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Consumer Demand for Fruit

Salt Lake City, Utah, 1948-1949

By

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BULLETIN 356

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Consumer Demand for Fruit

SALT LAKE CITY, UTAH 1948-49¹

By Ellis W. Lamborn and Roice H. Anderson²

INTRODUCTION

IN A free enterprise economy where production and consumption are adjusted through the medium of prices, consumers direct the kinds and amounts of production through their choices in the market. The problems of production and marketing of any product cannot be effectively solved without studying the wishes and actions of consumers.

To ignore the decisions of consumers is economic suicide. No one can long continue to produce who does not find buyers for his product. The producers who give the consumers what they want, in the form and at the time they want it, and at a price they are willing to pay, are the ones who are able to stay in business and find buyers for their products.

It is not economically feasible to force a product through the marketing channels and then have to induce the consumers to accept it. A more logical approach is to study the activities of consumers in the market, determine the kind of product they want, the form they want it in, and the price they will pay; then adjust the production and marketing system accordingly.

PURPOSE OF THE STUDY

THE purposes of this study were: (1) To determine the general level of consumption of various kinds of fruit by various income groups, (2) to ascertain the variation in expenditure for various fruits and reasons for such variation, (3) to determine the nature of the competitive relationships among various kinds of fruits.

METHOD OF STUDY

INFORMATION presented in this report is based on data obtained on the fruit purchases of 958 families in Salt Lake City. In the fall of 1948, 446 interviews were made covering fruit purchases by the family for the period from May to October. In order to get informa-

¹Report on project 294 R.M. (Research & Marketing Offset 9b1 & 2)

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tion on purchases for an entire year, 512 schedules were taken the following spring covering the period from November to April. No attempt was made to survey identical families in both periods but the two samples were drawn to include families of similar characteristics. The schedules were taken at two different periods in order to minimize memory bias. It was thought that it would be difficult for consumers to remember their purchases of fruit for an entire year.

Information for each record was obtained directly from the housewife or some other member of the family who was familiar with the family's consumption of fruit for the period studied. More than 90 percent of the records were obtained from housewives.

Since the primary objective was to study the level and the differences in the consumption of fruit by different income groups, the sample of consumers was purposely drawn to get an approximately equal number in each of the several income groups.

The samples were drawn from various income areas of Salt Lake City based on the average block rental as obtained from the county assessor's records. The actual income of the family as obtained by the interview, however, was used to classify the family regardless of the income area from which drawn.

The disproportionate sample as used in this study has the advantage of equal reliability among the averages when grouped by income. If sampled on a proportionate basis a large percentage of the schedules would be taken from medium income families and those in the extreme income groups, both low and high, would be limited. It should be pointed out, however, that averages of all consumers would not be representative of the total market because of the disproportionate sample.

Averages could be obtained for the market as a whole if the distribution of all families by income were known and the averages by income weighted accordingly.

The data were transferred from the field schedule to IBM cards and were analyzed by the tabular method.

FAMILY INCOME AND FAMILY SIZE

THE records obtained in the survey were sorted by income into six classes with as near as possible an equal number of families in each income group (tables 1 and 2). The average family income for each income group was practically the same in both the fall and spring survey, except for the group with annual incomes of over \$6000. The average incomes for the other five groups varied

Table 1. *Annual family income related to family composition and size, 446 families fall 1948, Salt Lake City, Utah*

Income		Number of families	Children	Adults	Total
Range	Average				
<i>dollars</i>	<i>dollars</i>	<i>number</i>	<i>number</i>	<i>number</i>	<i>number</i>
2400 and less	1885	88	0.7	2.2	2.9
2401 - 3000	2827	70	1.3	2.6	3.9
3001 - 3600	3402	74	1.1	2.8	3.9
3601 - 4700	4096	69	1.4	2.8	4.2
4701 - 6000	5301	81	1.2	2.9	4.1
Over 6000	9897	64	1.4	3.1	4.5

Table 2. *Annual family income related to family composition and size, 512 families spring 1949, Salt Lake City, Utah*

Income		Number of families	Children	Adults	Total
Range	Average				
<i>dollars</i>	<i>dollars</i>	<i>number</i>	<i>number</i>	<i>number</i>	<i>number</i>
2400 and less	1876	107	0.7	2.3	3.0
2401 - 3000	2850	91	1.2	2.6	3.8
3001 - 3600	3424	72	1.4	2.7	4.1
3601 - 4700	4074	73	1.4	2.8	4.2
4701 - 6000	5268	82	1.0	3.0	4.0
Over 6000	11188	87	0.9	3.2	4.1

less than \$40 between the two surveys. The average annual family income for the group of families in the fall survey with incomes of over \$6000 was \$9897 compared with an average annual income for families in the spring survey of the same income group of \$11,188.

The size and composition of the families in various income groups were similar for both the fall and spring surveys. Families with annual incomes of \$2400 and less had smaller families and fewer children than did families with larger incomes. With this exception there was no apparent relationship between annual family income and size of family. The small size of the low income families can be explained by the fact that included in this group were many young couples whose beginning salaries were low, as well as old couples who had retired and were living on savings. The number of children for both of these groups was small for obvious reasons.

FOOD AND FRUIT CONSUMPTION

THE consumption of nearly all items for which consumers spend their income increases as income increases. However, the expenditure for the different items does not increase at the same rate, nor is the rate of increase in the expenditure for the different items the same as the rate of increase in income.

The annual food expenditure increased consistently as income increased from an average of \$746 per family for those families with less than \$2400 of income to an average of \$1498 per family for those with incomes of over \$6000 (table 3). This was an increase of more than five times in income and was accompanied by only a doubling in the expenditure for food. The expenditure for fruit purchased during the summer (the months of May to October inclusive) more than doubled while the expenditure for fruit purchased during the winter months did not quite double as the average income was increased from the lowest to the highest group.

Table 3. *Annual family income related to annual expenditure for food and fruit per family, 446 families fall 1948, and 512 families spring 1949, Salt Lake City, Utah*

Income Range	Average*	Number of families*	Annual food expenditure*	Fruit expenditure per family		
				Summer	Winter	Total
<i>dollars</i>	<i>dollars</i>	<i>number</i>	<i>dollars</i>	<i>dol.</i>	<i>dol.</i>	<i>dol.</i>
2400 and less	1880	98	746	33	36	69
2401 - 3000	2838	80	984	34	36	70
3001 - 3600	3413	73	1074	47	45	92
3601 - 4700	4085	71	1136	46	47	93
4701 - 6000	5284	82	1232	48	49	97
Over 6000	10542	76	1498	73	69	142

*Average of the spring and fall surveys

Measured in terms of expenditures per \$1000 of income, the expenditure for food, and for fruit purchased both in the summer and the winter decreased as income increased (table 4). The average expenditure for food for the low income families was \$397 per \$1000 of income compared with an average of \$142 per \$1000 of income for the high income group. The expenditure for fruit per \$1000 of income decreased from \$37 to \$14 as the income increased from the lowest to the highest income group. For each 100 percent increase from the lowest to the highest level of income, the expenditure for food and fruit increased less than 40 percent.

Table 4. *Annual family income related to expenditure for food and fruit per \$1000 of income, 446 families fall 1948, and 512 families spring 1949, Salt Lake City, Utah*

Range in income	Expenditure per \$1000 of income for:			
	All food	Fruit		Total
<i>dollars</i>	<i>dol.</i>	<i>dol.</i>	<i>dol.</i>	<i>dol.</i>
2400 and less	397	18	19	37
2401 - 3000	347	12	13	25
3001 - 3600	315	14	13	27
3601 - 4700	278	11	12	23
4701 - 6000	233	9	9	18
Over 6000	142	7	7	14
	<i>Index of expenditure per \$1000 of income (lowest income equals 100)</i>			
	<i>percent</i>	<i>percent</i>	<i>percent</i>	<i>percent</i>
2400 and less	100	100	100	100
2401 - 3000	87	67	68	68
3001 - 3600	79	78	68	73
3601 - 4700	70	61	63	62
4701 - 6000	59	50	47	49
Over 6000	36	39	37	38

Items which consumers consider to be luxuries can be determined by the way different income groups spend their incomes. If the expenditure for an item increases at a more rapid rate than income, or in other words, if high income people spend a larger proportion of their income for the item it is considered to be a luxury. By such a measure food as a whole and fruit as a food group are not considered to be in the luxury category. The size of the human stomach limits the increase in quantity of food eaten. The purchase of better quality, more services, and changing consumption habits to include higher priced foods make it possible to increase expenditure for food, but these possibilities are in direct competition with all other alternative expenditures.

By this measure, fruits as a group seemed to be even less of a luxury than all food although they were not greatly different.

EXPENDITURE FOR THE VARIOUS KINDS OF FRUIT

THE amount of money expended for the various kinds of fruit increased as family income increased (table 5). As the annual family income was increased from less than \$2400 to over \$6000 the average expenditure for pears, apricots, cherries, strawberries,

Table 5. *Annual family income related to the expenditure for different kinds of fruit per family, 446 families fall 1948 and 512 families spring 1949, Salt Lake City, Utah*

Fruit	Income					
	\$2400 and less	\$2401 to 3000	\$3001 to 3600	\$3601 to 4700	\$4701 to 6000	Over \$6000
	Expenditure for fruit per family					
	<i>dol.</i>	<i>dol.</i>	<i>dol.</i>	<i>dol.</i>	<i>dol.</i>	<i>dol.</i>
Peaches	3.30	3.26	5.25	4.77	5.67	6.35
Pears	1.07	1.01	2.52	1.72	2.10	3.05
Apricots	0.63	0.52	0.96	0.87	0.82	1.53
Cherries	0.98	0.97	1.74	1.38	1.28	2.86
Plums and prunes	0.40	0.41	0.42	0.24	0.26	0.50
Strawberries	4.34	5.10	6.37	8.15	8.41	10.84
Raspberries	1.29	2.16	2.74	2.27	3.18	3.80
Grapes	0.97	1.04	2.46	2.32	2.28	2.82
Apples	5.20	5.91	6.14	7.22	6.69	9.74
Oranges	13.43	13.05	19.60	19.79	22.27	33.45
Grapefruit	5.68	3.60	5.77	5.54	6.75	9.74
Bananas	11.95	11.40	13.21	15.23	14.48	19.68
Commercially canned fruit	7.94	6.67	9.19	7.25	8.78	16.58
Citrus juice	7.71	11.09	11.83	11.79	10.00	13.14
Other juice	0.97	1.29	1.00	1.10	2.35	3.75
Jam and jelly	2.86	3.62	2.65	2.69	2.04	3.68
All fruit	69.00	70.00	92.00	93.00	97.00	142.00
All food	746.00	984.00	1074.00	1136.00	1232.00	1498.00

raspberries, grapes, oranges, commercially canned fruit and other juice (which is mostly pineapple juice) more than doubled. The expenditure for strawberries increased from an average of \$4.34 per family for the lowest income families to an average of \$10.84 for the highest income families. The expenditure for oranges increased from an average of \$13.43 to \$33.45 per family and the expenditure for commercially canned fruit increased from \$7.94 to \$16.58 per family.

It should be remembered that the income of the highest group was five times as great as that of the lowest group. The expenditure for peaches, plums and prunes, apples, grapefruit, citrus juice, and jam and jelly did not quite double as the income increased from less than \$2400 to over \$6000. The expenditure for peaches increased from an average of \$3.30 to 6.35 per family, the expenditure for apples from \$5.20 to \$9.74 per family, and for

bananas from \$11.95 to \$19.68 per family as the income increased from less than \$2400 to over \$6000.

As with all food and all fruit, the expenditure for various kinds of fruit increased as income increased but for most fruits the increase in expenditure was not proportional to the increase in income. The index of expenditure per \$1000 of income decreased for most of the various kinds of fruits as the income increased (table 6). The expenditure per \$1000 of income for raspberries, grapes, and pears increased as income increased to medium levels but decreased at high levels of income. For all other fruits the expenditure per \$1000 of income decreased more or less consistently as income increased from low to high levels.

Based on changes in expenditure per \$1000 of income as shown in table 6, grapes, raspberries, pears, and strawberries were the most luxurious fruits in about the order listed. The least luxuri-

Table 6. *Annual family income related to index of expenditures for different kinds of fruit per \$1000 of income, 446 families fall 1948 and 512 families spring 1949, Salt Lake City, Utah*

Fruit	Income					
	\$2400 and less	\$2401 to 3000	\$3001 to 3600	\$3601 to 4700	\$4701 to 6000	Over \$6000
	Index of expenditure per \$1000 of income (lowest income equals 100)					
	percent	percent	percent	percent	percent	percent
Peaches	100	65	88	66	61	34
Pears	100	63	130	74	70	51
Apricots	100	53	82	62	47	44
Cherries	100	65	98	65	46	52
Plums and prunes	100	67	57	29	24	24
Strawberries	100	78	81	87	69	45
Raspberries	100	110	116	81	87	52
Grapes	100	71	138	110	83	52
Apples	100	75	65	64	46	33
Oranges	100	64	80	68	59	44
Grapefruit	100	42	56	45	42	30
Bananas	100	63	61	59	43	29
Commercially canned fruit	100	56	64	42	39	37
Citrus juice	100	95	85	70	46	30
Other juice	100	87	56	52	85	69
Jam and jelly	100	84	51	43	26	23
All fruit	100	68	73	62	49	38
All food	100	87	79	70	59	36

ous were plums and prunes, grapefruit, jam and jelly, commercially canned fruits, and bananas.

IMPORTANCE OF VARIOUS FRUITS ON EXPENDITURE BASIS

ORANGES accounted for a larger proportion of the consumer's fruit dollar than did any other fruit (table 7). Expenditure for oranges accounted for approximately 20 percent of the fruit dollar and did not vary significantly with income. Bananas were the next most important fruit from the standpoint of expenditure, accounting for about 15 percent of the total fruit expenditure. Utah produces none of the oranges, grapefruit, bananas, and citrus juice which is consumed in Salt Lake City. If these fruits are grouped together, they account for about 55 percent of the total money expended for fruit by the consumers included in this study. Producers in Utah supply little of the commercially canned fruit, the other juice (which is mostly pineapple) and the jam and jelly. In addition, a great many of the grapes, apples, and berries con-

Table 7. *Annual family income related to the proportion of the total fruit dollar spent for the different kinds of fruit, 446 families fall 1948, 512 families spring 1949, Salt Lake City, Utah*

Fruit	Income					
	\$2400 and less	\$2401 to 3000	\$3001 to 3600	\$3601 to 4700	\$4701 to 6000	Over \$6000
	Percent fruit dollar for different kinds of fruit					
	percent	percent	percent	percent	percent	percent
Peaches	5	5	6	5	6	4
Pears	2	1	3	2	2	2
Apricots	1	1	1	1	1	1
Cherries	1	1	2	2	1	2
Plums and prunes	1	1	0	0	0	0
Strawberries	6	7	7	9	9	8
Raspberries	2	3	3	2	3	3
Grapes	1	1	3	3	2	2
Apples	8	8	7	8	7	7
Oranges	20	19	21	21	23	23
Grapefruit	8	5	6	6	7	7
Bananas	17	16	14	16	15	14
Commercially canned fruit	12	9	10	8	9	12
Citrus juice	11	16	13	13	10	9
Other juice	1	2	1	1	3	3
Jam and jelly	4	5	3	3	2	3

sumed in the state are not locally produced. The purchase of fruit which Utah produces such as peaches, pears, apricots, cherries, berries, apples, and grapes accounts for about 30 percent of the money expended for fruit, but Utah does not produce all of these fruits which are consumed in Salt Lake City.

PRICES PAID FOR VARIOUS KINDS OF FRUIT

VARIATIONS in expenditure for various kinds of fruit by different income groups may be the result of paying higher prices or buying larger quantities or both. There was no consistent relationship between the annual family income and the price paid for the fruit purchased (table 8). There was some evidence that for some fruits, such as bananas and cherries, families with high incomes paid more per pound for the fruit purchased than did families with low incomes. However, this relationship was not consistent for all of the different kinds of fruit and for most fruits the prices paid by the families with high incomes were, on the average, no higher than were the prices paid by families with low incomes. The differences in prices paid by different income groups may be a reflection of differences in quality of fruit, but other factors may also affect

Table 8. *Annual family income related to the price per pound paid for various kinds of fruit, 446 families fall 1948, 512 families spring 1949, Salt Lake City, Utah*

Fruit	Income					
	\$2400 and less	\$2401 to 3000	\$3001 to 3600	\$3601 to 4700	\$4701 to 6000	Over \$6000
	Prices paid per pound					
	ct.	ct.	ct.	ct.	ct.	ct.
Peaches	5	5	5	5	6	6
Pears	4	5	6	7	7	7
Apricots	3	2	3	2	2	3
Cherries	9	9	12	9	18	11
Plums and prunes	5	7	4	3	4	6
Strawberries	26	32	34	34	35	37
Raspberries	32	27	34	32	32	35
Grapes	11	7	10	11	10	13
Apples	5	5	7	4	6	5
Oranges	10	9	9	9	6	13
Grapefruit	7	9	9	7	10	7
Bananas	13	15	16	16	15	27

the price such as unit of purchase, amount of services obtained, season of the year, and brand of fruit purchased.

There was great variation among the different kinds of fruit as to their cost per pound. The most expensive fruits from the standpoint of price per pound were strawberries and raspberries. These berries were more than twice as costly on a per pound basis as were bananas, the next most expensive fruit. Apricots were the lowest priced fruit purchased and consumers paid 2 or 3 cents per pound for them. At this price apricots were purchased at less than 10 percent of the price paid for strawberries and raspberries. Peaches, pears, apples, and plums and prunes are rather low priced being purchased for less than 10 cents per pound. Citrus fruits and grapes and cherries were purchased at prices varying from slightly below to slightly above 10 cents per pound.

There was no consistent relationship between the expenditure for various fruits per \$1000 of income and their price per pound. For example, bananas were relatively high in price but the decrease in expenditure for bananas per \$1000 of income as income increased was rather great. The price of pears on the other hand was rather low but the decrease in expenditure for pears per \$1000 of income was not so great with increases in income.

The relatively constant proportion of the fruit dollar spent for various kinds of fruit by different income groups in spite of the variation in price per pound is evidence that the various kinds of fruits are not good substitutes for each other. Consumers are apparently interested in getting a variety of fruits in their diets rather than purchasing a given amount of fruit regardless of kind. If one kind of fruit was a good substitute for every other kind it would be expected that low income families would purchase proportionately larger quantities of the low priced fruits such as apricots, plums, prunes, apples, peaches, and pears, and high income families would buy more of the high priced fruits. Many of the fruits are not continuously available to consumers throughout the year at least in fresh form, which undoubtedly accounts for some of the purchasing habits of consumers.

PRICES PAID BY UNIT OF PURCHASE

THE price paid by consumers for different kinds of fruit which was purchased in different units varied considerably (table 9). For instance, the price per pound paid for peaches purchased by the bushel basket was 4 or 5 cents compared with an average price of

Table 9. *Annual family income related to prices paid per pound for the various kinds of fruit purchased in different ways, 446 families fall 1948, 512 families spring 1949, Salt Lake City, Utah*

Fruit	Income					
	\$2400 and less	\$2401 to 3000	\$3001 to 3600	\$3601 to 4700	\$4701 to 6000	Over \$6000
	Prices paid per pound					
	ct.	ct.	ct.	ct.	ct.	ct.
Peaches, basket	4	4	5	4	5	5
Peaches, pound	12	11	11	11	14	10
Pears, basket	4	5	6	6	6	7
Pears, pound	15	14	15	18	12	20
Apricots, basket	2	1	2	2	2	3
Apricots, lug	4	3	4	3	2	4
Apricots, pound	7	15	9	5	11	8
Cherries, lug	8	9	11	7	9	9
Cherries, pound	10	9	14	13	12	14
Strawberries, case	27	26	27	27	31	33
Strawberries, cup	35	39	39	38	40	41
Raspberries, case	29	25	33	29	31	32
Raspberries, cup	19	36	38	39	41	45
Apples, basket	4	4	4	4	3	5
Apples, pound	10	11	12	10	11	11

11 or 12 cents per pound paid when purchased by the pound. Strawberries by the case were purchased for about 30 cents per pound and when purchased by the cup cost about 40 cents per pound. The prices paid for other fruit varied in the same manner depending on the unit of purchase. Invariably, the smaller the unit the higher was the price paid per pound. Of course, some of this difference in price can be explained by the difference in the time of year the fruit was purchased. Consumers buy fruit in small quantities before and after the season when the particular fruit is at its peak. They expect to pay more for fruit purchased at this time than when purchased at the peak of the season.

The results of a study conducted during the 1947 season in Salt Lake City which was confined entirely to peaches indicated that the expenditure for peaches purchased by the pound increased approximately proportional with increases in income. It is safe to assume that any given fruit purchased in small units before and after the peak season of production will be a greater luxury than the same fruit purchased in larger units during the peak season of production.

POUNDS OF THE VARIOUS KINDS OF FRUIT CONSUMED

BECAUSE of the way in which the data were taken from consumers it was impossible to convert the commercially canned fruit, the citrus juice, other juice, or the jam and jelly into pound equivalents. As a result, this section of this report is confined to those fruits for which it was possible to derive pound equivalents. The standards used for converting bushels, lugs, and other containers into pounds were those recognized by the United States Department of Agriculture.

The pounds of the various kinds of fruit consumed tended to increase as family income increased (table 10). Oranges consumed per family increased from an average of 140 pounds for those families with less than \$2400 of income to an average of 265 pounds for those with an income of over \$6000 a year. The average consumption of apples increased from 103 pounds per family to 185 pounds for the same income groups. It is evident that most of the variation in expenditure for fruit by different income groups was a result of the quantity purchased rather than the price paid per pound since there was no consistent relationship between price paid per pound and income.

Table 10. *Annual family income related to the pounds of various kinds of fruit purchased per family, 446 families fall 1948, and 512 families spring 1949, Salt Lake City, Utah*

Fruit	Income					
	\$2400 and less	\$2401 to 3000	\$3001 to 3600	\$3601 to 4700	\$4701 to 6000	Over \$6000
	Pounds purchased per family					
	lb.	lb.	lb.	lb.	lb.	lb.
Peaches	65	71	107	101	101	112
Pears	24	19	40	26	31	46
Apricots	25	26	37	38	39	48
Cherries	11	11	15	16	7	25
Plums and prunes	8	6	10	8	6	9
Strawberries	17	16	19	24	24	29
Raspberries	4	8	8	7	10	11
Grapes	9	14	25	22	24	21
Apples	103	117	90	166	224	185
Oranges	140	153	223	213	394	265
Grapefruit	83	38	61	74	68	144
Bananas	90	74	85	96	98	74

The increase in the pounds of the various kinds of fruit consumed from low to high incomes was not nearly as great as was the increase in income. The increase in the pounds of the various kinds of fruit consumed from the lowest to the highest income groups was less than double although the income of the highest income group was more than five times as great as for the lowest income group. As a result, the index of the pounds of the various fruits consumed per \$1000 of income decreased as the income increased (table 11). The indexes per \$1000 of income for all of the fruits for which pound figures were available decreased by more than 50 percent from those families with less than \$2400 of income to those with over \$6000 of income. The greatest decrease in the index from lowest to highest income groups was noted for bananas and plums and prunes with the smallest decrease being associated with raspberries, grapes, and cherries.

Table 11. *Family income related to the index of the pounds of different kinds of fruit consumed per \$1000 of income, 446 families fall 1948, and 512 families spring 1949, Salt Lake City, Utah*

Fruit	Income					
	\$2400 and less	\$2401 to 3000	\$3001 to 3600	\$3601 to 4700	\$4701 to 6000	Over \$6000
Index of pounds purchased per \$1000 of income (lowest income equals 100)						
	percent	percent	percent	percent	percent	percent
Peaches	100	72	91	71	55	31
Pears	100	52	91	50	46	34
Apricots	100	69	81	70	56	35
Cherries	100	66	75	66	22	41
Plums and prunes	100	49	67	47	26	21
Strawberries	100	62	62	66	50	31
Raspberries	100	133	110	81	90	48
Grapes	100	102	152	113	94	42
Apples	100	75	48	74	78	32
Oranges	100	72	88	70	100	34
Grapefruit	100	30	41	41	29	31
Bananas	100	54	52	49	39	15

IMPORTANCE OF VARIOUS FRUITS ON QUANTITY BASIS

MEASURED in terms of the pounds of fruit, oranges were the most important fruit in the diet of Salt Lake City consumers. They accounted for over 25 percent of the total purchased (table 12).

Table 12. *Annual family income related to the proportion each fruit is of the total pounds of fruit purchased, 446 families fall 1948, 512 families spring 1949, Salt Lake City, Utah*

Fruit	Income					
	\$2400 and less	\$2401 to 3000	\$3001 to 3600	\$3601 to 4700	\$4701 to 6000	Over \$6000
	Percent of pounds purchased					
	percent	percent	percent	percent	percent	percent
Peaches	11	13	15	13	10	11
Pears	4	3	6	3	3	5
Apricots	4	5	5	5	4	5
Cherries	2	2	2	2	1	3
Plums and prunes	1	1	1	1	1	1
Strawberries	3	3	3	3	2	3
Raspberries	1	1	1	1	1	1
Other berries	0	0	0	0	0	0
Grapes	2	3	4	3	2	2
Apples	18	21	12	21	22	19
Oranges	24	28	31	27	38	27
Grapefruit	14	7	8	9	7	15
Bananas	16	13	12	12	9	8

Oranges were also the most important fruit, measured on the basis of expenditure, accounting for about 20 percent of the fruit dollar.

Judged on the basis of pounds of fruit consumed, apples were the second most important fruit consumed by families included in the survey. Bananas and peaches were the next in importance. Apples and peaches were the only two locally produced fruits which accounted for more than 5 percent of the total pounds of fruit consumed.

The importance of bananas as a proportion of the total pounds of fruit purchased tended to decrease as the income increased. When judged on the basis of the proportion of the total pounds of fruit, bananas were the only fruit which showed any consistent, significant relationship to income.

NATURE OF THE DEMAND FOR FRUIT

WHETHER the demand for any product is elastic or inelastic is of vital concern to the producers and marketers of the product. Elasticity may be defined as the percentage change in the quantity of a product taken by buyers with a given percentage change in price. If the change in quantity taken is proportionately greater

than the change in price, the demand is said to be elastic, if less than proportional, it is said to be inelastic.

There is a definite relationship between the elasticity of demand and the total gross value of the commodity sold. If demand is elastic, the total value received for a large crop will be greater than for a small crop. If the demand is inelastic the greatest value will be obtained when a small crop is sold and prices are relatively high.

Since demand, as used by the economist, refers to the quantities that would be taken by buyers at a schedule of prices at a given time and place, it is a theoretical concept almost impossible of measurement. Because of its vital importance, however, practical methods of estimating elasticity of demand are often used. The differences in expenditure for various commodities by different income groups, as shown in this study for fruits, is one method of approximating the elasticity of demand.³ Measuring elasticity by this method is based upon the assumption that a rise from a lower to a higher level of income with prices unchanged is equivalent from the point of view of the individual to a proportionate lowering of all prices with income remaining the same. It should be pointed out that the theoretical demand curve presumes to state the relationship between price and quantity with all other things except the price of the commodity in question remaining the same. The expenditure method indicates the probable changes in quantities, with all prices, including the price of the commodity in question, changing in the same proportion.

Two characteristics of a commodity which influence its elasticity of demand are (1) the extent to which consumers consider it to be a luxury, that is, luxury products would be more elastic than necessities, and (2) the availability of good substitutes for the product and the relative resistance of consumers to shifting to the substitutes. (Products with many good substitutes would have greater elasticity of demand than those with few, poor substitutes.)

By the expenditure method the demand for all fruit as well as most of the different kinds of fruit appeared to be inelastic, that is, the increase in expenditure for these fruits was not proportional to increases in income. The relatively fixed percentage of the fruit dollar spent for different kinds of fruit by families of various incomes

³This measure has been called income elasticity or consumption elasticity by some writers. See "The consumer and the economic order," by Warren C. Waite and Ralph Cassidy, Jr. New York, McGraw-Hill Book Company, Inc. 1949. p. 157-159.

indicates that the kinds of fruits are not substitutive. Even when incomes are low, consumers are apparently interested in variety of fruit rather than in spending more of their fruit dollars for the lower priced fruits.

UNIT OF PURCHASE FOR VARIOUS KINDS OF FRUIT

FRUITS are purchased by consumers in a variety of containers of various sizes as well as by the pound or dozen. The unit of purchase is usually related to the use to be made of the fruit and the kind of fruit. If consumers are purchasing fruit for canning, they prefer to buy in large units. On the other hand, if they are purchasing fruit to eat fresh, only a small quantity is wanted and the fruit is more likely to be purchased by the pound or dozen and carried home in a paper sack. Fruit that is extremely soft, such as the berries, cannot be packed in large containers. These fruits are usually packed in cups but the consumer has the alternative of buying one cup or a crate.

Of the pounds of peaches purchased by consumers 87 percent were in bushel baskets and only 10 percent were purchased by the pound (table 13). Most of the pears purchased were in bushel baskets. Bushel baskets were the most important container used for apricots, but 25 percent were purchased in lugs. Fifty percent

Table 13. *Proportion of the various kinds of fruit purchased in various units, 446 families fall 1948, 512 families spring 1949, Salt Lake City, Utah*

Fruit	Units of purchase						
	Basket	Lug	Pound	Cup	Case	Dozen	Each
	<i>per- cent</i>	<i>per- cent</i>	<i>per- cent</i>	<i>per- cent</i>	<i>per- cent</i>	<i>per- cent</i>	<i>per- cent</i>
Peaches	87	3	10	....	....	....	....
Pears	90	4	6	....	....	....	....
Apricots	71	24	5	....	....	....	....
Cherries	11	36	50	....	3	....	....
Plums and prunes	42	32	19	3	4	....	....
Strawberries	....	....	....	52	48	....	....
Raspberries	....	1	....	22	77	....	....
Other berries	....	....	1	19	80	....	....
Grapes	22	15	61	....	2	....	....
Apples	51	....	48	....	....	1	....
Oranges	....	....	23	....	19	57	....
Grapefruit	....	....	64	....	4	23	9
Bananas	....	....	87	....	....	12	1

of the cherries were purchased by the pound and 36 percent by the lug. Approximately half of the strawberries were purchased by the cup and half by the case; over 75 percent of the raspberries were purchased by the case. Over 60 percent of the grapes and almost 50 percent of the apples were purchased by the pound. Eighty percent of the oranges were purchased either by the pound or by the dozen.

CONCLUSIONS

THE consumption of all fruits, measured either on the basis of the expenditure or the total pounds of fruit consumed, will increase as the income is increased. This increase in the consumption of fruit will not be nearly as rapid as will the increase in income. As a result, the expenditure for, or the consumption of the various kinds of fruit, will decrease per dollar of income as income is increased.

Considered in this manner the demand for the various kinds of fruit is inelastic. This means that a change in the price of a particular fruit is accompanied by a less than proportionate change in the quantity demanded. If the price of peaches, for instance, was raised by 10 percent, the quantity demanded would of course be reduced. However, with the demand for peaches of an inelastic nature the quantity demanded would be reduced by less than 10 percent. If the price of peaches was reduced by 10 percent, the quantity demanded would be increased, but by less than 10 percent. Apparently, all of the fruits studied would behave in much the same manner.

This, of course, affects total revenue received for a crop. Increasing the price of a commodity, such as any of the fruits, which has an inelastic demand decreases the amount sold but increases the total revenue. On the other hand, decreasing the price results in an increased quantity sold, but decreases the total revenue.

This explains, in part at least, why fruit growers suffer so greatly in years when large crops or surpluses develop and enjoy good times in periods of relatively short crop years. Of course, in order for the full benefits of a short crop to be enjoyed by all fruit farmers equally, the crop must be short over the entire country or over the entire producing area.

SUMMARY

THE information included in this study was obtained from data relative to purchases of fruit by 446 families in the fall of 1948 and 512 families in the spring of 1949 in Salt Lake City, Utah. The sample of consumers was obtained in such a way as to obtain as nearly as possible an equal number of families with low, medium, and high incomes.

The expenditure for food as well as that for fruit increased as income increased. The expenditure for food and fruit, however, did not increase nearly as rapidly as did income. As a result, the expenditure for these items per \$1000 of income decreased as income increased. This is a rather good indication that the demand for both food and fruit was inelastic.

The expenditure for all fruit increased as income increased. In general, the expenditure for fruit about doubled as family income increased from less than \$2400 per year to over \$6000 per year. By comparison, the average income of the highest group was about 5 times as high as for the lowest group. Thus, the expenditure for fruit decreased per \$1000 of income as the income increased. As measured by the expenditure method all of the individual fruits tended to have an inelastic demand.

Oranges accounted for about 20 percent of the consumer's fruit dollar. All of the citrus fruits and bananas accounted for about 55 percent of the consumer's fruit dollar. Utah-grown fruit accounted for a small proportion of the total fruit consumed.

The price paid per pound for fruit did not increase consistently as income increased. Consumers paid more per pound for fruit purchased in the off season and for fruit purchased in small containers than they did for that purchased during the peak of the season and in large containers.

The pounds of the various kinds of fruit consumed per family increased as the income increased, but the increase was not nearly so great as was the increase in income.

On a per pound basis, oranges were the most important fruit in the diet of the consumers interviewed, with apples second.

For those fruits which are firm enough to stand the weight, the bushel basket was the most important container used.