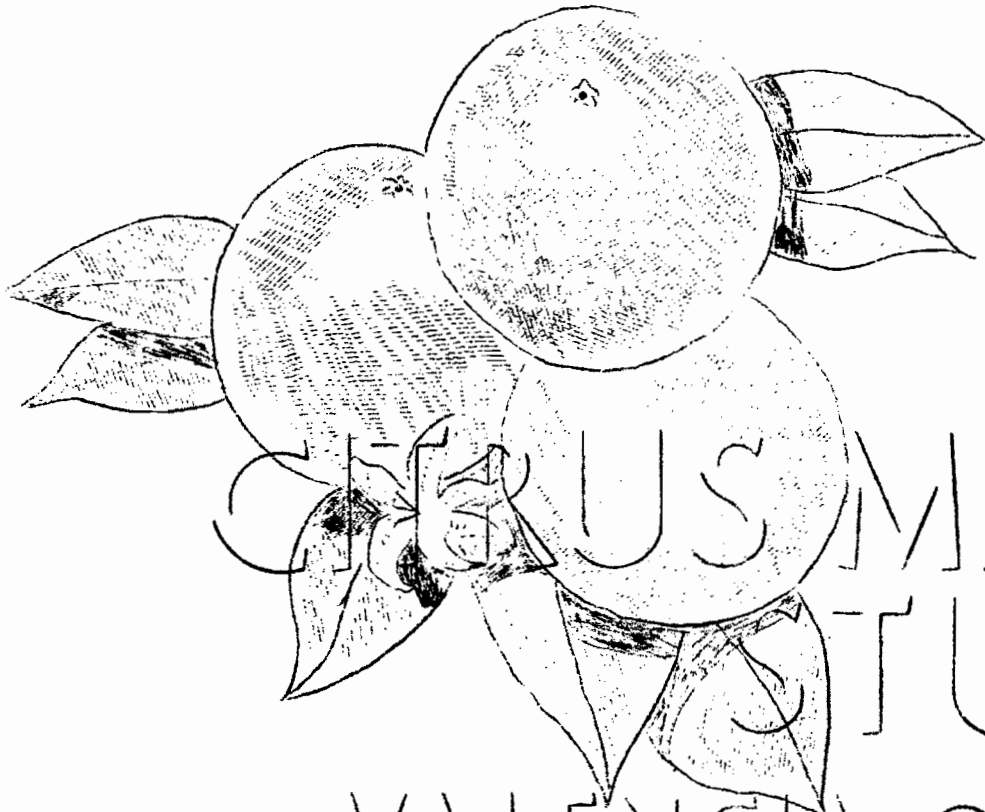


CS-SC-54-3



CITRUS MANAGEMENT
STUDY
VALENCIA ORANGES AND
LEMONS

SAN DIEGO COUNTY

1954

AGRICULTURAL EXTENSION SERVICE
UNIVERSITY OF CALIFORNIA

UC Cooperative Extension

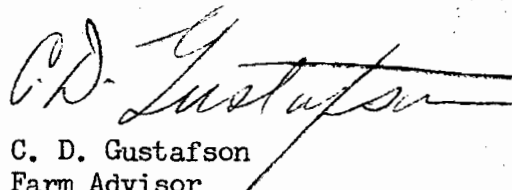
I N T R O D U C T I O N

This Citrus Management Study is an analysis of yields, returns, costs, and practices. The 1954 edition - the 16th annual summary - includes records from thirteen Valencia orange orchards covering 220 acres, and eighteen lemon orchards covering 253 acres. Data has been made available to the Agricultural Extension Service by cooperative citrus growers of San Diego County.

Grower cooperators in this study are volunteers. No attempt has been made systematically or scientifically to sample the industry in the county. The data, therefore, cannot be considered as a real average for the citrus production of the county.

Summary and analysis of the data was made by H. Fisk Phelps, Extension Economist in Farm Management, University of California, Berkeley. Appreciation is expressed to George Ferguson of the California Citrus League for his assistance.

Copies of this report, as well as other agricultural information, can be obtained upon request at the Farm Advisor's Office, Building 1, 4005 Rosecrans Street, San Diego 10, California.



C. D. Gustafson
Farm Advisor
San Diego County

EXPLANATION OF TERMS

Yields, costs, and returns are computed in packed boxes or the equivalent and include all fruit picked and hauled to the packing house.

Cultural labor costs include hired labor, operator's and family labor, field power, horses, tractors and trucks, and contract jobs.

Harvesting costs include picking, hauling, labor camp expense, etc.

Material cost includes irrigation water, fertilizer, pest and disease control material, etc. In some cases cost of application is included.

Cash overhead cost includes all cash costs other than labor and material, such as taxes, insurance, and general expense.

Depreciation is the share of the original cost of facilities which should be charged each year of use. Trees are not depreciated.

Interest on investment is computed at five per cent of the average value of facilities over their useful life.

Total cost of production includes all the above items of cost. It therefore covers wages for all labor, costs of materials, cash costs and, with depreciation, provides for replacement of facilities and interest pays for the use of invested capital.

Management income is total income less total cost of production. It is the amount available to reimburse the operator for his management after all costs are met.

Capital and Management income is management income plus interest on investment. It is total income less total cash and depreciation costs. It is the amount available to reimburse owners and operators for capital used and managerial ability.

VALENCIA ORANGE 1954

TABLE 1. YIELD, INCOME, COSTS, 1945-1954

A TEN YEAR SUMMARY OF THE VALENCIA ORANGE MANAGEMENT STUDY OF SAN DIEGO COUNTY WITH A NINE YEAR AVERAGE

ITEMS		1945	1946	1947	1948	1949	1950*	1951	1952	1953	1954	9 Year Average
No. Records in Study		11	10	20	17	13	18	15	13	11	13	14
Total Acres		135	126	228	186	150	232	203	192	178	220	180
Average Acres per Record		12.2	12.6	11.4	10.9	11.5	12.9	13.5	14.7	16.2	16.9	13.3
Average No. Trees per Acre		80	80	83	82	81	76	76	74	74	77	87
Average Age of Trees		20	21	20	22	24	25	25	26	27	27	24
Per Acre	Yield, Pk. Bx.	235	185	221	236	225	354	264	331	348	256	256
	Income	764.17	679.53	308.22	439.36	605.01		496.53	545.18	432.54	728.61	555.46
	Costs - Total	339.23	327.30	392.12	379.77	436.85	478.40	468.47	488.90	526.29	497.14	428.45
Management Income		424.94	352.23	-83.90	59.59	168.16		28.06	56.28	-93.75	231.47	127.01
Per Pkd. Box	Total Cost	1.45	1.77	1.77	1.61	1.94	1.35	1.77	1.48	1.55	1.94	1.67
	Average Income	3.25	3.68	1.39	1.86	2.69		1.88	1.65	1.24	2.84	2.17
	Management Income	1.80	1.91	-.38	.25	.75		.11	.17	-.27	.90	.50
	Capital & Mgt. Income	2.03	2.19	-.13	.49	1.01		.41	.41	-.04	1.21	.76
Per Acre	Labor Costs											
	Cultural	91.41	83.89	100.29	96.71	118.48	111.05	103.93	105.64	111.68	104.33	101.82
	Harvest	76.95	65.91	72.88	74.67	73.02	106.39	89.70	113.71	115.40	98.00	86.69
	Material Costs	77.54	84.25	109.21	95.04	125.28	129.23	128.50	126.37	136.37	135.05	113.07
	Cash Overhead	33.98	35.11	46.37	46.04	52.60	59.98	56.62	52.64	70.89	68.87	51.45
	Depreciation	5.92	5.49	7.68	10.01	8.89	8.57	10.16	11.04	11.42	11.98	9.18
	Interest on Investment	53.43	52.65	55.69	57.30	58.58	63.18	79.56	79.49	80.53	78.91	66.24
	Total All Costs	339.23	327.30	392.12	379.77	436.85	478.40	468.47	488.90	526.29	497.14	428.45
	Total Income	764.17	679.53	308.22	439.36	605.01		496.53	545.18	432.54	728.61	555.46
	Income Above Cash Costs	484.29	410.37	-20.53	126.91	235.63		117.78	146.81	-93.75	322.36	202.43
Capital & Mgt. Income	478.37	404.88	-28.21	116.90	226.74		107.62	135.77	-13.22	310.38	193.25	
Management Income	424.94	352.23	-83.90	59.59	168.16		28.06	56.28	-1.80	231.47	127.01	

* The income for the 1950 Crop was not collected; hence, it is not included in the average.

The above table shows a general summary by years for the 10 year period 1945-1954.

TABLE 2. MAIN PROFIT DETERMINING FACTORS IN INDIVIDUAL ORCHARDS - PER ACRE

Serial Number	Packed Box		Total Income Per A.	Cult. Labor & Field Power	Mate-rial Costs	Cash Over-head Cost	Total CashCost up to Picking	Capital Overhead Costs		Total on Tree Costs	Pick and Haul	Total all Costs	Capital & Mgmt. Income	Manage-ment Income
	Ave. Yield	Ave. Income						Depre.	Int. On Invest.					
848	478	2.99	1429.03	153.85	219.50	110.48	483.83	5.89	78.74	568.46	179.48	747.94	759.83	681.09
847	423	2.91	1231.61	153.62	219.17	109.32	482.11	5.90	78.73	566.74	164.80	731.54	578.80	500.07
852	346	2.87	992.75	63.29	163.11	66.61	293.01	12.32	91.49	396.82	124.27	521.09	563.15	471.66
842	272	2.66	724.47	70.82	133.82	67.30	271.94	12.08	73.74	357.76	96.72	454.48	343.73	269.99
854	331	2.23	740.21	91.33	85.53	44.11	220.97	6.80	81.39	309.16	164.85	474.01	347.59	266.20
862	218	2.70	588.88	85.14	68.49	27.47	181.10	4.17	69.58	254.85	92.41	347.26	311.20	241.62
855	233	3.53	821.78	142.00	170.24	77.10	389.34	12.53	79.54	481.41	100.75	582.16	319.16	239.62
846	319	2.68	855.67	153.85	219.50	110.48	483.83	5.89	78.74	568.46	107.96	676.42	257.99	179.25
851	217	2.55	553.65	54.75	182.61	56.87	294.23	7.86	79.22	381.31	91.82	473.13	159.74	80.52
863	146	3.02	441.48	124.90	93.10	84.30	302.30	15.53	70.99	388.82	45.61	434.43	78.04	7.05
833	101	2.27	229.39	59.97	26.52	34.58	121.07	9.36	74.03	204.46	38.31	242.77	60.65	-13.38
870	427	1.84	784.18	163.94	260.48	81.14	505.56	81.07	121.64	708.27	143.42	851.69	54.13	-67.51
849	80	3.05	243.48	105.66	147.00	54.61	307.27	8.33	78.83	394.43	33.45	427.88	105.57	-184.40
Ave. All	256	2.84	728.61	104.33	135.05	68.87	308.25	11.98	78.91	399.14	98.00	497.14	310.38	231.47

The above table shows the main profit determining factors per acre for the individual records in the 1954 Valencia Orange enterprise efficiency study. Each record is given a serial number and they are arranged in descending order of management income per acre. They are kept in the same order in subsequent tables.

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TABLE 3. COSTS AND INCOME PER PACKED AND FIELD BOX

Serial Number	Yield per acre		% Sold as		Income per Pkd. Box			Total Cost per Fld. Bx.	Costs & Income per Pkd. Box - All Fruit				
	Field Boxes	Packed Boxes	Fresh Fruit	Products and Culls	Sold Fresh	Pro-ducts & Cull	Ave. All		Total on Tree Pkd. bx.	Total Har-vest	Total all Costs	Capital & Mgmt. Income	Manage-ment Income
848	645	478	87.8	12.2	3.24	1.23	2.99	1.16	1.18	.38	1.56	1.59	1.43
847	590	423	92.8	7.2	3.05	1.07	2.91	1.24	1.34	.39	1.73	1.37	1.18
852	530	346	78.4	21.6	3.25	1.47	2.87	.98	1.15	.36	1.51	1.63	1.36
842	370	272	73.0	27.0	3.15	1.35	2.66	1.23	1.31	.36	1.67	1.26	.99
854	453	331	64.0	36.0	2.70	1.40	2.23	1.04	.93	.50	1.43	1.05	.80
862	305	218	85.4	14.6	2.96	1.12	2.70	1.14	1.17	.42	1.59	1.43	1.11
855	331	233	80.0	20.0	4.05	1.46	3.53	1.76	2.07	.43	2.50	1.37	1.03
846	450	319	68.3	31.7	3.30	1.35	2.68	1.50	1.78	.34	2.12	.81	.56
851	377	217	72.1	27.9	3.20	.87	2.55	1.25	1.76	.42	2.18	.74	.37
863	216	146	65.8	34.2	3.62	1.86	3.02	2.01	2.66	.31	2.97	.53	.05
833	154	101	73.6	26.4	2.69	1.12	2.27	1.58	2.02	.38	2.40	.60	-.13
870	546	427	70.2	29.8	2.08	1.27	1.84	1.56	1.66	.34	2.00	.13	-.16
849	111	80	88.1	11.9	3.09	2.76	3.05	3.85	4.94	.42	5.36	-1.32	-2.31
Ave. All	368	256	77.9	22.1	3.30	1.23	2.84	1.35	1.56	.38	1.94	1.21	.90

The above table is set up similar to table 2 and calculations are made showing costs and income per packed and field box. The field boxes were the actual number delivered to the packing house. The weight per box varied from 45 to 54#. The most common weight was 54#. The number of packed boxes was the actual number packed out plus all loose fruit. Products and culls converted to packed box equivalent of 77 pounds.

Yield per acre is one of the most important factors in reducing on tree costs per box.

TABLE 4. IRRIGATION AND FERTILIZER COSTS AND PRACTICES

Serial Number	Yield per A. Pkd. Box	Age of Tree	Irrigation			Fertilization				
			Cost per Acre			Per Acre				
			Labor	Water	Total	Kind and Amount	Lbs. Nit.	Material	Labor	Total
848	478	29	19.57	87.79	107.36	AmS. 609#; Dairy 667 Ft; Str. 4060#	319	109.10	15.83	124.93
847	423	28	19.55	87.66	107.21	AmS. 608#; Dairy 666 Ft; Str. 4054#	319	108.93	15.81	124.74
852	346	24	25.57	80.00	105.57	NH ₃ . 154#; AmS. 429#; Manure 459 Ft.	330	74.77	8.14	82.91
842	272	34	20.73	99.34	120.07	AmN. 305#; Poul. 193 Ft.	252	27.44	15.44	42.88
854	331	27	16.67	45.25	61.92	AmN. 554#; Str. 4778#	210	34.61	8.89	43.50
862	218	27	36.88	25.00	61.88	NH ₃ . 150#; Tr. Sup.	122	25.31	2.13	27.44
855	233	34	21.64	52.24	73.88	AmN. 450#; Dairy 746 Ft; Str. 4 Ton	377	103.94	24.03	127.97
846	319	24	19.58	87.79	107.37	AmS. 609#; Dairy 667#; Str. 4060#	319	109.10	15.83	124.93
851	217	27	18.68	105.71	124.39	AmN. 357#; AmS. 143#; NH ₃ . 93#	221	34.75	2.71	37.46
863	146	20	27.56	50.81	78.37	Poultry 409 Ft.	317	15.93	8.53	24.46
833	101	24	18.80	12.67	31.47	Poultry 129 Ft.	100	4.95	5.14	10.09
870	427	38	44.80	83.28	128.08	CaN. 1618#; Manure 567 Ft.	401	100.95	7.42	108.37
849	80	25	31.32	28.78	60.10	AmN. 266#; Turkey 333 Ft.	302	44.37	2.40	46.77
Ave. All	256	27	24.73	60.14	84.87		277	56.05	11.05	67.10

Abbr.: AmS - Ammonium Sulphate; NH₃ - liquid ammonia; Ca.N. - Calcium Nitrate; AmN - Ammonium Nitrate.

Irrigation and fertilization are two of the most important management practices in citrus production.

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TABLE 5. SOIL MANAGEMENT AND OTHER CULTURAL COSTS

Serial Number	Yield per Acre		Tillage Operations			Total Pest & Disease Control	Frost protection	Pruning and brush Removal	Tree Removal and Plant	Misc.
	Field Boxes	Packed Boxes	Cult. and Furrow	Hoe and Misc.	Weed Spray					
848	645	478	24.77	2.18	1.74	51.09	-	-	-	61.28
847	590	423	24.73	2.17	1.74	51.01	-	-	-	61.19
852	530	346	18.86	-	-	6.63	-	-	-	12.43
842	370	272	16.25	9.46	2.77	10.35	-	-	-	2.86
854	453	331	28.00	2.78	-	3.00	-	-	-	37.66
862	305	218	18.85	3.09	-	41.91	-	-	-	.46
855	331	233	17.46	9.70	-	5.52	-	41.79	3.08	32.84
846	450	319	24.77	2.17	1.74	51.09	-	-	-	61.28
851	377	217	25.86	2.14	-	1.50	.29	1.43	-	44.29
863	216	146	30.93	3.41	5.34	27.32	-	-	5.87	42.30
833	154	101	22.37	-	-	21.17	1.39	-	-	-
870	546	427	16.74	28.00	-	54.60	24.29	-	-	64.34
849	111	80	-	12.19	98.24	27.37	-	-	-	7.99
Ave. All	368	256	21.75	4.46	3.13	22.43	.68	6.42	1.44	27.10

The above table compares selected items of soil management and other cultural costs per acre.