessed value							\$ 61.13
Taxes, Trees: \$1,200 @ \$9.78/\$100							29.34
Taxes, Equipment: 713 @ \$9.78/\$100							17.43
Taxes, Building: 160 @ \$9.78/\$100							3.91
Taxes, Well-Pump: 120 @ \$9.78/\$100						(Total Taxes = \$114.74)	2.93
Marketing & Promotion: \$2.00/T fresh for 55% of 20T; \$.45/T processed for 45% of 20T							26.05
Office, Pickup, Interest on Operating Capital - 6% cash costs (1,361.17)							81.67
TOTAL OVERHEAD COSTS							\$222.46
TOTAL CULTURAL, HARVEST, OVERHEAD CASH COSTS							\$1,565.36
DEPRECIATION COSTS							
Trees: \$1,200 - 30 year bearing life							\$ 40.00
Buildings for Equipment: @ 160 - 25 year life							6.40
Irrigation, Sprinkler System: @ 300 - 15 year life							20.00
Pump-Well: @ 120 - 25 year life							4.80
Equipment, Cultural: @ 713 - 10 year life							71.30
TOTAL DEPRECIATION COSTS							\$ 142.50
TOTAL CASH AND DEPRECIATION COSTS							\$1,707.86

<u>INTEREST ON INVESTMENT @ 8% on 1/2 of investment</u>	
Land @ \$2,500	\$ 100.00
Trees @ 1,200	48.00
Equipment, Cultural @ 713	28.52
Irrigation, Sprinkler System @ 300	12.00
Well-Pump @ 120	4.80
Buildings for Equipment @ 160	6.40
<u>TOTAL INTEREST ON INVESTMENT</u>	<u>\$ 199.72</u>
<u>TOTAL COST OF PRODUCTION</u>	<u>\$1,907.58</u>

COST PER TON AT VARYING YIELDS PER ACRE

<u>YIELD: Tons</u>	<u>15</u>	<u>20</u>	<u>25</u>	<u>30</u>
Cultural	\$ 56	\$ 42	\$ 34	\$ 28
Harvest	25	25	24	24
Overhead	14	11	9	8
Depreciation	10	7	6	5
Interest on Investment	13	10	8	7
<u>TOTAL COST PER TON</u>	<u>\$118</u>	<u>\$ 95</u>	<u>\$ 81</u>	<u>\$ 72</u>

Legend:

Rate/Hr.

- 1/ \$4.87 Equipment operator labor cost to grower including Social Security, Health plans, Unemployment Insurance, Retirement.
- 2/ 3.90 Other labor, including fringe benefits.
- 3/ 3.20 Tractor, 40 Drawbar HP crawler diesel.
- 4/ 2.25 Tractor, 40 Drawbar HP Wheel gasoline.
- 5/ 6.40 Sprayer, speed, 500 gallon
- 6/ 2.65 Buckrake attachment to Wheel tractor.
- 7/ 2.37 Pipe trailer with wheel tractor.
- 8/ 3.15 Gopher machine (.90/hr.) attached to wheel tractor.
- 9/ 3.05 Forklift (.80/hr.) attachment to wheel tractor.
- 10/ 2.50 Truck, 2 ton.
- 11/ .88 Disc, 8', offset.
- 12/ .55 Disc, 8', tandem.
- 13/ .55 Springtooth, 8'.

SAMPLE COSTS TO PRODUCE RED DELICIOUS APPLES IN SANTA CRUZ COUNTY
1976

Based on a 50-acre mature orchard (25 acres Red Delicious and 25 acres Newtowns) planted 55 trees per acre with 15 ton production. Hourly labor costs to the grower are \$4.87 for equipment operator and \$3.90 for other labor. Hourly cash costs for equipment are \$3.20 for 40 DBHP crawler diesel tractor, \$2.25 for 40 DBHP wheel gasoline tractor and \$6.40 for speed air blast sprayer of 500 gallon capacity.

CULTURAL OPERATIONS	MAN		MACHINE			MATERIALS		Sample Total Cost per Acre
	Rate/Hours	Cost	Type/Rate/Hours	Cost	Kind	Cost		
Prune @ 3/4 hr./tree	2/ 41.3	\$161.07						\$161.07
Brush Disposal	1/ 2.0	9.74	6/ 2.0	\$5.30				15.04
Fertilization	1/ .5	2.44	4/ .5	1.22	80# N @ 30¢/lb.	\$24.00		27.66
Spray 3X @ 1/2 hr.	1/ 1.5	7.31	3/ 1.5	4.80	Insects, Disease			
			5/ 1.5	9.60	Thin	108.00		
3X @ 1/2 hr.	1/ 1.5	7.31	4/ 1.5	3.38	Ethaphon @ \$30.94/ac			
			5/ 1.5	9.60	20% of Acreage	6.18		156.18
Irrigate 2X @ 6"	2/ 4.0	15.60	7/ 4.0	9.50	Power for 1ac. ft.	12.00		37.10
Cultivate 3X @ 1/2 hr.	1/ 1.5	7.31	3/ 1.5	4.80				
			11/ 1.5	1.32				
3X @ 1/2 hr.	1/ 1.5	7.31	4/ 1.0	2.25				
			12/ 1.0	.55				
			4/ .5	1.13				
			13/ .5	.28				24.95
Thin 1 hr./tree	2/ 55.0	214.50						214.50
Prop	2/ 6.0	23.40			Twine	3.00		26.40
Misc. Labor, Machine	1/ 2.0	9.74	8/ 2.0	6.30	Gopher Bait, Other	6.50		
	2/ 3.0	11.70						34.24
TOTAL CULTURAL COSTS	119.8	\$477.43	17.5	\$60.03		\$159.68		\$697.14
HARVEST OPERATIONS								
Pick 15T @ 13.00		\$195.00						\$195.00
Move-Load Bins	1/ 4.8	23.37	9/ 4.8	14.64				38.01
Haul	1/ 3.8	18.50	10/ 3.8	9.50				28.00
Supervision	1/ 6.0	29.22						
Bin Rental					22.5 Bins @ 3.25/90 days			
					Harvest-Storage	73.12		73.12
TOTAL HARVEST COSTS	14.6	\$266.09	8.6	\$24.14		\$73.12		\$363.35
OVERHEAD COSTS								
Taxes, Land	\$2,500 @ \$9.78/\$100 assessed value							\$ 61.13
Taxes, Trees:	650 "	"	"	"	"	"	15.89	
Taxes, Equipment:	713 "	"	"	"	"	"	17.43	
Taxes, Buildings:	160 "	"	"	"	"	"	3.91	
Taxes, Well-Pump:	120 "	"	"	"	"	"	2.93	
Marketing Order	\$2.00/T fresh for 70% of 15T; .45/T processed for 30% of 15T							23.03
Office, Pickup, Interest on Operating Capital - 6% of cash costs								71.70
TOTAL OVERHEAD COSTS								\$196.02
TOTAL CULTURAL, HARVEST, OVERHEAD CASH COSTS								\$1,256.51
DEPRECIATION COSTS								
Trees: @ \$650 - 30 year life								\$ 21.67
Buildings: 160 - 25 year life								6.40
Irrigation System, Sprinkler: 300 - 15 year life								20.00
Well-Pump: 120 - 25 year life								4.80
Equipment, Cultural: 713 - 10 year life								71.30
TOTAL DEPRECIATION COSTS								\$124.17
TOTAL CASH AND DEPRECIATION COSTS								\$1,380.68

INTEREST ON INVESTMENT @ 8% on 1/2 of investment

Land @ \$2,500	\$ 100.00
Trees @ 650	26.00
Buildings @ 160	6.40
Irrigation System Sprinkler @300	12.00
Well and Pump @ 120	4.80
Equipment, Cultural @ 713	28.52
<u>TOTAL INTEREST ON INVESTMENT</u>	<u>\$ 177.72</u>
<u>TOTAL COST OF PRODUCTION</u>	<u>\$1,558.40</u>

COSTS PER TON AT VARYING YIELDS PER ACRE

<u>YIELD: Tons</u>	<u>10</u>	<u>12</u>	<u>15</u>	<u>18</u>	<u>20</u>
Cultural	\$ 58	\$ 57	\$ 46	\$ 39	\$ 35
Harvest	25	25	24	24	24
Overhead	18	16	13	11	11
Depreciation	12	10	8	7	6
Interest on Investment	18	15	12	10	9
<u>TOTAL COST PER TON</u>	<u>\$131</u>	<u>\$123</u>	<u>\$104</u>	<u>\$ 91</u>	<u>\$ 84</u>

EQUIPMENT INVENTORY FOR 50 ACRES

	<u>Cost</u>	<u>Years of Life</u>
Tractor, 40 DBHP, crawler, diesel	\$10,000	10
Tractor, 40 DBHP, wheel, gasoline	5,000	15
Truck, 2 Ton, used	5,000	5
Sprayer, Air blast, speed, 500 gallon	6,000	15
Disc, 8' offset for crawler tractor	1,800	10
Disc, 8' for wheel tractor	1,100	10
Springtooth, 8'	1,100	10
Forklift attachment	2,000	10
Pipe Trailer	800	15
Ladders	1,000	10
Props	350	10
Other Tools	<u>1,500</u>	15
	\$35,650	

\$35,650 ÷ 50 acres = \$713.00/acre