

Consumer Preferences: A Guide to Connecticut Apple Marketing

Robert L. Leonard and
James J. Wadsworth

Food Marketing Policy Center
Research Report No. 4

Department of Agricultural Economics
& Rural Sociology
The University of Connecticut

Acknowledgements

This research was supported by funds from the Connecticut Department of Agriculture and the Storrs Agricultural Experiment Station and the Cooperative Extension Service, University of Connecticut. The authors acknowledge and appreciate suggestions from Ronald W. Cotterill, David A. Kollas, and Emilio Pagoulatos from the University of Connecticut, and Alberto Manalo of University of New Hampshire. Appreciation is also extended to Laszlo Rieger for statistical analysis, Karen Nye for typing, and to Gary V. Johnson for editing. Responsibility for content including errors rests with the authors. This paper is Scientific Contribution No. 1281, Storrs Agricultural Experiment Station, Storrs, CT 06269.

Author Affiliation

Robert L. Leonard is an Associate Professor of Agricultural Economics at the University of Connecticut. James J. Wadsworth was a Graduate Research Assistant at the University of Connecticut and is now an Agricultural Economist with the Agricultural Cooperative Service/U.S.D.A.

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Abstract

The primary objectives of this research are:

- (1) to identify the preferences of Connecticut apple consumers regarding product attributes and market characteristics;
- (2) to assess the impact of Connecticut promotion programs on consumer preference for Connecticut grown apples, and
- (3) to identify opportunities for more effective marketing of Connecticut grown apples.

Information was obtained by interviewing a total of 374 persons purchasing apples at farm stores, pick-your-own orchards, supermarkets, and warehouse stores. Data collection included both direct questions and customer ranking of eight displayed apples. Each of the eight apples was either McIntosh or Red Delicious, 49 or 79 cents per pound, red or relatively green, large or small, Connecticut grown or unspecified origin, waxed or not waxed, and bruised or unbruised.

The percentage of customers reporting an awareness of a general promotion program, known as Connecticut Grown, varied from a low of 8.7 percent at farm stores to a high of 32.6 percent at pick-your-own orchards. A somewhat lower percentage of customers reported that they had heard a radio advertisement specifically promoting Connecticut grown apples.

Customers rated appearance, texture, sweetness and price as more important than Connecticut grown in deciding which apples to buy. A positive relation, however, was found between awareness of the promotion programs and the importance of Connecticut grown.

A customer listing of three favorite apple varieties in order of preference revealed McIntosh to be the most popular first choice at farm stores, pick-your-own orchards, and warehouse stores. Red Delicious was the most popular first choice at supermarkets.

Customer ranking of the eight displayed apples with seven attributes in various combinations revealed a preference for low price, a high percentage of red color, large size, waxed, and unbruised. Implied preferences regarding variety and origin were not statistically significant for the composite sample.

Data from the ranking experiment were subdivided with regard to customer awareness of each of the two promotion programs. Awareness of the promotion programs was associated with a relatively strong preference for Connecticut grown and a relatively weak preference for low price, waxed, and unbruised.

1. Introduction

The research was initiated in response to a request from the Connecticut Apple Marketing Board for information that would provide guidance for marketing initiatives. This report is the second of a two part series. The first report focused on produce buyer procurement and merchandising behavior and on marketing strategies for increasing the sales of Connecticut apples through retail food distribution channels (Cotterill and Iton).

This report is directly focused on the preferences and characteristics of persons purchasing apples at farm stores, pick-your-own orchards, conventional supermarkets, and warehouse stores. Special attention is given to an assessment of the impact on consumer preferences of two promotion programs.

The Connecticut Department of Agriculture has for several years been promoting Connecticut agricultural products with an extensive program known as "Connecticut Grown." The Connecticut Grown program has promoted essentially all types of agricultural products. Promotion methods have included numerous publications, use of the Connecticut Grown logo on boxes and bags, and public service announcements and programs for radio and television.

A relatively intense radio advertising campaign specifically for Connecticut grown apples was conducted during September 1987. This program was sponsored by the Connecticut Apple Growers Association and consisted of numerous advertisements from five stations over a three week period.

The specific objectives of this study are to:

1. Identify consumer preferences with regard to both product attributes, such as variety, size, and color, and market characteristics.
2. Identify the degree of preference for Connecticut grown apples and to assess the impact of the promotion programs.

3. Identify purchase behavior, such as the number of varieties bought, quantity bought, frequency of purchase, and distance traveled to the store or orchard.
4. Identify the household size and income level of customers.
5. Identify opportunities for more effective marketing of Connecticut grown apples.

Information was obtained by interviewing persons purchasing apples at farm stores, pick-your-own orchards, supermarkets, and warehouse stores. The following section of the report explains the data collection procedure. The next section contains survey results and includes a subsection for each major topic. The final section summarizes the results and suggests strategies for more effective marketing of Connecticut grown apples.

2. Data Collection Procedure

Data collection included both direct questions and customer ranking of eight displayed apples. Direct questions from a survey form were asked regarding awareness of the promotion programs, factors important in deciding which apples to buy, and varietal preference. Other questions covered apple purchases, household characteristics, and customer evaluation of market types. The questions are in the survey form in Appendix A. Information on implied preferences was collected by having customers rank eight apples with specific attributes in various combinations.

2.1 Attributes of Apples Ranked by Customers

Each of the eight apples was characterized by one of each of the following pairs of attributes: McIntosh or Red Delicious; 49 or 79 cents per pound; red or relatively green; large or small; Connecticut grown or unspecified origin; waxed or not waxed; and bruised or unbruised. Each level of each attribute was paired with a balanced number of each of the other

attribute levels as shown in Table 1. The experimental design was based on recommendations by Addelman.

Table 1. ATTRIBUTES OF APPLES RANKED BY CUSTOMERS.

| Apple Number | Price | Variety | Color | Size | Origin | Waxed | Bruised |
|--------------|-------|----------|-------|-------|--------|-------|---------|
| 1 | 49 | McInt. | Green | Small | (?) | Yes | No |
| 2 | 49 | McInt. | Green | Large | CT | No | Yes |
| 3 | 49 | Red Del. | Red | Small | (?) | No | Yes |
| 4 | 49 | Red Del. | Red | Large | CT | Yes | No |
| 5 | 79 | McInt. | Red | Small | CT | Yes | Yes |
| 6 | 79 | McInt. | Red | Large | (?) | No | No |
| 7 | 79 | Red Del. | Green | Small | CT | No | No |
| 8 | 79 | Red Del. | Green | Large | (?) | Yes | Yes |

In this type of preference evaluation the relative influence of each attribute is sensitive to the specification of the attribute levels. Size, for example, could not be a significant attribute if size differences were unobservable. At the other extreme, size would be an overly dominant attribute if the small apples were smaller than the smallest size commonly sold in retail markets. In general, we tried to have observable attribute differences that correspond to differences at a typical apple outlet.

Prices at 49 and 79 cents per pound were selected to be clearly within the range of current retail prices and to have enough spread to influence ranking decisions.

McIntosh and Red Delicious are popular among consumers and are widely grown in Connecticut. Inclusion of more than two varieties would have required either a reduction in the number of other attributes or an unrealistic expansion in the number of apples to be ranked.

The color classification was relative to the characteristic color of each variety. Apples were selected to fit as closely as possible into the following groups:

- (1) red McIntosh—50 percent red;
- (2) green McIntosh—25 percent red;
- (3) red Red Delicious—100 percent red; and

(4) green Red Delicious—66 percent red.

The large size in both varieties was represented by apples sized at 100 count per box. The small size was established by using a 125 count size for Red Delicious and a 140 count size for McIntosh. The higher count per box for small McIntosh as compared to small Red Delicious stemmed from a difference in apple shape and an attempt to have a visual size match.

While all apples were from the same orchard in Connecticut, only four apples were identified as Connecticut grown. There was no indication of origin in the case of the other four apples.

Waxing was done with commercial equipment. If a waxed apple appeared somewhat dull at the time of display it was buffed to achieve an obvious shine. Unwaxed apples were not buffed.

Bruised apples had two slightly visible indentations. Bruising was done just prior to each interview session and was achieved by thumb pressure. The project leader demonstrated apple bruising to all interviewers in an attempt to achieve a consistent degree of bruising. Interviewers were supplied with replacement apples to be used in the event of unplanned damage.

Apples were displayed on a card table on white sheets of paper. Variety, price, and Connecticut grown, where applicable, were clearly printed. The fact that some apples had been waxed and that some were slightly bruised was confirmed in response to questions from customers. Customers who asked about the origin of apples with no information regarding origin were requested to consider the presence or absence of an origin label in the same way as they would when purchasing apples. Customers were asked to observe the apples and rank them in order of preference beginning with the first preference.

2.2 Interview Sites and Scheduling

Orchards and stores were selected to include areas with a variety of income levels and population densities. Interview locations were as follows:

1. Farm stores—Bethel, Glastonbury, Guilford, Ledyard, and Middlefield;
2. Pick-your-own orchards—Ellington, Glastonbury, Granby, Ledyard, and Plainfield;
3. Supermarkets—Cromwell, Derby, Fairfield, Seymour, and Willimantic; and
4. Warehouse stores—two in Manchester and one each in Newington and West Hartford.

Interviews began at pick-your-own orchards in late September 1987 and at farm stores in the middle of October. Other interview sites were generally scheduled in the latter half of the interview period which continued into early December. The initial plan was to take twenty interviews at each site. The sampling plan was altered somewhat by the flow of events in scheduling appointments and securing customer cooperation. Customers at farm stores and pick-your-own orchards were very cooperative. Interviewers were generally able to complete 18 to 22 questionnaires during one visit. The percentage of customers willing to participate was rather low at some supermarkets and warehouse stores. A second visit was made to some stores, while the goal of 20 interviews was not reached at other stores. The resulting sample sizes are: 103 at farm stores; 95 at pick-your-own orchards; 92 at supermarkets; and 84 at warehouse stores. The data set contains a total of 374 observations.

Two elements of the data collection procedure should always be considered when interpreting the information obtained. First, all opinion surveys include the possibility that persons interviewed may have different attitudes and preferences than persons not willing to cooperate.

The second sampling limitation pertains only to the full sample (a combination of the four subsamples). The four subsample sizes are not in proportion to the statewide distribution of apple customers among the four types of markets. Data regarding the full sample should always be considered within the context of the sampling procedure.

3. Results

3.1 Awareness of Promotion Programs

The percentage of customers reporting an awareness of the promotion programs was greater at pick-your-own orchards than at other store types (see Tables 2 and 3). The relatively high level of awareness among pick-your-own customers probably stems from a two way relationship. In one direction, persons with a preexisting interest in picking apples are more apt to notice and remember the promotion programs. In the other direction, the promotion programs have presumably stimulated interest in picking apples.

The percentage of customers reporting that they had heard a radio advertisement promoting Connecticut grown apples was somewhat lower than the percentage of customers aware of the Connecticut Grown program. This difference, however, is not surprising in view of the longer term and broader coverage of the Connecticut Grown program. The relatively high frequency of awareness among pick-your-own customers of the radio advertisements in September likely stems in part from the fact that these customers were interviewed shortly after the advertisements while interviews at other store types continued into early December.

Awareness of the promotion programs was least frequent among the farm store customers. While a few farm store customers reported a travel distance sufficiently great to indicate an out-of-state residence, this explains only a small part of the disproportionately low frequency of awareness among farm store customers.

Table 2. AWARENESS OF THE "CONNECTICUT GROWN" PROMOTION PROGRAM.

| Awareness | Percent of Customers | | | | |
|-----------|----------------------|---------------|--------------|-----------------|-------------|
| | Farm Store | Pick-Your-Own | Super-market | Warehouse Store | Full Sample |
| Aware | 8.7 | 32.6 | 27.2 | 20.2 | 21.9 |
| Not Aware | 86.4 | 55.8 | 72.8 | 77.4 | 73.3 |
| No Answer | 4.9 | 11.6 | 0.0 | 2.4 | 4.8 |

Table 3. CUSTOMERS HAVING HEARD A RADIO ADVERTISEMENT PROMOTING CONNECTICUT APPLES.

| Heard Advertisement | Percent of Customers | | | | |
|---------------------|----------------------|---------------|--------------|-----------------|-------------|
| | Farm Store | Pick-Your-Own | Super-market | Warehouse Store | Full Sample |
| Yes | 7.8 | 25.3 | 17.4 | 15.5 | 16.3 |
| No | 86.4 | 63.2 | 81.5 | 81.0 | 78.1 |
| No Answer | 5.8 | 11.6 | 1.1 | 3.6 | 5.6 |

3.2 Factors Important in Deciding Which Apples to Buy

Customers were asked to rate five factors with regard to importance in deciding which apples to buy. These factors were: appearance, texture, sweetness, price, and Connecticut grown. Each factor was rated as very important, somewhat important or not important.

Customer ratings of the five factors provide a perspective on the relative importance of the factors in deciding which apples to buy. Specific preferences cannot be identified in the case of appearance, texture, and sweetness. In the case of appearance, customers would presumably prefer shapes and colors characteristic of the particular variety and an absence of blemishes. In the case of texture, crisp is a widely acclaimed characteristic, but crisp to one consumer may be hard to

another. Likewise, the preferred degree of sweetness depends on taste. Numerous customers volunteered a preference for tart apples. A high rating for sweetness does not imply a preference for sweet rather than tart.

The percentage of customers that gave a very important rating for each of the five factors is shown by store type in Table 4. The ratings have a wide variation among factors and a consistent pattern across store types. For the full sample the percentages of customers giving a rating of very important were: appearance 76.5; texture 72.2; sweetness 61.0; price 32.6; and Connecticut grown 16.8.

Table 4. FACTORS RATED AS VERY IMPORTANT IN DECIDING WHICH APPLES TO BUY.

| Factors Rated | Percent of Customers | | | | |
|----------------|----------------------|---------------|--------------|-----------------|-------------|
| | Farm Store | Pick-Your-Own | Super-market | Warehouse Store | Full Sample |
| Very Important | | | | | |
| Appearance | 70.9 | 75.8 | 77.2 | 83.3 | 76.5 |
| Texture | 73.8 | 71.6 | 71.7 | 71.4 | 72.2 |
| Sweetness | 61.2 | 56.8 | 55.4 | 71.4 | 61.0 |
| Price | 26.2 | 34.7 | 33.7 | 36.9 | 32.6 |
| CT Grown | 12.6 | 21.1 | 13.0 | 21.4 | 16.8 |

The percentage distributions for all three levels of importance for individual factors are shown in Tables 5, 6, 7, 8 and 9. Very few customers considered appearance, texture, or sweetness to be not important in deciding which apples to buy. The percentage of customers that declared price to be not important ranged from 15.8 percent at pick-your-own orchards to 26.2 percent at warehouse stores. Connecticut grown was clearly the least important of the five factors evaluated.

Results from this survey are generally consistent with results from a Pennsylvania survey of consumer preferences and attitudes regarding fruit and vegetable purchases (Connell, Beierlein, and Vroomen). The percentage of respondents aware of the state promotion program was somewhat higher in

Pennsylvania than in Connecticut. One third of the 400 participants in the Pennsylvania survey rated the overall quality of Pennsylvania grown fruits and vegetables as better than those grown elsewhere. However, in another set of questions only thirteen percent of the Pennsylvania respondents rated "where it is grown" as very important in fruit and vegetable selection.

Table 5. IMPORTANCE OF APPEARANCE IN DECIDING WHICH APPLES TO BUY.

| Importance of Appearance | Percent of Customers | | | | |
|--------------------------|----------------------|---------------|--------------|-----------------|-------------|
| | Farm Store | Pick-Your-Own | Super-market | Warehouse Store | Full Sample |
| Very Important | 70.9 | 75.8 | 77.2 | 83.3 | 76.5 |
| Somewhat Important | 21.4 | 18.9 | 21.7 | 11.9 | 18.7 |
| Not Important | 2.9 | 2.1 | 1.1 | 4.8 | 2.7 |
| No Answer | 4.9 | 3.2 | 0.0 | 0.0 | 2.1 |

Table 6. IMPORTANCE OF TEXTURE IN DECIDING WHICH APPLES TO BUY.

| Importance of Texture | Percent of Customers | | | | |
|-----------------------|----------------------|---------------|--------------|-----------------|-------------|
| | Farm Store | Pick-Your-Own | Super-market | Warehouse Store | Full Sample |
| Very Important | 73.8 | 71.6 | 71.7 | 71.4 | 72.2 |
| Somewhat Important | 19.4 | 23.2 | 25.0 | 21.4 | 22.2 |
| Not Important | 1.9 | 1.1 | 3.3 | 6.0 | 2.9 |
| No Answer | 4.9 | 4.2 | 0.0 | 1.2 | 2.7 |

The importance of Connecticut grown was considerably stronger than the preference for locally grown apples indicated in a report on consumer preferences in Tennessee (Eastwood, Brooker, and Orr). The Tennessee research was conducted prior to initiation of a Tennessee grown promotion program. The stronger preference for locally grown apples in Connecticut

may be directly associated with awareness of the Connecticut promotion activities.

Table 7. IMPORTANCE OF SWEETNESS IN DECIDING WHICH APPLES TO BUY.

| Percent of Customers | | | | | |
|-------------------------|------------|---------------|--------------|-----------------|-------------|
| Importance of Sweetness | Farm Store | Pick-Your-Own | Super-market | Warehouse Store | Full Sample |
| Very Important | 61.2 | 56.8 | 55.4 | 71.4 | 61.0 |
| Somewhat Important | 30.1 | 32.6 | 41.3 | 23.8 | 32.1 |
| Not Important | 4.9 | 3.2 | 3.3 | 2.4 | 3.5 |
| No Answer | 3.9 | 7.4 | 0.0 | 2.4 | 3.5 |

Table 8. IMPORTANCE OF PRICE IN DECIDING WHICH APPLES TO BUY.

| Percent of Customers | | | | | |
|----------------------|------------|---------------|--------------|-----------------|-------------|
| Importance of Price | Farm Store | Pick-Your-Own | Super-market | Warehouse Store | Full Sample |
| Very Important | 26.2 | 34.7 | 33.7 | 36.9 | 32.6 |
| Somewhat Important | 44.7 | 45.3 | 40.2 | 36.9 | 42.0 |
| Not Important | 22.3 | 15.8 | 26.1 | 26.2 | 22.5 |
| No Answer | 6.8 | 4.2 | 0.0 | 0.0 | 2.9 |

Table 9. IMPORTANCE OF CONNECTICUT GROWN IN DECIDING WHICH APPLES TO BUY.

| Percent of Customers | | | | | |
|---------------------------------|------------|---------------|--------------|-----------------|-------------|
| Importance of Connecticut Grown | Farm Store | Pick-Your-Own | Super-market | Warehouse Store | Full Sample |
| Very Important | 12.6 | 21.1 | 13.0 | 21.4 | 16.8 |
| Somewhat Important | 29.1 | 40.0 | 38.0 | 31.0 | 34.5 |
| Not Important | 54.4 | 35.8 | 47.8 | 47.6 | 46.5 |
| No Answer | 3.9 | 3.2 | 1.1 | 0.0 | 2.1 |

3.3 Importance of Connecticut Grown in Relation to Awareness of the Promotion Programs

A cross tabulation of data on awareness of the Connecticut Grown promotion program and the importance of Connecticut grown in deciding which apples to buy is shown in Table 10. This table includes only the response from customers that answered both questions. Table 10 includes both the actual number of observations for each cell and a hypothetical number, which is the mathematically expected number if there is no relationship between awareness of the Connecticut Grown program and importance of Connecticut grown to the customer. A comparison of the actual and expected numbers indicates that there is an association between awareness of the promotion program and importance of Connecticut grown. Results from a chi-square (X^2) goodness of fit test indicate that the association between the variables in the sample would occur by chance alone in less than 0.5 percent of all samples of the same size drawn in a similar manner.¹ These results clearly indicate a positive relationship between awareness of the promotion programs and the importance of Connecticut grown in deciding which apples to buy.

Information on the association between recall of having heard a radio advertisement for Connecticut grown apples and the importance of Connecticut grown in deciding which apples to buy is shown in Table 11. The sample data clearly indicate a positive relationship between these variables. The degree of association between the variables in the sample would occur by chance alone in between 0.5 and 1.0 percent of all samples drawn in a similar manner.

3.4 Varietal Preference

Customers were asked to list their three favorite apple varieties in order of preference. The range of choice was

¹A statistical association does not clearly indicate a one-way causal relationship. Persons with a preexisting preference for Connecticut grown apples are more likely to notice and recall the Connecticut grown promotion activities than persons with no preexisting preference for Connecticut grown products.

Table 10. IMPORTANCE OF CONNECTICUT GROWN IN RELATION TO AWARENESS OF THE CONNECTICUT GROWN PROMOTION PROGRAM.

| Importance of Connecticut Grown | Aware of the Connecticut Grown Promotion Program? | | | |
|---------------------------------|---|-----------------|---------------|-----------------|
| | Yes | | No | |
| | Actual Number | Expected Number | Actual Number | Expected Number |
| Very Important | 26 | 13.88 | 34 | 46.11 |
| Somewhat Important | 31 | 29.16 | 95 | 96.84 |
| Not Important | 24 | 37.96 | 140 | 126.05 |

Calculated X^2 test statistic = 20.59

Critical X^2 value at 0.5% confidence level and 5 degrees of freedom = 16.75

completely open with no reference to the varieties at the store or orchard. While the entire list includes 26 varieties the same seven varieties were dominant at each of the three preference levels.

The percentage distributions of first preference are shown in Table 12. Customers at farm stores, pick-your-own orchards and warehouse stores expressed similar preferences. At each of these market types McIntosh was the most popular first preference, and Red Delicious and Macoun were, respectively, the second and third most popular first preference. McIntosh apples were especially popular at farm stores. This may reflect both promotion and a tendency for customers with a preference for McIntosh to shop at farm stores in a state with substantial production of McIntosh.

At supermarkets the most popular first preference was Red Delicious, while the second and third most popular first preferences were McIntosh and Golden Delicious, respectively.

The percentage distributions of second preferences are presented in Table 13. McIntosh and Red Delicious were popular second preferences at all market types. This is of particular significance when first and second preferences are jointly considered. At supermarkets, for example, Red Delicious accounted for 37.0 percent of the first preferences and 26.1 percent of the second preferences. Thus, Red Delicious was

Table 11. IMPORTANCE OF CONNECTICUT GROWN IN RELATION TO HAVING HEARD A RADIO ADVERTISEMENT.

| Importance of Connecticut Grown | Heard a Radio Advertisement? | | | |
|---------------------------------|------------------------------|-----------------|---------------|-----------------|
| | Yes | | No | |
| | Actual Number | Expected Number | Actual Number | Expected Number |
| Very Important | 19 | 10.17 | 40 | 48.83 |
| Somewhat Important | 25 | 21.55 | 100 | 103.45 |
| Not Important | 16 | 28.28 | 148 | 135.72 |

Calculated X^2 test statistic = 16.37

Critical X^2 value at 1.0% confidence level and 5 degrees of freedom = 15.09

Critical X^2 value at 0.5% confidence level and 5 degrees of freedom = 16.75

either the first or second preference for 63.1 percent of supermarket customers interviewed. Likewise, McIntosh was either the first or second preference for 56.6 percent of supermarket respondents.

The high regard for McIntosh at farm stores is evident in second as well as first preferences. McIntosh was either the first or second preference for 65.1 percent of farm store customers. Both second and first preference data indicate Macoun to be almost as popular as Red Delicious at farm stores.

Third preference data, shown in Table 14, indicate a substantial spread over both the seven leading varieties and the "other varieties" group.

Part of the data from this survey of customers can be compared with results from a recent survey of persons in charge of apple procurement and merchandising for supermarkets and grocery stores in the Hartford, Boston and New York market areas (Cotterill and Iton). In that study, information on leading apple varieties was reported by respondents for fourteen large retailers and six small retailers. Red Delicious was the leading variety for eleven of the fourteen large retailers, while McIntosh was the leading variety for three

of the fourteen large retailers and for two of the six small retailers (Cotterill and Iton, p. 18).

Table 12. FIRST PREFERENCE IN RANKING FAVORITE VARIETIES OF APPLES.

| Variety | Percent of Customers | | | | |
|-------------------|----------------------|---------------|--------------|-----------------|-------------|
| | Farm Store | Pick-Your-Own | Super-market | Warehouse Store | Full Sample |
| Cortland | 4.9 | 9.5 | 2.2 | 8.3 | 6.2 |
| Empire | 4.9 | 4.2 | 4.3 | 2.4 | 4.0 |
| Golden Delicious | 1.9 | 6.3 | 10.9 | 10.7 | 7.2 |
| Granny Smith | 1.9 | 5.3 | 8.7 | 2.4 | 4.5 |
| Macoun | 16.5 | 15.8 | 5.4 | 13.1 | 12.8 |
| McIntosh | 44.7 | 35.8 | 28.3 | 37.0 | 36.6 |
| Red Delicious | 21.4 | 17.9 | 37.0 | 20.2 | 24.1 |
| (Other Varieties) | 3.8 | 5.2 | 3.2 | 5.9 | 4.6 |

Table 13. SECOND PREFERENCE IN RANKING FAVORITE VARIETIES OF APPLES.

| Variety | Percent of Customers | | | | |
|-------------------|----------------------|---------------|--------------|-----------------|-------------|
| | Farm Store | Pick-Your-Own | Super-market | Warehouse Store | Full Sample |
| Cortland | 12.6 | 11.6 | 4.3 | 10.7 | 9.9 |
| Empire | 4.9 | 3.2 | 6.5 | 2.4 | 4.3 |
| Golden Delicious | 9.7 | 17.9 | 9.8 | 13.1 | 12.6 |
| Granny Smith | 4.9 | 5.3 | 13.0 | 7.1 | 7.5 |
| Macoun | 17.5 | 7.4 | 5.4 | 13.1 | 11.0 |
| McIntosh | 20.4 | 26.3 | 28.3 | 15.5 | 22.7 |
| Red Delicious | 18.4 | 21.1 | 26.1 | 29.8 | 23.5 |
| (Other Varieties) | 11.6 | 7.2 | 6.6 | 8.3 | 8.5 |

3.5 Willingness to Substitute Some Other Fruit for Apples

Customers were asked if they would substitute some other fruit for apples if apple prices were to increase by 25 percent. As shown in Table 15, willingness to substitute in response to a price increase was least frequent in the case of farm store

customers. This low price sensitivity by farm store customers is consistent with their infrequent rating of price as a very important factor in deciding which apples to buy (Table 8).

Table 14. THIRD PREFERENCE IN RANKING FAVORITE VARIETIES OF APPLES.

| Variety | Percent of Customers | | | | |
|-------------------|----------------------|---------------|--------------|-----------------|-------------|
| | Farm Store | Pick-Your-Own | Super-market | Warehouse Store | Full Sample |
| Cortland | 14.6 | 17.9 | 9.8 | 14.3 | 14.2 |
| Empire | 3.9 | 10.5 | 4.3 | 4.8 | 5.9 |
| Golden Delicious | 4.6 | 9.5 | 16.3 | 14.3 | 12.8 |
| Granny Smith | 1.9 | 6.3 | 16.3 | 13.1 | 9.1 |
| Macoun | 9.7 | 4.2 | 4.3 | 7.1 | 6.4 |
| McIntosh | 13.6 | 17.9 | 26.1 | 13.1 | 17.6 |
| Red Delicious | 16.5 | 18.9 | 13.0 | 10.7 | 15.0 |
| (Other Varieties) | 8.2 | 14.8 | 9.9 | 22.6 | 19.0 |

Customers who expressed a willingness to substitute were asked to name one or more likely substitutes. The most frequently mentioned substitute was grapes, followed by bananas and then by pears.

Table 15. WILLINGNESS TO SUBSTITUTE SOME OTHER FRUIT FOR APPLES IF APPLE PRICES WERE TO INCREASE BY 25 PERCENT.

| Willingness to Substitute | Percent of Customers | | | | |
|---------------------------|----------------------|---------------|--------------|-----------------|-------------|
| | Farm Store | Pick-Your-Own | Super-market | Warehouse Store | Full Sample |
| Yes | 4.9 | 30.5 | 21.7 | 29.8 | 21.1 |
| No | 89.3 | 57.9 | 78.3 | 67.9 | 73.8 |
| No Answer | 5.8 | 11.6 | 0.0 | 2.4 | 5.1 |

3.6 Attribute Preferences Implied through a Ranking of Apples

Attributes of the eight apples ranked by customers are listed in Table 1 and more fully defined in the accompanying

text. Results from the ranking procedure should always be considered in relation to the attributes viewed by the customers.

Attribute preferences implied by the ranking of apples are shown in Tables 16, 17 and 18. Each attribute preference is accompanied by an estimate of the probability that the indicated preference could have resulted from chance alone. A low probability of occurrence by chance alone, say 0.05 or less, indicates that most of the respondents have the same preference regarding the particular attribute and that the attribute is sufficiently important to influence the ranking of the apples. A high probability that the indicated preference could have occurred by chance alone could result from either a fairly even division in the preference among respondents or a small influence of this attribute on the ranking by a large number of respondents.

Implied preferences are shown by store type in Table 16. As might be expected, the preference for low price is consistent across store types. A probability estimate of 0.1190 for low price at farm stores means that an implied preference for low price would be expected to occur by chance alone in 11.9 percent of all samples of the same size and similarly drawn from the same population of customers. Each of the probability estimates has a comparable meaning. The smaller the probability estimate the more reliable the estimate of attribute preference.²

²The relationships between rank and apple attributes were evaluated with analysis of variance and linear multiple regression. In both models rank was the dependent variable and the seven attributes were the independent variables. The use of qualitative independent variables precludes conventional use of coefficients estimated with the regression model. However, the regression model was needed to identify the direction of attribute influences. Probability estimates of the statistical significance of independent variables were the same in both models.

Both regression and analysis of variance are directly applicable only when the dependent variable is continuous and measurable, such as height or weight. Results from the statistical analyses are based on an implicit assumption that

Table 16. ATTRIBUTE PREFERENCE INDICATED BY THE RANKING OF APPLES.

| Attribute | Preference and the Probability that the Indicated Preference Could Have Resulted from Chance Alone | | | | |
|---------------|--|------------------|--------------------|------------------|--------------------|
| | Farm Store | Pick-Your-Own | Super-market | Warehouse Store | Full Sample |
| Price | Low 0.1190 | Low 0.1077 | Low 0.0001 | Low 0.2859 | Low 0.0001 |
| Variety | McInt. 0.6522 | McInt. 0.2675 | Red Del. 0.0001 | McInt. 0.0113 | Red Del. 0.6362 |
| Color | Red 0.0001 | Red 0.0001 | Red 0.0001 | Red 0.4181 | Red 0.0001 |
| Size | Large 0.0008 | Large 0.0001 | Large 0.0001 | Large 0.0001 | Large 0.0001 |
| Origin | CT 0.2984 | CT 0.2379 | CT 0.0262 | (?) 0.0716 | CT 0.1831 |
| Waxed | Yes 0.0012 | Yes 0.1077 | Yes 0.0001 | No 0.4843 | Yes 0.0001 |
| Bruised | No 0.0001 | No 0.1980 | No 0.3146 | No 0.0001 | No 0.0001 |
| (Sample Size) | (91) | (86) | (91) | (79) | (347) |

The implied variety preference at each store type is consistent with answers to the direct question about most preferred variety (see Tables 12 and 16). The full sample shows a very weak (statistically insignificant) implied preference for Red Delicious, while the direct question approach indicated a preference for McIntosh. This contrast is not a complete surprise in view of the aggregation across store types and the preference for Red Delicious at supermarkets.

The implied preference for red is consistent across store types and is statistically significant except at warehouse stores. The weakness of the preference for red at warehouse stores could be associated with the strong preference for McIntosh. However, the survey was not designed to estimate interaction effects.

rank is in direct correspondence with some measure of preference. As this is not the case, the results must be interpreted with some caution.

A preference for large size was statistically significant at each store type. A preference for waxed apples was implied except at warehouse stores, where customers indicated a very weak preference for unwaxed. A preference for unbruised apples was consistent across store types and was very strong at farm stores and warehouse stores. The relatively weak preference for unbruised at pick-your-own orchards and supermarkets could have resulted from unobservable bruises at some interview sites.

The implied preference for Connecticut grown apples was rather weak and is consistent with answers to the direct question about the importance of Connecticut grown in deciding which apples to buy if the comparison is limited to the full sample (see Tables 9 and 16). Results from the two measures of preference for Connecticut grown are not consistent when the comparison is made for each store type.

Considerable diversity in attribute preferences was indicated by unsolicited comments and by analysis of the implied preferences. The highly predominate preference for the larger size was not unanimous. Some customers commented that large apples result in waste by children who often consume only part of a large apple. Likewise, some customers expressed a preference for unwaxed apples.

3.7 Attribute Preferences in Relation to Awareness of the Promotion Programs

Data from the ranking experiment were subdivided with regard to awareness of each of the two promotion programs (see Table 17). In both cases the implied preference for low price, waxed, and unbruised was relatively weak among consumers aware of the promotion programs as compared to customers not aware of the promotion programs. Meanwhile, the implied preference for Connecticut grown was relatively strong among customers aware of the promotion programs. This combination of preferences is not a total surprise in that the ranking procedure involved a concurrent evaluation of several attributes. The greater the focus on Connecticut grown the smaller the opportunity for expressing preferences regarding some other attribute.

Table 17. ATTRIBUTE PREFERENCES IN RELATION TO AWARENESS OF PROMOTION PROGRAMS.

| Attribute | Preference and the Probability that the Indicated Preference Could Have Resulted from Chance Alone | | | |
|---------------|--|--------------------|--|--------------------|
| | Aware of the Connecticut Grown Promotion Program? | | Recall Having Heard a Radio Advertisement? | |
| | Yes | No | Yes | No |
| Price | Low 0.2173 | Low 0.0001 | Low 0.2853 | Low 0.0001 |
| Variety | Red Del. 0.4322 | Red Del. 0.7757 | Red Del. 0.6381 | Red Del. 0.5947 |
| Color | Red 0.0001 | Red 0.0001 | Red 0.0106 | Red 0.0001 |
| Size | Large 0.0001 | Large 0.0001 | Large 0.0001 | Large 0.0001 |
| Origin | CT 0.0251 | CT 0.7447 | CT 0.1047 | CT 0.4422 |
| Waxed | Yes 0.0303 | Yes 0.0001 | Yes 0.3050 | Yes 0.0001 |
| Bruised | No 0.4773 | No 0.0001 | No 0.6381 | No 0.0001 |
| (Sample Size) | (76) | (243) | (56) | (277) |

Several points should be considered in evaluating the implied preferences. The relatively weak preference for waxed apples among consumers aware of the promotion programs could reflect either a low priority of this attribute or a preference for unwaxed apples by a portion of the customers. Likewise, the statistically insignificant implied preference by each group for Red Delicious does not indicate that variety was of little concern for individual consumers. Variety preference could have been individually strong and divided almost evenly between Red Delicious and McIntosh.

Given a fixed level of other factors, customers are presumed to prefer a low price to a high price and to prefer an unbruised apple to a bruised apple. A weak preference for low price or absence of bruises indicates a low priority of the attribute relative to other attributes. Within the structure of the ranking experiment, awareness of the promotion programs

appears to reduce consumer sensitivity to high price and bruises.

3.8 Attribute Preferences in Relation to Importance of Connecticut Grown

Data on the ranking of apples were subdivided on the basis of answers to the direct question regarding the importance of Connecticut grown in deciding which apples to buy. The implied preference for Connecticut grown was surprisingly weak in the case of customers who rated Connecticut grown as either very important or somewhat important (Table 18). However, the implied preference for Connecticut grown has been weak in most subsamples.

Table 18. ATTRIBUTE PREFERENCES IN RELATION TO IMPORTANCE OF CONNECTICUT GROWN IN DECIDING WHICH APPLES TO BUY.

| Preference and the Probability that the Indicated Preference Could Have Resulted from Chance Alone | | |
|--|--|--|
| | Customers Who Rated Connecticut Grown as Important or Somewhat Important | Customers Who Rated Connecticut Grown as Not Important |
| Price | Low 0.0222 | Low 0.0001 |
| Variety | McIntosh 0.0007 | Red Delicious 0.0001 |
| Color | Red 0.0001 | Red 0.0001 |
| Size | Large 0.0001 | Large 0.0001 |
| Origin | CT 0.4551 | CT 0.2606 |
| Waxed | Yes 0.0100 | Yes 0.0001 |
| Bruised | No 0.0015 | No 0.0001 |
| (Sample Size) | (176) | (166) |

Division of the attribute preference data on the basis of declared importance of Connecticut grown revealed some interesting information regarding implied variety preference. Customers who rated Connecticut grown as either very

important or somewhat important expressed a highly significant implied preference for McIntosh (Table 18). Customers who rated Connecticut grown as not important expressed an even stronger preference for Red Delicious.

The implied preferences for low price, waxed and unbruised were slightly stronger among customers who rated Connecticut grown as not important than among customers who rated Connecticut grown as either very important or somewhat important.

3.9 Apples Purchased

As might be expected the quantity of apples purchased per customer varied widely among store types. Average purchases per customer were 22.0 pounds at pick-your-own orchards, 8.9 pounds at farm stores, 4.1 pounds at supermarkets, and 3.6 pounds at warehouse stores (Table 19). Many of the customers at farm stores and orchards purchased two varieties and some purchased three varieties. Each variety at each price purchased by a customer is considered to be a separate purchase. Pick-your-own customers made the largest number of purchases with 93 customers making 181 purchases.

Information on the quantity of apples that customers normally purchase at one time from that store or orchard is summarized in Table 20. Quantities actually purchased were generally consistent with the estimated normal purchase.

Quantities purchased on the survey day in relation to price at each store type are reported in Tables 21 and 22. At farm stores the average purchase size is clearly largest at the lowest price level. To some extent this may reflect a common farm store practice of selling the same variety at a lower price per pound for a larger quantity (such as a peck) as compared to a smaller quantity (such as a quart). Pick-your-own orchards had relatively low prices and large purchases even when the total amount per customer is split on a variety basis into two or three purchases. The survey data show little indication of a relationship between price and the size of individual purchase at supermarkets and warehouse stores.

Table 19. QUANTITY OF APPLES PURCHASED.

| Store Type | Number of Customers* | Number of Purchases** | Quantity in Pounds | Pounds per Customer |
|-----------------|----------------------|-----------------------|--------------------|---------------------|
| Farm Store | 97 | 137 | 862 | 8.9 |
| Pick-Your-Own | 93 | 181 | 2049 | 22.0 |
| Supermarket | 90 | 118 | 369 | 4.1 |
| Warehouse Store | 70 | 85 | 249 | 3.6 |

* The number of customers in this table includes only those customers with reported data on the quantity of apples purchased.

** Each variety at each price purchased by a customer is considered to be a separate purchase.

Table 20. QUANTITY OF APPLES NORMALLY PURCHASED AT ONE TIME FROM THIS STORE OR ORCHARD.

| Pounds | Percent of Customers | | | | |
|------------|----------------------|---------------|-------------|-----------------|-------------|
| | Farm Store | Pick-Your-Own | Supermarket | Warehouse Store | Full Sample |
| 4 or less | 36.9 | 6.3 | 77.2 | 79.8 | 48.7 |
| 5 to 9 | 21.4 | 10.5 | 21.7 | 17.9 | 17.9 |
| 10 to 19 | 27.2 | 27.4 | 1.1 | 1.2 | 15.0 |
| 20 to 29 | 7.8 | 23.2 | 0.0 | 0.0 | 8.0 |
| 30 or more | 2.9 | 28.4 | 0.0 | 0.0 | 8.0 |
| No answer | 3.9 | 4.2 | 0.0 | 1.2 | 2.4 |

A summary of information on planned use of apples is shown in Table 23. Consumption of at least a portion of the apples as fresh fruit was planned by over 90 percent of the customers at all store types. As compared to customers at other store types, pick-your-own customers expressed the most diversity in planned use. A relatively large percentage of these customers planned to use apples for pies, applesauce, and other uses. Farm store customers indicated plans for a somewhat more diverse use than customers at supermarkets and warehouse stores.

Table 21. QUANTITY OF APPLES PURCHASED IN RELATION TO PRICE AT THE FARM STORES AND PICK-YOUR-OWN ORCHARDS.

| Price. Cents per Pound | Farm Store | | | Pick-Your-Own | | |
|------------------------|--------------------|---------------------|---------------------|--------------------|---------------------|---------------------|
| | Quantity in Pounds | Number of Purchases | Pounds per Purchase | Quantity in Pounds | Number of Purchases | Pounds per Purchase |
| 34 or less | 160 | 11 | 14.5 | 199 | 16 | 12.4 |
| 35 to 44 | 48 | 7 | 6.9 | 1842 | 142 | 13.0 |
| 45 to 54 | 141 | 37 | 3.8 | 0 | 0 | 0.0 |
| 55 to 64 | 158 | 23 | 6.9 | 0 | 0 | 0.0 |
| 65 to 74 | 112 | 23 | 4.9 | 0 | 0 | 0.0 |
| 75 to 84 | 174 | 23 | 7.6 | 0 | 0 | 0.0 |
| 85 or more | 46 | 12 | 3.8 | 0 | 0 | 0.0 |

Table 22. QUANTITY OF APPLES PURCHASED IN RELATION TO PRICE AT THE SUPERMARKETS AND WAREHOUSE STORES.

| Price. Cents per Pound | Supermarket | | | Warehouse Store | | |
|------------------------|--------------------|---------------------|---------------------|--------------------|---------------------|---------------------|
| | Quantity in Pounds | Number of Purchases | Pounds per Purchase | Quantity in Pounds | Number of Purchases | Pounds per Purchase |
| 34 or less | 0 | 0 | | 34 | 9 | 3.8 |
| 35 to 44 | 14 | 2 | 7.0 | 24 | 7 | 3.4 |
| 45 to 54 | 12 | 4 | 3.0 | 40 | 16 | 2.5 |
| 55 to 64 | 22 | 7 | 3.1 | 125 | 41 | 3.0 |
| 65 to 74 | 223 | 72 | 3.1 | 19 | 5 | 3.8 |
| 75 to 84 | 73 | 30 | 2.4 | 5 | 3 | 1.7 |
| 85 or more | 9 | 3 | 3.0 | 0 | 0 | 0.0 |

3.10 Distance Traveled and Frequency of Purchase

Distances traveled to the store or orchard varied widely among store types. Information on the percentage of customers traveling various distances to each type is presented in Table 24.

Average one way distances were 26.6 miles to farm stores and 10.3 miles to pick-your-own orchards. These averages are based on all reported distances even though some of the trips may have been primarily for purposes not directly related to

the purchasing of apples. The decision to include all reported distances was based on an assumption that visiting a farm store or picking apples could be an integral part of a multiple purpose trip.

Table 23. PLANNED USE OF APPLES PURCHASED.

| Use | Percent of Customers | | | | |
|------------|----------------------|---------------|--------------|-----------------|-------------|
| | Farm Store | Pick-Your-Own | Super-market | Warehouse Store | Full Sample |
| Eat fresh | 94.2 | 95.8 | 91.3 | 91.6 | 93.3 |
| Pies | 41.7 | 68.4 | 25.0 | 26.2 | 40.9 |
| Applesauce | 15.6 | 32.6 | 3.2 | 16.7 | 17.1 |
| Other | 7.8 | 15.8 | 4.3 | 1.2 | 7.5 |

Table 24. DISTANCE TRAVELED TO STORE OR ORCHARD.

| Miles, One Way | Percent of Customers | | | | |
|----------------|----------------------|---------------|--------------|-----------------|-------------|
| | Farm Store | Pick-Your-Own | Super-market | Warehouse Store | Full Sample |
| 4 or less | 21.4 | 13.7 | 58.7 | 33.3 | 31.3 |
| 5 to 9 | 22.3 | 31.6 | 31.5 | 44.0 | 31.8 |
| 10 to 19 | 26.2 | 41.1 | 8.7 | 17.9 | 23.8 |
| 20 to 79 | 23.3 | 13.7 | 1.1 | 0.0 | 10.2 |
| 80 or more | 6.8 | 0.0 | 0.0 | 4.7 | 2.9 |

In the case of supermarket and warehouse stores, a one way distance of greater than 20 miles was judged to indicate a high probability that the primary purpose of the trip was not directly related to the purchase of apples. With a few trips of greater than 20 miles excluded, the average distances were 4.5 miles to supermarkets and 6.0 miles to warehouse stores.

The reported frequencies of apple purchases at interview sites were higher than expected. The estimated annual number of apple purchases at the interview site averaged 13.9 at farm stores, 2.0 at pick-your-own orchards, 42.1 at supermarkets, and 43.5 at warehouse stores. Additional information on the frequency of purchases is shown in Table 25. The estimated

frequency of pick-your-own purchases is probably the most accurate. The activity is seasonal, infrequent and clearly distinguishable from other shopping. Estimates of the annual frequency of apple purchases at the other store types probably involved an excessive emphasis on the frequency of purchases during the fall season.

Table 25. FREQUENCY OF APPLE PURCHASES AT THE INTERVIEW SITE.

| Number of Purchases Per Year | Percent of Customers | | | | |
|------------------------------|----------------------|---------------|--------------|-----------------|-------------|
| | Farm Store | Pick-Your-Own | Super-market | Warehouse Store | Full Sample |
| 1 to 3 | 51.5 | 82.1 | 5.4 | 1.2 | 36.6 |
| 4 to 6 | 13.6 | 11.6 | 3.3 | 1.2 | 7.8 |
| 7 to 12 | 5.8 | 2.1 | 8.7 | 9.5 | 6.4 |
| 13 to 20 | 0.0 | 0.0 | 0.0 | 1.2 | 0.3 |
| more than 21 | 20.4 | 0.0 | 78.3 | 78.6 | 42.5 |
| no answer | 8.7 | 4.2 | 4.4 | 8.3 | 6.4 |

3.11 Household Size and Income Characteristics

Household characteristics of the customers interviewed are reported in Tables 26, 27 and 28. There are no major differences among store types. Household size and the number of employed adults averaged somewhat higher at pick-your-own orchards than at other store types. The percentage of customers with a household income of over \$50,000 was greater at farm stores and supermarkets than at warehouse stores and pick-your-own orchards. Warehouse store customers had the lowest percentage of households with income over \$50,000 and the highest percentage of households with income of \$30,000 or less (Table 28). A joint consideration of household size and income at the various store types indicates that customers at pick-your-own orchards and warehouse stores are likely to be somewhat more sensitive to price than customers at the other store types. This inference is consistent with the percentage distribution of customers that considered price to be a very important factor in deciding which apples to buy (Table 8). However, income and price sensitivity differences among store types are small.

Table 26. NUMBER OF PERSONS IN THE HOUSEHOLD BY AGE GROUP.

| Age Group in Years | Average Number of Persons by Location of Interview | | | | |
|-----------------------|---|-------------------|------------------|--------------------|----------------|
| | Farm Store | Pick- Your-Own | Super- market | Warehouse Store | Full Sample |
| less than 5 | 0.33 | 0.49 | 0.32 | 0.41 | 0.38 |
| 5 to 18 | 0.71 | 1.04 | 0.66 | 0.62 | 0.75 |
| 18 to 65 | 2.06 | 2.09 | 2.18 | 1.84 | 2.05 |
| over 65 | 0.03 | 0.09 | 0.12 | 0.31 | 0.13 |
| all ages | 3.12 | 3.72 | 3.28 | 3.17 | 3.32 |

3.12 Evaluation of Market Types

Consumers were asked to evaluate three market types for each of five service characteristics and for overall level of service. The three market types were pick-your-own orchards, roadside markets, and supermarkets. The characteristics were: (1) availability of products that you want; (2) low price; (3) high quality; (4) enjoyable trip or experience; (5) convenience of location; and; (6) overall rating. All evaluations were made on a scale of one (lowest) to five (highest).

The ratings were consistent with expectations. Pick-your-own-orchards received the highest average rating from customers at all four store types with regard to price, product quality, and enjoyable trip or experience (see Tables 29, 30 and 31). Within this group the lowest rating for pick-your-own orchards was the rating with regard to price by customers at supermarkets.

Supermarkets received the highest average rating from customers at all four store types with regard to convenience of location (see Table 32). Within this group of ratings the lowest average rating was from customers at pick-your-own orchards. This seems reasonable in that a relatively high percentage of these customers probably live some distance from supermarkets.

Table 27. NUMBER OF EMPLOYED ADULTS PER HOUSEHOLD.

| Number of Adults Employed | Percent Distribution by Number of Persons Employed and by Location of Interview | | | | |
|---------------------------------|--|-------------------|------------------|--------------------|----------------|
| | Farm Store | Pick- Your-Own | Super- market | Warehouse Store | Full Sample |
| 0 | 5.8 | 2.1 | 9.8 | 13.1 | 7.5 |
| 1 | 26.2 | 23.2 | 37.0 | 27.4 | 28.3 |
| 2 | 54.4 | 57.9 | 34.8 | 44.0 | 48.1 |
| 3 | 3.9 | 5.3 | 12.0 | 4.8 | 6.4 |
| 4 or more | 9.7 | 11.6 | 6.5 | 10.7 | 9.6 |

Table 28. HOUSEHOLD INCOME.

| Annual Income (\$1,000) | Percent Distribution by Income and by Location of Interview | | | | |
|----------------------------|--|-------------------|------------------|--------------------|----------------|
| | Farm Store | Pick- Your-Own | Super- market | Warehouse Store | Full Sample |
| less than 10 | 2.0 | 2.1 | 5.4 | 0.0 | 2.4 |
| 10 to 20 | 3.9 | 3.2 | 5.4 | 13.1 | 6.2 |
| 20 to 30 | 19.6 | 10.6 | 17.4 | 26.2 | 18.3 |
| 30 to 40 | 16.7 | 27.7 | 17.4 | 16.7 | 19.6 |
| 40 to 50 | 15.7 | 21.3 | 19.6 | 12.0 | 17.2 |
| over 50 | 23.5 | 19.1 | 23.9 | 10.7 | 19.6 |
| no answer | 18.6 | 16.0 | 10.9 | 21.4 | 16.7 |

Ratings with regard to availability of products did not show a strong preference among market types (see Table 33). In three of four cases the highest average rating was for the store type most similar to the location of the interview.

4. Summary and Suggested Marketing Strategies

The percentage of customers aware of the Connecticut Grown program varied from 8.7 at farm stores to 32.6 at pick-your-own orchards and averaged 21.9 for the full sample. The percentages of customers who recalled having heard a radio

advertisement promoting Connecticut apples were somewhat lower and followed the same pattern across store types.

Table 29. EVALUATION OF MARKET TYPES WITH REGARD TO PRICE.

| Type of Market | Average of Ratings Scaled from 1 (lowest) to 5 (highest) by Location of Interview | | | | |
|-----------------------|---|---------------|--------------|-----------------|-------------|
| | Farm Store | Pick-Your-Own | Super-market | Warehouse Store | Full Sample |
| Pick-Your-Own Orchard | 4.4 | 4.2 | 3.9 | 4.3 | 4.2 |
| Roadside Market | 4.0 | 3.2 | 3.1 | 3.4 | 3.5 |
| Supermarket | 3.2 | 2.7 | 3.7 | 3.9 | 3.4 |

Table 30. EVALUATION OF MARKET TYPES WITH REGARD TO PRODUCT QUALITY.

| Type of Market | Average of Ratings Scaled 1 (lowest) to 5 (highest) by Location of Interview | | | | |
|-----------------------|--|---------------|--------------|-----------------|-------------|
| | Farm Store | Pick-Your-Own | Super-market | Warehouse Store | Full Sample |
| Pick-Your-Own Orchard | 4.6 | 4.7 | 4.4 | 4.7 | 4.6 |
| Roadside Market | 4.4 | 3.7 | 4.1 | 4.2 | 4.1 |
| Supermarket | 2.9 | 2.5 | 4.2 | 3.5 | 3.3 |

Customers were asked to rate the importance of appearance, texture, sweetness, price, and Connecticut grown in deciding which apples to buy. Appearance was rated very important by 76.5 percent of the customers, while Connecticut grown was rated very important by only 16.8 percent of the customers.

The sample data clearly indicate a positive relationship between awareness of the promotion programs and a declared preference for Connecticut grown apples.

Table 31. EVALUATION OF MARKET TYPES WITH REGARD TO ENJOYABLE TRIP OR EXPERIENCE.

| Type of Market | Average of Ratings Scaled 1 (lowest) to 5 (highest) by Location of Interview | | | | |
|-----------------------|--|---------------|--------------|-----------------|-------------|
| | Farm Store | Pick-Your-Own | Super-market | Warehouse Store | Full Sample |
| Pick-Your-Own Orchard | 4.6 | 4.7 | 4.2 | 4.6 | 4.5 |
| Roadside Market | 3.8 | 3.0 | 3.4 | 3.7 | 3.5 |
| Supermarket | 1.9 | 1.6 | 3.0 | 2.9 | 2.4 |

Table 32. EVALUATION OF MARKET TYPES WITH REGARD TO CONVENIENCE OF LOCATION.

| Type of Market | Average of Ratings Scaled from 1 (lowest) to 5 (highest) by Location of Interview | | | | |
|-----------------------|---|---------------|--------------|-----------------|-------------|
| | Farm Store | Pick-Your-Own | Super-market | Warehouse Store | Full Sample |
| Pick-Your-Own Orchard | 3.3 | 3.6 | 3.2 | 3.2 | 3.3 |
| Roadside Market | 3.8 | 3.4 | 3.5 | 3.3 | 3.5 |
| Supermarket | 4.2 | 3.9 | 4.4 | 4.6 | 4.2 |

A customer listing of three favorite apple varieties in order of preference revealed McIntosh to be the most popular first choice at farm stores, pick-your-own orchards, and warehouse stores. Red Delicious was the most popular first choice at supermarkets. While the same seven varieties were dominant at each of the three preference levels, the list included 26 favorite varieties.

Several marketing opportunities stem from existing varietal preferences. The most obvious case is the strong popularity of McIntosh and the association between preference for McIntosh and preference for Connecticut grown. The rather high regard for Macoun and the wide diversity of variety preferences suggest an opportunity for farm stores and orchards to

emphasize the availability of varieties not commonly found in supermarkets.

Table 33. EVALUATION OF MARKET TYPES WITH REGARD TO AVAILABILITY OF PRODUCTS.

| Type of Market | Average of Ratings Scaled from 1 (lowest) to 5 (highest) by Location of Interview | | | | |
|-----------------------|---|---------------|--------------|-----------------|-------------|
| | Farm Store | Pick-Your-Own | Super-market | Warehouse Store | Full Sample |
| Pick-Your-Own Orchard | 3.8 | 4.2 | 3.7 | 4.2 | 4.0 |
| Roadside Market | 3.9 | 3.7 | 3.9 | 3.9 | 3.8 |
| Supermarket | 3.3 | 3.1 | 4.1 | 4.1 | 3.7 |

The high rating of farm stores and pick-your-own orchards with regard to both quality and enjoyable trip or experience indicate an opportunity for emphasis on these factors rather than price. However, a farm store that sells numerous products may find an advantage in pricing apples at a price somewhat lower than the price that would maximize profits on apples. A bargain on apples may attract customers who will purchase additional items with a higher profit margin.

Customer ranking of eight apples with seven attributes in various combinations revealed a preference for low price, red color, large size, waxed, and unbruised. The implied variety preferences at individual store types were roughly similar to those indicated by the listing of favorite varieties. The implied preference for Connecticut grown was rather weak and is consistent with answers to the direct question about the importance of Connecticut grown if the comparison is limited to the full sample.

The preference for a high percentage of red color is of particular interest and concern in the marketing of Red Delicious. Some Connecticut grown strains of Red Delicious with excellent taste and texture are light red or mixed red, yellow and green. Successful marketing of these apples in competition with western Red Delicious may require point-of-purchase sampling and advertisements that stress taste and

texture in order to counteract the established preference for dark red.

While a preference for large size was clearly expressed through the ranking procedure, a few customers prefer small apples and volunteered an explanation. Small apples are convenient for consumption without waste by children and adults with a modest appetite. Display of a brief statement such as "Sized for a Modest Appetite" might help move smaller apples.

An opportunity may exist for promotion of Connecticut grown unwaxed apples. The preference for waxed was not as strong among customers aware of the promotion programs as among customers not aware of the promotion programs. Most of the customers who select waxed apples are probably expressing a preference for shiny apples with little thought to the fact that the shine is achieved by waxing. Advertisements could stress the opportunity for achieving a natural shine by buffing prior to consumption or display. In the absence of this approach Connecticut growers should probably wax most of the crop. Meanwhile, growers should continue to provide unwaxed apples for customers with a preference for unwaxed.

Preferences implied in the ranking experiment indicate that customers aware of the promotion programs were less sensitive to price than other customers. The preference for Connecticut grown was apparently stronger than the preference for low price among a substantial number of customers aware of the promotion programs.

In a similar manner, customers aware of the promotion programs placed less emphasis on bruises than other customers. This result indicates that revenue might be increased in some markets by limiting the use of the Connecticut Grown logo to apples with bruises or some other imperfection. Customers with a preference for Connecticut grown products would be guided toward the apples less easily sold to other customers. Practical opportunities, however, for selective use of the Connecticut Grown logo to sell apples with some imperfection are limited by the fact that most apples are graded. Restricting the use of the Connecticut Grown logo to lower grades would be rather obvious to customers. A subdivision within Federal grades would require very careful grading. Moreover, the

advantage of the subdivision within Federal grades might decline over time as customers begin to associate the Connecticut Grown logo with low quality.

While developed for other purposes, a recently established Connecticut Seal of Quality program may lower the average grade of apples sold under the unrestricted Connecticut Grown logo. The new program was developed to promote and to take advantage of a linkage between Connecticut grown and high quality. To qualify for the Connecticut Quality Seal Grade apples must be grown in Connecticut, have a minimum diameter of 2.5 inches, and meet strict specifications for freshness and quality. This new grade should initially increase total revenue as customers with a preference for Connecticut grown will be subdivided on the basis of willingness to pay a higher price for higher quality. The long run implications are more complex.

Marketing of a substantial percentage of the higher quality apples under the Connecticut Quality Seal program would presumably lower the average grade of apples sold under the unrestricted Connecticut Grown logo. The result could be detrimental to the more comprehensive Connecticut Grown program. On the other hand, marketing a small percentage of the crop under the Quality Seal program would have little impact on the average grade of the remainder of the crop. Moreover, the Connecticut Quality Seal program may promote a general association between Connecticut grown and high quality and thereby indirectly promote all Connecticut grown apples. Consumer preference data from this survey provide only a general indication of the issues to be considered in coordinating the Connecticut Seal of Quality program with the more general Connecticut Grown program.

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Appendix A

University of Connecticut
Department of Agricultural Economics
and Rural Sociology

APPLE MARKETING SURVEY

Interviewer: _____
Location: _____
Date: _____

1. What apples are you purchasing today?

| | | | |
|----------|-------|-------|-------|
| variety | _____ | _____ | _____ |
| size | _____ | _____ | _____ |
| price | _____ | _____ | _____ |
| quantity | _____ | _____ | _____ |

2. How are you going to use these apples?

(1) eat them fresh _____
(2) pies _____
(3) applesauce _____
(4) other _____, _____

3. How often do you purchase apples here? _____

4. What quantity do you normally purchase? _____

5. How many miles did you travel (one-way) to purchase these apples?

6. What are your three favorite varieties of apples? Please list in order of preference starting with the most preferred variety.

(1)

(2)

7. The eight apples on the table have several attributes in various combinations. We are seeking information on the relative importance to consumers of these attributes. Please rank the apples in order of your preference.

Preference Rank Apple #

(highest) 1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

7 _____

(lowest) 8 _____

8. Please rate the importance of the following factors in deciding which apples to buy:

- (1) Appearance
 (2) Sweetness
 (3) Texture
 (4) Connecticut Grown
 (5) Price
 (6) Other: _____

| | Very Important | Somewhat Important | Not Important |
|--|----------------|--------------------|---------------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

9. On a scale of 1 (lowest) to 5 (highest) please rate each type of market for each service characteristic:

| Type of Market | Service Characteristic | | | | Overall rating |
|-----------------------|--|-----------|--------------|------------------------------|----------------|
| | Availability of products that you want | Low price | High quality | Enjoyable trip or experience | |
| Pick-Your-Own Orchard | | | | | |
| Roadside Market | | | | | |
| Supermarket | | | | | |

10. If apple prices were to increase by 25 percent would you substitute some other fruit for apples? _____ If yes, what fruit?

11. Have you heard of the Connecticut Grown promotion program?

12. During September did you hear a radio advertisement promoting Connecticut apples?

13. How many persons in your households are:

under 5 years old _____
5 to 18 _____
18 to 65 _____
over 65 _____

14. How many adults in your household are employed? _____

15. Please indicate the income group of your household:

less than \$10,000 _____
\$10,000 to 20,000 _____
\$20,000 to 30,000 _____
\$30,000 to 40,000 _____
\$40,000 to 50,000 _____
over \$50,000 _____

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Food Marketing Policy Center
1376 Storrs Road, Unit 4021
University of Connecticut
Storrs, CT 06269-4021

Tel: (860) 486-1927
FAX: (860) 486-2461
email: fmpc@uconn.edu
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