Research is continuing in this area. A polynomial function is being used to estimate the coefficients to determine if it does a better job when large variations in supplies occur. The results of this phase of the investigation will be included in a later report.

SUMMARY

With all the shortcomings of equation (5), it explained over 95 per cent of the variation in on-tree prices of Florida oranges during the past 11 years. A small number of independent variables were used to generate the estimated prices. These were: (1) estimated production (supply) as released by the Crop Reporting Service, Orlando, Florida; (2) personal disposable income; and (3) nine seasonal shift (month) variables. The function was complicated in that adjustment to changes in the independent variables is distributed over several time periods and the deviations are correlated.

The short-run and long-run effect of a 1 per cent change in the quantity of oranges is a 1.44 per cent and a 3.2 per cent change in the opposite direction in the on-tree price of oranges. The short- and long-run effect of a 1 per cent change in personal disposable income is 1.22 per cent and 2.43 per cent change in the same direction in the on-tree price of oranges. The adjustment coefficient for changes in quantity is 0.45 and for changes in income is 0.50, which is the proportion of adjustment taking place in time period t.

The citrus industry can use the estimated parameters to trace through the marketing system the effects of alternative policies and programs. The price flexibility coefficient is usable to the individual producers and processors in narrowing the range in which bargaining takes place in discovering the market price following shifts in supplies. The results given in this paper are tentative and are likely to be revised as research on this problem is continued.

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THE DEGREES BRIX & BRIX-ACID RATIOS OF GRAPEFRUIT UTILIZED BY FLORIDA CITRUS PROCESSORS FOR SEASONS 1958-59 THROUGH 1961-62

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The authors have from time to time reported on the Brix and Brix-acid ratios of citrus fruits utilized by processors (1, 2, 3). This new report, which contains more recent and somewhat similar data to the initial publication on grapefruit presented at the 1956 meeting of the Horticultural Society, was prepared at the request of the Quality Advisory Committee of the Florida Canners Association, and the brackets which were selected for degrees Brix and Brix-acid ratios were concurred in by that committee.

As in earlier reports, all information was obtained from the inspectors' worksheets, which are standard forms used for recording analyses of loads of fruit received at processing plants. For reasons of simplicity, loads rather than boxes were used as the basic unit in this tabulation. The analyses of the individual loads were punched on IBM cards, then the desired data were extracted and grouped in respective Brix and ratio brackets as follows: Degrees Brix—less than 8.0, 8.0 to 8.49, 8.5 to 8.99, 9.0 to 9.49, 9.5 to 9.99, 10.0 to 10.49, 10.5 to 10.99, 11.0 to 11.49, 11.5 to 11.99, and 12 degrees and higher; and ratios—6.0 to 6.49 to 1, 6.5 to 6.99 to 1, 7.0 to 7.49 to 1, 7.5 to 7.99 to 1, 8.0 to 8.49 to 1, 8.5 to 8.99 to 1, and 9.0 to 1 and higher. Each month was tabulated individually, and the percentages of loads falling into each of the categories for that period were calculated. The tabulations were drawn up so as to represent fruit received by all major processors, with each day's receipts for the months of October, November and June being completely covered, and

Table 1: Percent of Loads Meeting Various Degrees Brix-Ratio Combinations

OCTOBER

1961-62: (404,395 Boxes)

°Brix	RATIO 6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0			0.3%	0.5%		0.2%		1.0%
8.0			1.0	1.4	1.1%	0.3	0.2%	4.3
8.5			2.3	3.3	2.2	1.7	0.8	10.3
9.0		0.6%	3.9	7.7	5.4	1.6	0.9	20.1
9.5		1.7	6.1	7.8	3.5	2.1	0.9	22.2
10.0	0.2%	2.1	5.8	6.8	4.3	1.2	1.0	21.4
10.5	0.3	1.9	5.3	4.5	1.8	1.0		14.8
11.0	0.3	0.8	1.4	0.7	0.5	0.3		4.0
11.5	0.2	0.4	0.4		0.2			1.2
12.0 & Up		0.3	0.2	0.2				0.7
Total	1.0%	7.8%	26.7%	32.9%	19.4%	8.4%	3.8%	100.0%

1960-61: (191,184 Boxes)

°Brix	RATIO 6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0			7.8%	7.1%	3.1%	0.8%	0.2%	19.3%
8.0			19.0	13.3	3.1	0.8		36.2
8.5			16.1	9.5	1.9	0.6	0.2	28.3
9.0		0.8%	6.4	2.5	1.6			11.3
9.5		0.2	2.1	0.6	0.2			3.1
10.0	0.2%	0.4	0.8		0.2			1.6
10.5			0.2					0.2
11.0								
11.5								
12.0 & Up								
Total	0.2%	1.4%	52.4%	33.3%	10.1%	2.2%	0.4%	100.0%

1959-60: (627,191 Boxes)

°Brix	RATIO 6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0			2.1%	4.8%	4.3%	2.1%	0.6%	13.9%
8.0			6.1	11.1	11.5	4.2	1.6	34.5
8.5			5.2	11.2	9.1	6.3	3.0	34.8
9.0			1.8	3.1	4.0	1.9	1.5	12.3
9.5			0.3	0.7	0.9	0.6	0.4	2.9
10.0		0.1%	0.2		0.3	0.3	0.2	1.1
10.5				0.1		0.3		0.4
11.0			0.1					0.1
11.5								
12.0 & Up								
Total		0.1%	15.8%	31.0%	30.1%	15.7%	7.3%	100.0%

1958-59: (289,117 Boxes)

°Brix	RATIO 6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0								
8.0			4.9%	1.0%	0.6%			6.5%
8.5			5.1	3.8	0.6	0.3%	0.1%	9.9
9.0		4.3%	10.8	4.3	1.2	0.4		21.0
9.5		8.2	11.6	4.7	2.1	0.9	0.4	27.9
10.0	0.8%	6.1	6.9	2.9	0.8		0.3	17.8
10.5	1.3	2.7	5.5	1.4	0.3	0.3		11.5
11.0	0.8	1.7	1.6	0.3	0.1			4.5
11.5		0.3	0.4					0.7
12.0 & Up	0.1		0.1					0.2
Total	3.0%	23.3%	46.9%	18.4%	5.7%	1.9%	0.8%	100.0%

Table 2: Percent of Loads Meeting Various Degrees Brix-Ratio Combinations

NOVEMBER

1961-62: (1,367,909 Boxes)

°Brix	RATIO 6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0								
8.0			0.1%	0.2%	0.5%		0.2%	1.0%
8.5			0.4	0.7	0.4	0.5%	0.3	2.3
9.0		0.1%	1.2	1.8	1.8	1.3	0.8	7.0
9.5		1.3	2.6	2.7	2.6	1.4	0.9	11.5
10.0	0.1%	2.6	3.9	4.9	3.1	1.4	0.9	16.9
10.5	0.8	3.4	5.6	5.4	3.2	1.1	0.6	20.1
11.0	0.8	3.6	4.5	4.5	2.7	1.0	0.4	17.5
11.5	1.6	2.5	3.0	2.8	1.0	0.3	0.2	11.4
12.0 & Up	1.9	3.3	4.2	1.9	0.8	0.2		12.3
Total	5.2%	16.8%	25.5%	24.5%	16.1%	7.2%	4.3%	100.0%

1960-61: (1,023,622 Boxes)

°Brix	RATIO 6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0			1.4%	1.8%	1.0%	0.3%		4.5%
8.0			4.7	3.9	1.8	0.4	0.1%	10.9
8.5			10.4	5.0	2.5	0.2	0.1	18.2
9.0		3.6%	11.0	7.6	1.8	0.6	0.2	27.8
9.5		5.7	9.1	4.5	1.0	0.3	0.1	20.7
10.0	0.2%	3.5	4.0	2.0	0.6	0.1		10.4
10.5	0.5	1.1	1.7	1.0	0.6	0.3		5.2
11.0	0.2	0.3	0.5	0.4	0.1	0.1	0.2	1.8
11.5	0.2	0.1		0.1				0.4
12.0 & Up	0.1							0.1
Total	1.2%	14.3%	45.8%	26.3%	9.4%	2.3%	0.7%	100.0%

1959-60: (1,644,624 Boxes)

°Brix	RATIO 6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0			0.6%	1.5%	1.7%	1.5%	1.3%	6.6%
8.0			2.8	4.5	5.6	3.3	2.1	18.3
8.5			4.9	7.1	6.9	5.6	4.4	28.9
9.0		0.2%	2.9	6.6	6.9	4.1	3.5	24.2
9.5		0.2	1.8	3.1	3.0	2.4	1.5	12.0
10.0		0.2	1.2	1.6	1.0	0.7	0.7	5.4
10.5	0.1%	0.2	0.8	1.0	0.4	0.2	0.4	3.1
11.0		0.1	0.2	0.3	0.2		0.3	1.1
11.5		0.1	0.1	0.1				0.3
12.0 & Up			0.1					0.1
Total	0.1%	1.0%	15.4%	25.8%	25.7%	17.8%	14.2%	100.0%

1958-59: (1,264,572 Boxes)

°Brix	RATIO 6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0			0.1%		0.1%			0.2%
8.0			0.9	0.5%	0.2			1.6
8.5			2.0	1.0	0.4	0.2%	0.1%	3.7
9.0		1.2%	3.7	2.1	1.2	0.3	0.1	8.6
9.5		6.5	6.1	3.4	1.2	0.2	0.4	17.8
10.0	1.7%	11.2	8.5	3.1	1.1	0.3	0.2	26.1
10.5	4.6	8.6	6.6	2.6	1.1	0.2	0.1	23.8
11.0	3.7	4.3	3.5	1.1	0.3	0.1	0.1	13.1
11.5	1.4	1.4	0.7	0.2	0.1	0.1		4.0
12.0 & Up	0.3	0.3	0.2	0.1	0.1			1.1
Total	11.7%	33.5%	32.3%	14.2%	5.9%	1.4%	1.0%	100.0%

with each alternate day's receipts being tabulated for the heavy six months of the processing season. In all, nearly 100,000 individual loads were tabulated. Since this represents more than half of all grapefruit received by all processing plants during these seasons, statistical sample variation is not a complicating factor.

The results of the tabulation of the 1958-59 through 1961-62 seasons are shown on Tables 1 through 9, with each table consisting of one month for the four years. It had been anticipated that this second report on grapefruit would include data for five seasons, but the exclusion of the non-representative freeze years of 1957-58 and 1962-63 has limited the data to the four successive seasons mentioned. Also, since there is no specific current interest in any particular Brix-ratio combinations as there was at the time of the 1956 report, no attempt will be made here to study or to evaluate the data as was done in the previous publications for grapefruit (1), oranges (2), and tangerines (3). Those persons who intend to make use of the data herein should refer to those reports.

In addition to these special compiled data which indicate the percentages meeting various Brix and ratio levels, this Division routinely tabulates and distributes seasonal summaries of percent citric acid and degrees Brix by week endings, including volume of movement, for all fruit received at processing plants (4). This information is available to all segments of the citrus industry, and published data for grapefruit will not be repeated here. However, the monthly averages for the four seasons involved have been

Table 3: Percent of Loads Meeting Various Degrees Brix-Ratio Combinations

DECEMBER

1961-62: (1,704,579 Boxes)	RATIO							
°Brix	6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0						0.1%	0.1%	0.2%
8.0			0.1%			0.1	0.1	0.3
8.5			0.2	0.1%	0.2%	0.2	0.4	1.1
9.0			0.2	0.5	0.5	0.9	1.4	3.5
9.5		0.5%	1.4	1.5	2.0	1.4	1.6	8.4
10.0	0.1%	1.1	2.0	2.7	2.4	1.5	1.7	11.5
10.5	0.9	2.2	2.6	2.4	2.6	1.5	1.5	13.7
11.0	0.8	2.7	4.4	3.4	3.7	1.1	0.7	16.8
11.5	1.7	2.9	3.7	3.2	1.4	0.7	0.5	14.1
12.0 & Up	4.4	7.5	8.1	5.3	2.9	1.8	0.4	30.4
Total	7.9%	16.9%	22.7%	19.1%	15.7%	9.3%	8.4%	100.0%

1960-61: (1,627,169 Boxes)	RATIO							
°Brix	6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0			0.7%	0.4%	0.4%	0.1%	0.2%	1.8%
8.0			1.1	1.6	1.2	0.5	0.3	4.7
8.5			3.2	2.5	1.1	0.7	0.4	7.9
9.0	0.1%	3.7%	8.3	5.2	1.8	0.6	0.3	20.0
9.5		7.9	10.4	4.7	1.6	1.0	0.3	25.9
10.0	0.7	7.5	7.1	4.0	1.1	0.1	0.4	20.9
10.5	1.5	2.6	3.0	1.7	0.8	0.2	0.1	9.9
11.0	0.7	1.2	1.3	0.8	0.6	0.1	0.1	4.8
11.5	0.6	0.7	0.8	0.1	0.3	0.2	0.1	2.8
12.0 & Up	0.2	0.5	0.2	0.2	0.1	0.1		1.3
Total	3.8%	24.1%	36.1%	21.2%	9.0%	3.6%	2.2%	100.0%

1959-60: (2,091,763 Boxes)	RATIO							
°Brix	6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0			0.6%	1.1%	1.7%	1.3%	2.2%	6.9%
8.0			1.8	2.6	3.6	2.4	1.4	11.8
8.5			3.1	5.3	5.4	4.3	2.6	20.7
9.0		0.4%	4.9	6.3	5.6	3.8	3.6	24.6
9.5		0.6	2.7	4.6	3.5	2.3	1.8	15.5
10.0		0.7	1.9	2.7	2.0	0.7	0.7	8.7
10.5	0.1%	0.4	1.5	1.5	0.7	0.5	0.2	4.9
11.0	0.1	0.3	1.1	0.8	0.8	0.3	0.2	3.6
11.5		0.3	0.8	0.3	0.5	0.3		2.2
12.0 & Up		0.1	0.4	0.3	0.2	0.1		1.1
Total	0.2%	2.8%	18.8%	25.5%	24.0%	16.0%	12.7%	100.0%

1958-59: (2,187,086 Boxes)	RATIO							
°Brix	6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0				0.1%				0.1%
8.0			0.2%	0.2	0.4%			0.8
8.5			0.7	0.5	0.5	0.2%	0.2%	2.1
9.0		0.8%	1.6	1.2	1.0	0.2	0.2	5.0
9.5		3.3	2.5	2.1	1.2	0.3	0.3	9.7
10.0	1.0%	6.1	4.5	3.1	1.5	0.5	0.3	17.0
10.5	3.8	9.0	6.1	3.8	0.9	0.7	0.1	24.4
11.0	2.9	8.6	5.6	3.0	0.7	0.7	0.1	21.6
11.5	2.3	4.0	3.2	1.5	0.6	0.1	0.1	11.8
12.0 & Up	1.6	2.1	2.3	1.3	0.2			7.5
Total	11.6%	33.9%	26.7%	16.8%	7.0%	2.7%	1.3%	100.0%

Table 4: Percent of Loads Meeting Various Degrees Brix-Ratio Combinations

JANUARY

1961-62: (2,146,475 Boxes)	RATIO							
°Brix	6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0								
8.0				0.1%	0.1%	0.1%	0.4%	0.7%
8.5			0.1%	0.1%	0.1	0.1	0.5	1.0
9.0			0.1	0.4	0.4	1.0	0.7	1.9
9.5		0.1%	0.3	0.8	1.2	2.1	1.1	3.2
10.0		0.3	0.7	1.7	2.3	2.2	2.7	3.9
10.5		0.8	1.3	2.9	3.4	3.2	2.8	3.6
11.0		1.1	3.1	3.4	2.9	2.5	1.6	1.7
11.5		1.5	2.8	3.0	2.6	2.0	0.7	1.1
12.0 & Up		5.0	5.8	5.9	3.1	2.1	0.8	0.5
Total		8.8%	14.2%	18.2%	16.1%	15.3%	10.6%	16.8%

1960-61: (2,391,041 Boxes)	RATIO							
°Brix	6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0	0.1%	0.1%	0.1%	0.2%	0.2%	0.1%	0.1%	0.9%
8.0	0.4	0.3	0.4	0.7	0.5	0.2	0.3	2.8
8.5	1.1	0.8	1.1	1.2	1.1	0.7	0.5	6.5
9.0	3.2	3.0	2.4	1.6	1.1	0.6	0.7	12.6
9.5	5.0	6.4	3.4	2.2	1.2	0.7	0.4	19.3
10.0	5.0	6.6	3.8	3.1	1.6	0.8	0.4	21.3
10.5	4.8	4.5	3.4	2.3	1.1	0.4	0.2	16.7
11.0	2.5	2.7	2.1	1.6	0.5	0.2	0.2	9.8
11.5	2.0	1.8	0.9	0.6	0.1	0.1	0.1	5.6
12.0 & Up	1.5	1.5	0.6	0.4	0.3	0.2		4.5
Total	25.6%	27.7%	18.2%	13.9%	7.7%	4.0%	2.9%	100.0%

1959-60: (3,175,228 Boxes)	RATIO							
°Brix	6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0		0.5%	0.9%	0.7%	1.2%	1.0%	3.4%	7.7%
8.0	0.2%	0.9	1.6	2.3	1.9	1.0	2.1	10.0
8.5	0.4	1.1	3.4	3.6	2.7	2.1	2.1	15.4
9.0	0.3	1.1	3.6	4.8	4.5	2.9	2.9	20.1
9.5	0.2	0.7	2.6	3.9	2.7	2.4	2.2	14.7
10.0	0.2	0.8	2.0	2.8	1.9	1.4	1.5	10.6
10.5	0.3	0.8	1.9	2.2	1.4	0.8	0.9	8.3
11.0	0.3	0.8	1.2	1.5	0.9	0.6	0.6	5.9
11.5	0.2	0.6	1.0	1.0	0.5	0.5	0.4	4.2
12.0 & Up		0.6	0.8	0.9	0.4	0.3	0.1	3.1
Total	2.1%	7.9%	19.0%	23.7%	18.1%	13.0%	16.2%	100.0%

1958-59: (3,425,130 Boxes)	RATIO							
°Brix	6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0		0.1%		0.1%	0.1%	0.1%	0.1%	0.5%
8.0	0.1%	0.1	0.1%	0.3	0.1	0.1	0.1	0.9
8.5	0.2	0.4	0.5	0.4	0.7	0.4	0.3	2.9
9.0	1.0	1.1	0.9	1.4	0.9	0.5	0.7	6.5
9.5	2.2	3.3	2.4	2.0	1.3	0.5	0.7	12.4
10.0	3.3	4.7	4.1	2.5	1.4	0.7	0.7	17.4
10.5	3.8	6.3	5.3	2.9	1.4	0.7	0.4	20.8
11.0	3.9	4.8	4.4	2.6	1.2	0.5	0.3	17.7
11.5	2.5	3.8	2.3	1.7	1.0	0.3	0.3	11.9
12.0 & Up	2.1	2.6	2.4	1.1	0.5	0.1	0.2	9.0
Total	19.1%	27.2%	22.4%	15.0%	8.6%	3.9%	3.8%	100.0%

graphically illustrated in Figure 1 for those persons interested in averages only, but not in the detailed breakdown in the following tables.

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3. Westbrook, G. F., and E. C. Stenstrom. A study of the degrees Brix and Brix-acid ratios of tangerines utilized by Florida citrus processors for the seasons 1953-54 through 1956-57 and 1958-59. Proc. Fla. State Hort. Soc. 72: 290-297. (1959)

4. Fruit & Vegetable Inspection Division Annual Reports, 1958-59 through 1961-62.

Table 5: Percent of Loads Meeting Various Degrees Brix-Ratio Combinations

FEBRUARY

1961-62: (2,352,737 Boxes)	RATIO							
	6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
°Brix								
-8.0								
8.0					0.1%		0.1%	0.2%
8.5			0.1%	0.3%		0.1%	0.8	1.3
9.0		0.2%	0.1	0.4	0.2	0.2	1.7	2.8
9.5		0.5	0.6	1.0	0.8	1.1	2.6	6.6
10.0	0.4%	1.0	1.2	1.3	1.2	1.4	4.8	11.3
10.5	0.9	1.4	2.1	1.9	2.0	2.4	3.7	15.4
11.0	0.7	2.5	2.7	2.7	2.2	1.7	2.7	16.2
11.5	0.8	2.8	3.4	2.8	2.9	1.6	2.3	16.6
12.0 & Up	4.1	6.5	6.4	4.6	3.3	2.4	2.3	29.6
Total	6.9%	14.9%	16.6%	15.0%	12.7%	10.9%	23.0%	100.0%

1960-61: (2,102,153 Boxes)	RATIO							
	6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
°Brix								
-8.0			0.2%	0.3%	0.2%	0.1%	0.1%	0.9%
8.0	0.1%	0.2%	0.4	0.6	0.7	0.4	0.5	2.9
8.5	0.5	0.5	0.4	0.3	1.0	1.3	1.1	5.1
9.0	1.7	1.5	1.5	1.1	1.3	1.0	1.1	9.2
9.5	3.6	3.7	2.9	2.0	1.2	0.6	0.8	14.8
10.0	4.9	6.1	4.8	3.2	1.6	0.5	0.8	21.9
10.5	3.2	5.2	3.6	2.1	1.6	0.6	0.5	16.8
11.0	2.3	3.3	2.1	1.6	1.0	0.4	0.3	11.0
11.5	1.7	2.1	1.4	1.0	0.4	0.4	0.3	7.3
12.0 & Up	2.6	4.0	1.5	1.1	0.5	0.3	0.1	10.1
Total	20.6%	26.6%	18.8%	13.3%	9.5%	5.6%	5.6%	100.0%

1959-60: (3,424,163 Boxes)	RATIO							
	6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
°Brix								
-8.0	0.1%	0.5%	0.9%	0.6%	0.7%	0.9%	2.9%	6.6%
8.0	0.3	0.7	1.3	1.5	1.5	1.2	2.1	8.6
8.5	0.2	0.7	1.7	2.4	2.5	1.8	2.7	12.0
9.0	0.2	0.8	2.7	3.3	2.7	2.0	4.5	16.2
9.5	0.3	0.6	1.9	2.7	2.8	1.8	3.8	13.9
10.0	0.1	0.7	1.7	2.4	1.7	1.5	2.7	10.8
10.5	0.1	0.4	1.2	2.2	1.9	1.2	2.0	9.0
11.0	0.1	0.5	1.2	2.1	1.4	1.2	2.0	8.5
11.5	0.1	0.3	1.6	1.8	0.9	0.6	0.9	6.2
12.0 & Up		1.1	1.6	2.2	1.6	0.7	1.0	8.2
Total	1.5%	6.3%	15.8%	21.2%	17.7%	12.9%	24.6%	100.0%

1958-59: (3,057,373 Boxes)	RATIO							
	6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
°Brix								
-8.0		0.1%	0.1%			0.2%	0.2%	0.6%
8.0	0.1%	0.2	0.2	0.2%	0.2%	0.3	0.7	1.9
8.5	0.3	0.5	0.4	0.6	0.4	0.5	1.0	3.7
9.0	0.6	0.8	1.2	1.4	0.7	0.5	1.2	6.4
9.5	1.2	1.6	1.9	1.7	1.1	1.1	1.5	10.0
10.0	1.7	2.9	3.4	2.6	1.5	1.1	1.5	14.9
10.5	2.5	4.1	4.5	3.1	1.8	1.2	0.8	18.0
11.0	2.0	4.4	4.2	3.2	1.6	0.9	0.6	16.9
11.5	1.6	3.8	3.6	2.4	1.4	0.6	0.4	13.8
12.0 & Up	1.9	3.9	3.9	1.7	1.2	0.8	0.4	13.8
Total	11.8%	22.3%	23.4%	17.1%	9.9%	7.2%	8.3%	100.0%

Table 6: Percent of Loads Meeting Various Degrees Brix-Ratio Combinations

MARCH

1961-62: (3,838,656 Boxes)	RATIO							
	6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
°Brix								
-8.0							0.4%	0.4%
8.0							0.6	0.6
8.5			0.1%	0.1%		0.2%	0.7	1.1
9.0			0.1	0.3	0.4%	0.5	1.4	2.7
9.5		0.1%	0.5	0.6	0.7	0.8	2.9	5.6
10.0	0.1%	0.3	0.6	1.1	1.1	1.2	4.3	8.7
10.5	0.5	0.7	0.8	1.1	1.5	1.5	5.3	11.4
11.0	0.6	1.5	1.4	1.8	2.0	1.9	5.2	14.4
11.5	1.0	1.2	2.2	2.5	2.5	2.2	4.5	16.1
12.0 & Up	3.0	5.6	6.9	6.9	5.7	4.1	6.8	39.0
Total	5.2%	9.4%	12.6%	14.4%	13.5%	12.4%	32.1%	100.0%

1960-61: (3,462,926 Boxes)	RATIO							
	6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
°Brix								
-8.0		0.1%	0.1%	0.2%	0.2%	0.1%	0.6%	1.3%
8.0	0.1%	0.1	0.3	0.6	0.3	0.5	1.4	3.3
8.5	0.1	0.3	0.5	0.8	1.0	0.6	2.0	5.3
9.0	0.7	0.9	1.3	1.1	1.3	1.1	2.3	8.7
9.5	1.2	2.4	3.2	1.9	1.5	1.3	2.4	13.9
10.0	1.5	3.0	3.3	3.1	2.0	1.8	2.7	17.4
10.5	1.0	2.9	3.4	2.5	1.8	0.8	2.4	14.8
11.0	0.8	1.8	2.1	1.7	1.3	1.0	1.3	10.0
11.5	0.7	2.0	2.6	1.4	1.0	0.7	0.8	9.2
12.0 & Up	1.3	4.2	4.6	2.3	1.5	0.9	1.3	16.1
Total	7.4%	17.7%	21.4%	15.6%	11.9%	8.8%	17.2%	100.0%

1959-60: (1,946,174 Boxes)	RATIO							
	6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
°Brix								
-8.0		0.3%	0.5%	1.2%	0.7%	1.1%	4.4%	8.2%
8.0	0.1%	0.5	0.9	2.0	1.5	1.5	4.6	11.1
8.5	0.2	0.1	1.2	2.1	3.1	2.9	6.8	16.4
9.0	0.2	0.6	1.1	2.2	3.1	2.1	5.7	15.0
9.5	0.2	0.6	0.8	1.3	2.0	1.5	5.0	11.4
10.0	0.2	0.4	0.9	1.4	1.5	1.4	4.1	9.9
10.5	0.2	0.5	0.5	1.0	1.2	1.4	4.1	8.9
11.0	0.2	0.4	0.5	0.9	1.0	1.4	2.9	7.9
11.5		0.1	0.3	0.7	0.9	0.7	1.9	4.6
12.0 & Up	0.1	0.1	0.7	2.2	1.1	0.7	1.7	6.6
Total	1.4%	3.6%	7.4%	15.0%	16.7%	14.7%	41.2%	100.0%

1958-59: (4,210,815 Boxes)	RATIO							
	6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
°Brix								
-8.0		0.1%	0.1%	0.2%	0.2%	0.2%	0.4%	1.2%
8.0		0.1	0.1	0.3	0.2	0.2	1.0	1.9
8.5	0.1%	0.2	0.5	0.4	0.4	0.7	1.9	4.5
9.0	0.2	0.6	1.1	1.0	1.0	1.1	2.1	7.1
9.5	0.3	1.0	1.3	1.6	1.7	1.4	3.1	10.4
10.0	0.7	2.0	2.4	1.9	1.7	1.8	2.4	12.9
10.5	0.8	2.1	2.9	3.1	2.2	1.5	1.8	14.4
11.0	0.8	2.4	2.9	4.2	2.8	1.9	1.7	16.7
11.5	0.6	2.2	2.6	3.4	1.8	1.0	0.8	12.4
12.0 & Up	1.8	3.9	4.3	4.3	2.2	1.2	0.8	18.5
Total	5.3%	14.6%	18.2%	20.4%	14.5%	11.0%	16.0%	100.0%

Table 7: Percent of Loads Meeting Various Degrees Brix-Ratio Combinations

APRIL

1961-62: (2,156,004 Boxes)

°Brix	RATIO 6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0						0.1%	0.4%	0.5%
8.0		0.1%	0.1%		0.1%	0.1	0.9	1.3
8.5				0.2%	0.1	0.2	1.3	1.8
9.0	0.1%		0.4	0.3	0.2	0.4	3.1	4.5
9.5	0.5	0.2%	0.6	0.2	0.9	0.9	4.8	8.1
10.0	0.7	0.5	0.5	1.3	1.3	1.8	4.8	10.9
10.5	1.5	1.5	1.3	1.6	1.7	1.7	6.9	16.4
11.0	1.4	1.9	1.5	1.8	2.1	2.0	6.3	17.0
11.5	1.9	1.6	1.4	1.3	2.1	1.3	4.6	14.2
12.0 & Up	2.3	3.0	3.8	2.7	3.0	3.0	8.5	25.3
Total	8.4%	8.9%	8.6%	9.4%	11.5%	11.7%	41.6%	100.0%

1960-61: (2,162,929 Boxes)

°Brix	RATIO 6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0		0.1%	0.2%	0.5%	0.2%	0.1%	1.3%	2.4%
8.0	0.1%	0.2	0.3	0.8	1.0	0.5	2.1	5.5
8.5	0.1	0.6	0.4	1.0	1.1	1.2	3.1	7.5
9.0	0.3	1.3	1.5	1.6	1.4	1.2	3.3	10.6
9.5	1.1	1.3	2.6	2.6	2.1	1.7	4.0	15.9
10.0	1.0	2.3	2.7	2.3	1.6	1.9	4.3	16.1
10.5	0.8	1.8	2.2	2.1	1.6	1.6	3.5	13.6
11.0	0.4	1.4	2.2	1.5	1.1	0.6	2.3	9.5
11.5	0.2	1.3	1.5	1.4	1.1	0.8	1.4	7.7
12.0 & Up	0.2	2.0	3.1	2.2	1.6	1.0	1.1	11.2
Total	4.2%	12.9%	17.2%	16.0%	12.8%	10.6%	26.4%	100.0%

1959-60: (840,177 Boxes)

°Brix	RATIO 6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0	0.1%	0.2%	0.7%	1.0%	1.2%	0.8%	7.2%	11.2%
8.0	0.1	0.2	0.2	1.1	2.3	1.5	5.5	10.9
8.5	0.1	0.3	0.2	1.7	3.0	3.9	7.5	16.7
9.0	0.5	0.5	0.7	1.5	1.9	2.2	9.0	16.3
9.5	1.2	0.8	1.0	0.5	1.1	1.6	7.2	13.4
10.0	1.1	0.3	0.7	1.4	0.5	1.6	6.7	12.8
10.5	1.2	0.4	0.3	0.3	0.3	0.6	4.4	7.5
11.0	0.4	0.1	0.2	0.2	0.4	0.5	4.1	5.9
11.5	0.1	0.2		0.2		0.2	1.8	2.5
12.0 & Up			0.2	0.2	0.6		1.8	2.8
Total	4.8%	3.5%	4.2%	8.1%	11.3%	12.9%	55.2%	100.0%

1958-59: (2,315,578 Boxes)

°Brix	RATIO 6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0		0.1%	0.3%	0.3%	0.3%	0.1%	2.2%	3.3%
8.0		0.1	0.5	0.4	0.6	0.5	2.2	4.3
8.5	0.1%	0.3	0.8	1.7	1.1	0.8	2.9	7.7
9.0	0.2	0.6	1.1	1.6	1.7	1.9	4.5	11.6
9.5	0.3	1.5	1.6	1.9	2.9	1.8	5.1	15.4
10.0	0.5	1.2	1.9	2.4	2.4	1.7	4.0	14.1
10.5	0.5	1.6	2.2	2.5	1.9	1.8	3.1	13.6
11.0	0.4	1.6	2.0	2.1	1.7	1.3	2.7	11.8
11.5	0.3	0.7	1.3	1.3	1.7	1.1	1.7	8.1
12.0 & Up	0.5	1.1	2.5	2.6	1.3	0.8	1.3	10.1
Total	2.8%	8.3%	14.2%	16.3%	15.6%	11.8%	30.0%	100.0%

Table 8: Percent of Loads Meeting Various Degrees Brix-Ratio Combinations

MAY

1961-62: (1,285,423 Boxes)

°Brix	RATIO 6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0		0.1%		0.1%	0.1%		0.2%	0.5%
8.0		0.1	0.1%	0.1	0.2	0.2%	0.9	1.6
8.5		0.1		0.2	0.1	0.1	2.4	2.9
9.0	0.1%		0.1	0.2	0.7	0.5	4.6	6.2
9.5	0.2	0.4	0.4	0.4	0.9	1.0	7.0	10.3
10.0	0.6	0.5	0.4	0.5	0.8	1.1	8.4	12.3
10.5	1.0	1.5	0.9	0.8	0.9	1.3	9.4	15.8
11.0	1.1	1.5	1.4	1.5	1.2	1.7	9.7	18.1
11.5	1.2	1.5	1.6	1.2	1.2	1.5	6.5	14.7
12.0 & Up	2.1	2.3	2.6	2.0	2.0	1.3	5.3	17.6
Total	6.3%	8.0%	7.5%	7.0%	8.1%	8.7%	54.4%	100.0%

1960-61: (1,826,444 Boxes)

°Brix	RATIO 6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0		0.2%	0.4%	0.6%	0.7%	0.6%	2.0%	4.5%
8.0		0.1	0.2	0.7	0.9	1.0	3.7	6.6
8.5	0.1%	0.2	0.6	1.4	1.5	1.3	5.4	10.5
9.0	0.1	0.1	0.5	1.2	1.7	1.7	6.6	11.9
9.5		0.5	1.5	1.5	1.7	1.7	6.2	13.1
10.0	0.2	0.6	1.1	2.3	1.9	1.5	7.3	14.9
10.5	0.1	0.4	0.9	1.6	1.9	2.3	5.7	12.9
11.0	0.2	0.5	0.9	1.0	1.3	1.0	5.1	10.0
11.5	0.2	0.4	0.5	1.1	0.9	0.8	2.5	6.4
12.0 & Up		0.4	1.0	1.9	1.3	1.6	3.0	9.2
Total	0.9%	3.4%	7.6%	13.3%	13.8%	13.5%	47.5%	100.0%

1959-60: (323,604 Boxes)

°Brix	RATIO 6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0		0.4%	0.8%	1.9%	1.5%	1.3%	6.6%	12.5%
8.0		0.2	0.2	1.1	0.8	1.5	5.9	9.7
8.5	0.4%	0.6	0.6	1.5	1.9	2.1	6.6	13.7
9.0	1.5	0.8	1.7	1.3	1.1	0.4	8.5	15.3
9.5	1.5	2.6	2.8	2.1	0.8	0.8	7.4	18.0
10.0	2.1	1.3	1.3	0.6	0.2	0.2	8.0	13.7
10.5	1.7	1.1	0.8	0.6	0.2	0.2	5.6	10.2
11.0	0.2	0.4				0.4	2.1	3.1
11.5					0.2	0.2	1.3	1.7
12.0 & Up		0.2					1.9	2.1
Total	7.4%	7.6%	8.2%	9.1%	6.7%	7.1%	53.9%	100.0%

1958-59: (1,243,834 Boxes)

°Brix	RATIO 6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0		0.2%	0.4%	0.8%	0.7%	0.6%	3.0%	5.7%
8.0			0.6	1.0	0.8	0.8	3.1	6.3
8.5		0.1	0.6	1.3	1.7	1.6	5.7	11.0
9.0		0.5	0.2	1.1	2.3	2.2	7.8	14.1
9.5		0.2	0.9	2.0	2.3	2.8	9.2	17.4
10.0	0.1%	0.5	1.1	0.9	1.5	1.9	6.6	12.6
10.5	0.3	0.5	1.1	1.1	1.1	1.3	5.0	10.4
11.0	0.2	0.7	0.8	1.2	0.8	1.1	4.4	9.2
11.5		0.3	0.4	0.8	0.7	0.7	3.0	5.9
12.0 & Up		0.4	0.7	0.9	1.3	1.1	3.0	7.4
Total	0.6%	3.4%	6.8%	11.1%	13.2%	14.1%	50.8%	100.0%

Table 9: Percent of Loads Meeting Various Degrees Brix-Ratio Combinations

JUNE

1961-62: (791,688 Boxes)

°Brix	RATIO 6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0				0.2%	0.1%		0.6%	0.9%
8.0					0.1	0.1%	1.0	1.2
8.5		0.1%	0.2%	0.1	0.1	0.2	2.4	3.1
9.0		0.2	0.2	0.4	0.4	0.3	4.0	5.5
9.5	0.1%	0.5	0.8	0.9	0.7	0.7	5.5	9.2
10.0	0.2	0.6	1.3	1.3	0.9	1.6	7.6	13.5
10.5	0.4	1.2	1.8	1.6	1.3	1.6	10.9	18.8
11.0	0.6	1.4	2.3	1.5	1.6	1.2	9.4	18.0
11.5	0.4	1.4	1.4	1.2	0.9	1.2	4.5	11.0
12.0 & Up	0.8	2.4	3.4	2.8	2.8	1.7	4.9	18.8
Total	2.5%	7.8%	11.4%	10.0%	8.9%	8.6%	50.8%	100.0%

1960-61: (883,590 Boxes)

°Brix	RATIO 6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0					0.3%	0.5%	2.0%	2.8%
8.0			0.1%	0.3%	0.7	0.6	4.6	6.3
8.5				0.4	0.9	1.1	10.5	12.9
9.0			0.4	0.3	0.7	1.4	13.0	15.8
9.5		0.2%	0.4	0.4	1.0	1.6	13.5	17.1
10.0		0.2	0.4	0.6	0.6	1.5	10.9	14.2
10.5		0.2	0.3	0.9	0.6	0.7	7.1	9.8
11.0		0.1	0.4	0.7	0.7	0.9	6.2	9.0
11.5			0.4	1.0	0.4	0.4	3.9	6.1
12.0 & Up		0.2	0.4	1.0	0.9	0.8	2.7	6.0
Total		0.9%	2.8%	5.6%	6.8%	9.5%	74.4%	100.0%

1959-60: (86,615 Boxes)

°Brix	RATIO 6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0				1.3%		1.8%	4.4%	7.5%
8.0		1.0%	1.8%	0.4	1.0%		4.0	8.2
8.5				1.0	1.3	1.8	4.4	8.5
9.0	0.4%	0.4	3.1	4.0	4.0	2.6	9.8	24.3
9.5		2.2	4.4	4.4	2.2	1.3	9.3	23.8
10.0		0.4	2.2	1.0	1.8	0.4	7.5	13.3
10.5		1.3	1.0		0.4	1.0	1.8	5.5
11.0	0.4	0.4		0.4			1.8	3.0
11.5							1.0	1.0
12.0 & Up							4.9	4.9
Total	0.8%	5.7%	12.5%	12.5%	10.7%	8.9%	48.9%	100.0%

1958-59: (499,946 Boxes)

°Brix	RATIO 6.0-1	6.5-1	7.0-1	7.5-1	8.0-1	8.5-1	9.0-1 & Up	Total
-8.0			0.1%	0.5%	0.7%	0.6%	6.1%	8.0%
8.0				0.2	1.0	1.0	6.8	9.0
8.5		0.1	0.1	0.4	0.8	1.1	9.9	12.4
9.0		0.1	0.4	0.6	0.7	0.9	11.1	13.8
9.5	0.1%		0.3	0.5	1.0	1.2	11.5	14.6
10.0		0.1	0.2	0.7	1.0	0.8	10.1	12.9
10.5	0.1	0.1	0.1	0.4	0.6	0.9	8.0	10.2
11.0		0.1	0.2	0.3	0.7	0.6	6.8	8.7
11.5			0.1	0.1	0.5	0.3	3.7	4.7
12.0 & Up		0.1		0.7	0.3	0.7	3.9	5.7
Total	0.2%	0.6%	1.5%	4.4%	7.3%	8.1%	77.9%	100.0%

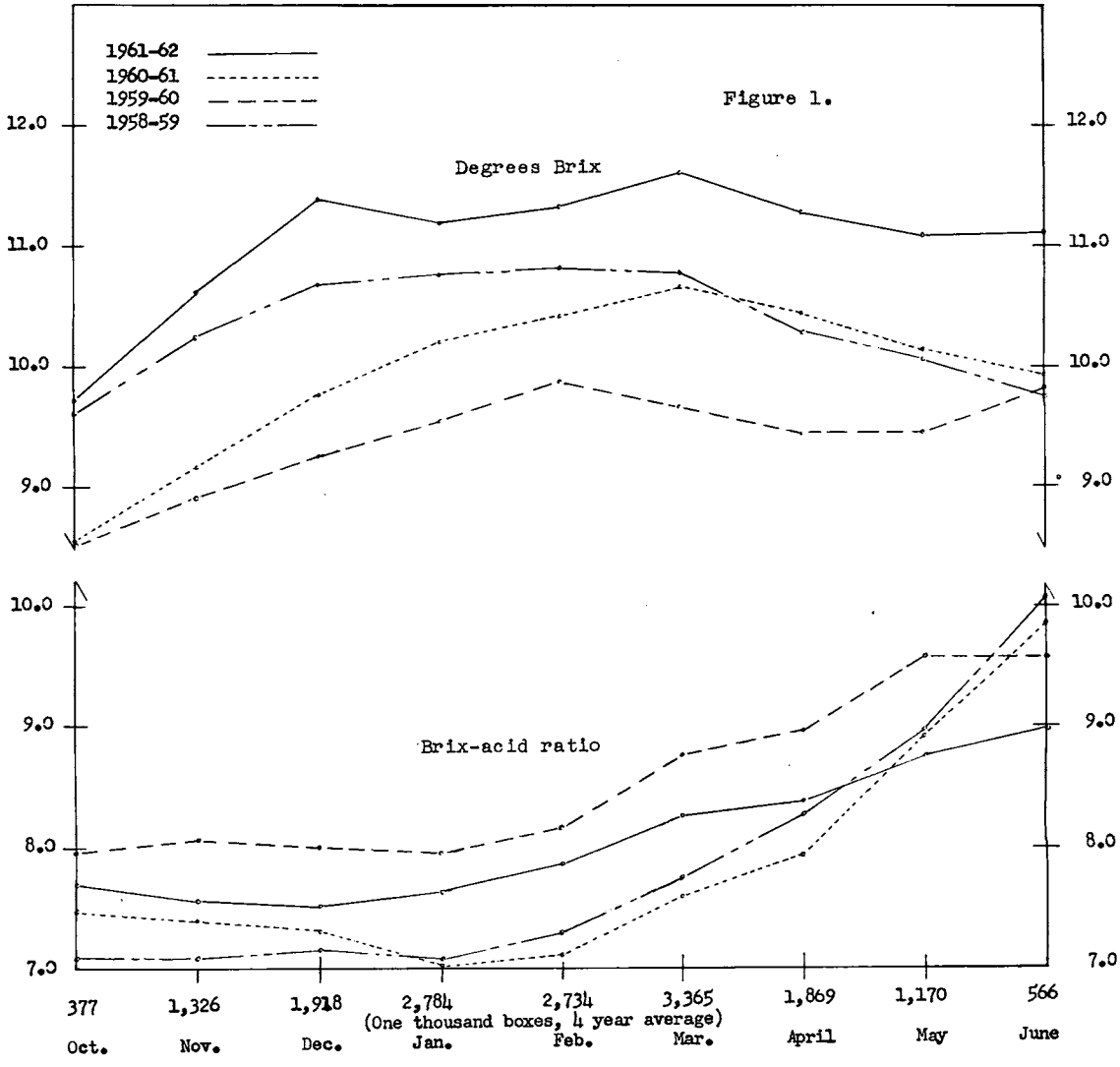

Figure 1.

VOGES-PROSKAUER POSITIVE YEASTS ISOLATED FROM FROZEN ORANGE CONCENTRATE

D. I. MURDOCK

Minute Maid Company
A Division of The Coca-Cola Company

Orlando

One of the principal spoilage hazards in the production of frozen concentrated orange juice has been the development of off-flavors characterized as being similar to "buttermilk." This type of spoilage was first reported by Hayes (8) and Murdock (13) in 1951. These investigators were of the opinion that the bacteria responsible were principally those organisms belonging to the genus *Lactobacillus*. In 1954 Byer (6) developed a method for the detection of diacetyl or acetylmethylcarbinol in frozen concentrated orange juice. During that same year Hill *et al.*