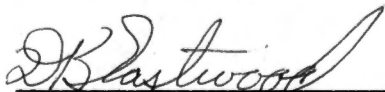


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ECONOMIC ANALYSIS OF IN-STORE EXPERIMENTS REGARDING SALES OF LOCALLY
GROWN TOMATOES TO URBAN CONSUMERS IN KNOX COUNTY, TENNESSEE

A Thesis

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ABSTRACT

Limited market access is a major problem facing many small fruit and vegetable producers. Developing viable markets in which small producers can sell their produce is of particular importance to Tennessee growers who are small relative to producers presently utilized by the commercial-wholesale market system for fresh produce. Increasing amounts of research are being collected on the possibilities of various forms of direct-marketing operations as alternatives for small producers. One such alternative form is sales of locally grown produce through urban supermarket outlets. The purpose of this study was to gather information from urban consumers as to the receptability of locally grown produce offered for sale in their local supermarket. Two methods were employed to address this objective--an in-store pricing and labeling experiment and a mail-in questionnaire survey.

Vine-ripened Tennessee-grown tomatoes were the locally grown produce item tested. The in-store study was conducted in three Knoxville supermarkets in July of 1986. The in-store experiment involved incremental price adjustments to the Tennessee tomato in order to test the sensitivity of consumers to price changes of the locally grown tomato relative to a base price for the tomatoes that the store normally stocked. In conjunction with the pricing treatments, the Tennessee Country Fresh (TCF) logo was used to identify the origin of the locally grown tomato. Therefore, a possible bias among consumers for or against locally grown tomatoes could be revealed.

Each purchaser of bulk display tomatoes was given a postage paid mail-in questionnaire. The questionnaire was designed to assess consumers' attitudes, perceptions, and preferences for locally grown produce in general and TCF tomatoes specifically. Socioeconomic information of purchasers was also collected. The questionnaire was designed not only to gather information concerning attitudes of consumers with regard to locally grown produce, but also to provide possible insight into purchasers' actual marketplace behaviors during the in-store experiment.

Results from the in-store experiment revealed a preference among the purchasers in this study for locally grown tomatoes. This preference was based on physical attributes of the tomatoes. The logo had a positive effect on increasing sales of the locally grown tomato. Some consumers in the study preferred the locally grown tomato, and they were willing to pay a somewhat premium price for the Tennessee-grown tomato.

Results from the questionnaire survey reinforced the in-store experiment results. Consumers stated that origin of fresh tomatoes was of concern to them, and therefore they were influenced by the TCF logo to buy the locally grown tomato. Consumers rated the TCF tomato better than other tomatoes in terms of freshness, taste, and appearance, which lead a majority of the purchasers to state that they would patronize a store which featured TCF produce.

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CHAPTER I

INTRODUCTION

Fresh Produce Distribution and Consumption

In the early stages of the fruit and vegetable industry in the United States, a direct farmer-to-consumer marketing structure existed. Areas of production were located near densely populated areas. Farmers sold their products directly to consumers, small local stores, or to small processors [Free]. There were many of these small truck farmers, and no one independently captured a large segment of the market, nationally. As the population increased and the country expanded, this type of system became less efficient in meeting the demands of the consumer. Technological innovations brought about increased efficiency in production and distribution and a highly efficient communication system. Further advances in transportation, refrigeration, storage, packaging, and communication helped to change the structure of the industry [Free].

Today's fruit and vegetable industry is characterized by specialized commodity production in key geographic areas suited for large scale production. Most of the production occurs on large farms, which continue to capture most of the growth in the expanding fresh fruit and vegetable industry. According to a report by LeVeen and Gustafson, this tendency for production to be concentrated is related more to the effects of markets and less related to technical conditions.

The present, and most predominant, marketing system involves large retail grocery chains and/or wholesalers who buy large quantities, often in the field, and transport the produce to large regional warehouses where it is distributed to retail stores in that area. Retailers are interested in purchasing produce through this type of system because they can be assured of a highly standardized product and a consistent, dependable supply [Free]. This makes it difficult for the small fruit and vegetable producer who can not supply the large quantities of standardized products required to compete in this commercial, wholesale-retail market.

Consumption of fresh fruits and vegetables has increased 22 percent over the past 10 years [Produce Marketing Almanac, 1986]. This increase in consumption is partly attributed to Americans seeking a healthier life and partly to the year-round availability of fresh fruits and vegetables today [Produce Marketing Almanac, 1986]. Consumers are becoming increasingly concerned over nutritional value, freshness, and palatability of fresh fruits and vegetables [Williams]. These changes may provide an opportunity for local producers to supply local retailers with fresher products that will satisfy the consumers' desires for nutrition and taste. The term "local" is used throughout this report to refer to producers, retailers, wholesalers, or consumers located in Tennessee.

Renewed Interest in Direct Marketing of Fresh Produce

Rising food prices along with consumers' heightened awareness of the importance of fresh fruits and vegetables in their diets have led

to a renewed interest in the possibilities of direct marketing [Free]. On average, farmers receive about \$.33 of the consumers' food dollar while \$.67 goes for marketing costs [Food Retailing Review]. By providing some of the marketing services through direct marketing, farmers are able to capture a larger portion of the consumers' food dollar and increase their incomes [Vroomen, Beierlein, and Connell, 1986].

In 1976 the Farmer-to-Consumer Direct Marketing Act was passed as a result of increased interest by consumers and producers for direct buying and selling of farm products [Henderson and Lindstrom]. The purpose of the act is to promote the development of agricultural products, ascertain the extent of direct marketing, and to show benefits to consumers and farmers from direct marketing [Henderson and Lindstrom]. Many small farmers may be able to gain access into fresh produce markets by utilizing direct-market operations, thus bypassing the conventional marketing system.

There are typically four types of direct-market outlets: pick-your-own operations, roadside stands or markets, farmers' markets, and sales from a farm building. In a broad context, direct marketing refers to any marketing system that excludes one or more middlemen [Brooker]. Therefore, direct marketing would also include retail stores that buy products from individual local producers.

Pick-your-own operations require that consumers harvest the produce themselves. This type of outlet is sometimes attractive to both consumers and producers in that both groups can share in cost savings. Harvesting and some marketing costs normally incurred by

producers can be avoided since the consumer bears much of the cost of these two activities. Consumers feel they benefit by being able to select the produce that is freshest and of the highest quality [Henderson and Lindstrom]. Consumers may also benefit by being able to buy produce at a lower price as compared to the other forms of direct-market outlets [Henderson and Lindstrom].

Roadside stands are generally owned and operated by a single family that produces part or all of the produce sold. These outlets usually offer a few products on a seasonal basis with temporary shelters for displaying produce. Roadside markets are usually a more permanent facility and larger than roadside stands. Critical to roadside stands (markets) is the location, due to the fact that most sales are to repeat customers [Free]. Since much of the costs associated with marketing (transportation to shipping points, shipping containers, handling charges by wholesalers, etc.) is eliminated, farmers can increase their incomes while offering produce at an attractive price to consumers [Henderson and Lindstrom].

Farmers' markets are designated areas with physical facilities that are used by farmers who sell their products directly to the consumer [Brooker]. Most of the farmers' markets are within or near urban areas, and many of the facilities are owned by state or local governments [Free]. Some of these markets are owned and maintained by farmer cooperatives. Consumer prices are generally lower at farmers' markets than in retail food stores, and a wide variety of produce is offered, not all of which is locally grown [Henderson and Lindstrom].

Some farmers sell their products directly to consumers from a farm building located on the premises where the produce is grown. The building is often used for purposes other than a sales outlet. A variety of sizes of produce and stages of ripeness are usually offered through this form of outlet. Some farmers selling their produce through wholesale channels use this type of direct marketing to dispose of produce that can not be sold to the wholesale buyers [Henderson and Lindstrom].

Retail stores that buy products directly from local producers is another form of direct marketing. Retailers may buy fresh produce directly from farmers to be sold in retail outlets, or they may utilize a wholesaler to supply fresh produce that has been purchased from local growers. However, retail food stores predominantly utilize the commercial marketing system because they can be assured a highly standardized product and a consistent, dependable supply [Free].

Access to Commercial Markets

Structural changes in the fruit and vegetable industry over the last fifty years have created a barrier which many small farmers are finding increasingly difficult to overcome. Limited market access is the major problem confronting small fruit and vegetable producers [Free]. Market access is of particular importance to Tennessee fruit and vegetable producers who are small relative to suppliers utilized by the current wholesale merchants. The solution to this barrier may depend upon the development of new, viable market alternatives for these small scale fruit and vegetable producers.

Tennessee growers are further excluded from the present commercial marketing system in that substantial amounts of capital are needed to adopt new technologies that are being implemented in major produce production areas. In the Tennessee Valley region, 90 percent of the fruit and vegetable growers have gross farm sales of less than \$20,000 [Free]. It is very difficult for these growers to acquire the financing needed to compete with large scale producers. For these reasons expansion and even survival as a produce grower for many farmers may depend on development of new markets where their products can be effectively merchandised. One such "new" marketing alternative being considered in several parts of the United States is the increased sale of local produce to consumers at supermarkets outlets [Trotter and Brewer].

Because effective marketing involves providing consumers with the products they desire, information gathered on consumers' attitudes toward and perceptions of locally grown produce should be beneficial to fruit and vegetable growers desiring to pursue sales to local retailers. Through such information producers and retailers may be better able to satisfy the demand of consumers for locally grown produce, if such demand exists. Socioeconomic information about the consumers that purchase local produce should be of benefit to retailers in determining target groups for promotional campaigns. Through careful evaluation of information, producers and retailers should be better able to determine marketing strategies that will be best suited for their operations.

Eastwood, Orr, and Brooker, in their study dealing with various fresh produce outlets, concluded that in order for local growers to increase local sales, access to supermarkets would be essential, and consumers' perceptions and patronage of direct-market outlets could be improved. These conclusions were based on consumers' stated preferences. Actual in-store experiments would be required to determine whether consumers' actual market behaviors match their stated behaviors. This study was based on their findings. The purpose of this study is to observe consumers' actual marketplace behaviors and to collect information from the consumer on their attitudes, perceptions, and preferences, when confronted with locally grown produce offered for sale at their local supermarket outlets.

Objectives

The purpose of this study was to conduct an in-store produce sales experiment to examine urban supermarket shoppers' purchasing behaviors when confronted with locally grown produce. The specific objectives were to:

- 1) measure and evaluate consumers' actual retail store purchases of locally grown produce when confronted with various pricing and labeling situations;
- 2) analyze the perceptions, attitudes, and socioeconomic characteristics of retail customers who purchase bulk display produce; and

- 3) estimate the impact of labeling locally grown produce as grown in Tennessee by the use of a logo and to evaluate the effectiveness of that labeling.

CHAPTER II

REVIEW OF LITERATURE

The success of the small scale produce farmer may depend upon overcoming market barriers that have been created by the present commercial-wholesale marketing system. Realizing this, some researchers have directed efforts toward obtaining information that would aid the small scale produce grower in competing in the conventional fresh produce marketing system.

In recent years increasing amounts of research have been conducted regarding the small scale fruit and vegetable farmer and the viability of direct marketing [Kezis, King, Toensmeyer, Jack, and Kerr]. However, much of the research has centered on farmer-to-consumer forms of direct marketing such as: farmers' markets, pick-your-own operations, roadside stands, and sales from on premises farm buildings. However, little research has been conducted on the possibilities of direct marketing by local producers to retailers and wholesalers. Although farmer-to-wholesaler-to-retailer is the direct-marketing form most pertinent to this study, information gathered from various other forms of direct-marketing studies are beneficial. Of particular importance is consumers' attitudes, perceptions, and preferences of fresh produce in general, and of locally grown produce specifically.

Consumers' Attitudes, Perceptions, and Preferences

Concerning Fresh Produce

Through a mail-in questionnaire survey conducted by researchers at the Maine, Delaware, and West Virginia Agricultural Experiment Stations, consumers stated that quality was the primary factor in selecting produce [Kezis, King, Toensmeyer, Jack, and Kerr]. Consumers rated produce quality at direct-market outlets superior to quality of grocery store produce. Consumers indicated that appearance and price were the second and third most important factors for selecting produce. Overall, the reason respondents utilized direct markets was for quality and good prices. In a similar study by Marion dealing with consumer attitudes and shopping behavior, urban shoppers rated direct-market outlets highest for quality while supermarkets received high ratings for convenience and variety.

Connell, Beierlein, and Vroomen found that the most important factors for selection of fresh produce by consumers were quality, appearance, nutritional value, and the ability to buy a desired quantity. They also found that even though origin is not a major factor in selecting produce, consumers preferred locally grown produce to produce from other origins based on freshness, taste, appearance, and nutritional value. In evaluating direct-market produce, even nondirect-market shoppers rated direct-market produce higher than supermarket produce in terms of freshness, quality, appearance and price.

Consumers' attitudes and perceptions regarding fresh produce for sale at various outlets in Knox County, Tennessee, were obtained from personal interviews with randomly selected residents [Eastwood, Orr, and Brooker]. Five specific fresh produce commodities were given special emphasis: apples, broccoli, cabbages, peaches, and tomatoes. In determining the satisfaction level of the selected commodities in terms of retail outlets, tomatoes had the lowest rating for supermarkets, while broccoli and cabbages had the highest ratings. The percentages were approximately equal across items for the other outlets. With regard to the purchase of locally grown produce, consumers were asked to indicate which commodities they would be willing to pay higher prices for over commodities grown elsewhere. One-quarter of the respondents were willing to pay higher prices for locally grown produce as opposed to produce grown out-of-state. The most positive result was for tomatoes. The authors concluded that there did not seem to be an inbred bias for or against out-of-state produce. The researchers also found that consumers prefer to buy produce from bulk displays. This result is consistent with interviews of retailers in the four major Tennessee cities in which they stated that consumers prefer to buy produce from bulk displays in order to choose the desired quantity, color, size, and maturity [The Packer, 1984].

Locally Grown Fruits and Vegetables in Retail Outlets

A study was conducted by Trotter and Brewer dealing with consumer reactions to fresh apples marketed in Pennsylvania. Information

concerning types of retail outlets were obtained from consumers through mail-in questionnaires. Consumers bought most of their fresh apples in supermarkets due to convenient store location. When asked about origin of the apples they purchased, over half of the respondents had no preferred source. Of those respondents who did express a preference, almost all stated a preference for Pennsylvania-grown apples. Interior characteristics such as juiciness, crispness, and firmness were most important in evaluating quality. Contrary to beliefs of many merchandisers, appearance was not ranked as high.

A subsequent in-store experiment was conducted to assess actual marketplace behaviors of consumers. Customers selected apples from identical bulk displays containing locally grown Pennsylvania apples and Washington apples. Large signs indicating the origin of the apples were used to identify each bin. Sales volume data along with taste test results were obtained. The findings from the in-store experiment paralleled those from the mail-in survey in that consumers preferred Pennsylvania-grown apples in the marketplace. The authors concluded that as long as Pennsylvania apples are of comparable quality with apples from other origins, that they can match competition and may even be able to outsell the competition within the state.

In a recent research report by the Agricultural Marketing Service, produce buyers were asked questions pertaining to the use of locally grown Virginia produce for retail sale. Buyers indicated several problems related to local produce buying. Buyers stated that lack of consistent quality was a major problem. Also related to this

problem are uneven sizing and grading of produce and with products being too mature. Another stated problem is the lack of advance notice of product availability. Buyers also indicated that grower organizations would be beneficial when buying from local growers. By organizing, local growers could better meet the requirements of buyers. They stated that it would be easier for growers to supply large volumes of consistent quality produce and, possibly, for longer periods of time if associated with other growers in a mutual selling effort. Organizations could also aid in establishing grower/buyer relations and in gaining reputations as good suppliers [Runyan, Anthony, Kesecker, Ricker].

Promotion of Locally Grown Produce

In recent years there has been increasing interest among state agricultural departments and grower organizations in developing promotional activities and materials for state grown produce. Many states now have state logos which promote state grown commodities. Among these are Minnesota, Kansas, Illinois, Louisiana, Pennsylvania, Tennessee, and Kentucky [Oregon Department of Agriculture]. These logos are designed to encourage consumers to look for and request state grown products. The aim is to increase demand for locally grown produce, thus helping the state's economy and produce industry.

Connell, Beierlein, and Vroomen found that among Pennsylvania consumers surveyed, seventy percent indicated that they would be more inclined to buy produce labeled with the Pennsylvania logo. Consumers supported buying state grown produce to benefit the state, local

community, local farmers, the economy, and because they perceived Pennsylvania produce as being fresher, of higher quality, and lower priced. Consumers who would not be influenced to buy produce with the Pennsylvania logo stated that quality and price are more important than origin [Connell, Beierlein, Vroomen].

The University of Kentucky Department of Agricultural Economics in conjunction with the Governor's Council on Agriculture conducted an in-store experiment to determine the effects from labeling food products as Kentucky produced with logos and point-of-purchase materials. Three pairs of small town supermarkets patronized by rural customers and three pairs of urban stores patronized by blue collar consumers and middle to upper middle class consumers were used in the study. The effectiveness of the "A Kentucky Agricultural Product" logo and point-of-purchase material designed to increase consumer awareness was tested using five Kentucky produced commodities. Results from the study showed that sales of those products were increased from the use of the logo. This indicated that in-store promotion of products using logos and point-of-purchase material identifying products as locally grown within the state would be beneficial to all participating parties [Brothers and Love].

CHAPTER III

METHODOLOGY

This study was conducted in two parts. The first part was an in-store experiment designed to reflect consumers' marketplace behaviors when confronted with locally grown produce. In conjunction with the in-store experiment, a mail-in survey was conducted. The mail-in questionnaire was designed to gather information from consumers that would aid in providing insight into and explanations for consumers' purchase behaviors.

In-store Experiment

In order to be representative of all Knoxville area residents, it was preferable to obtain a study sample that included persons from three income categories--lower, middle, and middle to upper income levels. By using a study published by the Knoxville-Knox County Community Action Committee, areas predominantly inhabited by persons belonging to these three income groups were identified. Selection of stores to be used in the study was based on socioeconomic characteristics of customers living in areas surrounding the stores. Four supermarket chains with stores throughout the Knoxville area were contacted. Of the four chains contacted, two chains declined to participate in the study. From the two remaining supermarket chains that chose to participate, three store locations were selected. The selection of the three stores was based largely on the average income level of persons living in areas surrounding the stores. It was

theorized that each store would be largely patronized by those persons living near the store. Therefore, three supermarket outlets were used--one patronized by lower income level customers, one patronized by middle income level customers, and one patronized by middle to upper income level customers.

The vine-ripened tomato was the locally grown produce item chosen to be tested in the study. There are several reasons for this choice. First of all, tomatoes are the largest single fresh produce item grown in Tennessee [Tennessee Agriculture Statistics]. Also, Knox County is adjacent to several counties which produce tomatoes. Thus, shipments of vine-ripened tomatoes could be acquired fairly easily. In the personal interview study conducted by Eastwood, Orr, and Brooker, they found that, among Knoxville consumers interviewed, tomatoes grown in Tennessee had the best image compared to four other commodities in the study [page 36]. Also, a majority of the consumers indicated that they would be willing to pay a slightly higher price for Tennessee tomatoes as opposed to tomatoes grown out-of-state [Eastwood, Orr, and Brooker, page 39]. With regard to retail outlets, the researchers found that consumers were least satisfied with the purchase of tomatoes in supermarket outlets [Eastwood, Orr, and Brooker, page 23]. Therefore, the use of tomatoes in this in-store study would provide the results for consumers' marketplace behaviors for the most favorably viewed product, as opposed to their stated preferences concerning the other fresh produce, based on the findings from the study by Eastwood, Orr, and Brooker.

A local wholesaler was used to supply the stores with vine-ripened tomatoes from local growers in surrounding counties of Knoxville. The wholesaler was responsible for contacting and securing shipments from local producers and for delivery of shipments to the three stores. Each shipment of tomatoes was inspected by a state inspector, and only U.S. No. 1, large and extra large tomatoes were used. Names of the growers and the location of their operations were obtained from the wholesaler. These growers were contacted, and personal visits were made to discuss the project with them. Their farms were located in counties northeast and adjacent to Knox County.

After consultations with produce department managers and store managers, the study was scheduled for four days in each of two consecutive weeks--July 9-12 and July 16-19, 1986, beginning on Wednesday and following through Saturday in each week. Produce department managers were responsible for ordering quantities and displaying the tomatoes, along with keeping inventories of the amounts of bulk display tomatoes sold during each day of the experiment.

In each store two identical size and shape bins of bulk display loose tomatoes were used. The selection of bulk display as opposed to prepackaged was based on the findings by Eastwood, Orr, and Brooker, in which 97 percent of Knoxville consumers interviewed, preferred bulk display for tomatoes [page 30]. One bin contained tomatoes that the store normally sold at that time of the year and were supplied by the store's own distributors. The other bin contained tomatoes purchased from local Tennessee growers via a Knoxville wholesaler. These bins were separated by some neutral produce, such as avocados.

Four pricing and labeling treatments (A,B,C,D) were conducted in each store, each week for the locally grown tomatoes (Table 1). These treatments were designed to measure urban consumers' true marketplace behaviors when confronted with the opportunity to buy locally grown tomatoes in their supermarket outlets. On days in which the experiment called for the labeling of the locally grown tomato, a logo was used to identify the tomato as a Tennessee-grown product. Each locally grown tomato was labeled with the "Tennessee Country Fresh (TCF)" logo provided by the Tennessee State Department of Agriculture. The logo is part of a promotional campaign for Tennessee produced agricultural commodities. Point-of-purchase signs, which were enlargements of the logo, were also used to aid the consumer in identifying the locally grown bin of tomatoes. In the remaining

Table 1. Pricing and Labeling Treatments During the In-Store Experiment Period

Experiment	Price ^a	Labeling ^b
Treatment A	Equal	No logo
Treatment B	Equal	Logo
Treatment C	Week one: 15¢ higher	Logo
	Week two: 30¢ higher	Logo
Treatment D	Week one: 30¢ higher	Logo
	Week two: 50¢ higher	Logo

^aPrice treatments were administered for the locally grown tomato based on a set price of \$.89 per pound for the competing tomato.

^bLocally produced tomatoes identified by a Tennessee Country Fresh logo sticker attached to each tomato.

sections of this paper, the store's bin of tomatoes will be referred to as the "other" tomato. Locally grown tomato, Tennessee tomato, and TCF tomato will be used synonymously to indicate the locally grown produce item tested in this study.

Treatment A consisted of the two bins of tomatoes being equally priced with neither bin of tomatoes' origin labeled. Since prices were equal and origin unknown, physical attributes of the tomato were the only selection criteria available to the consumer. This treatment was designed to reveal any preference consumers may have had for either bin of tomatoes based on physical attributes only.

Treatment B consisted of equal pricing for the two bins of tomatoes with the origin of the locally grown tomato revealed by logos placed on each tomato. This treatment was designed to reveal any biases consumers may have for or against locally grown produce. Also, the impact, or the influence, of the logo on the purchasers would be revealed by comparing the percentage change in the quantity of Tennessee tomatoes sold under treatment A to the quantity of Tennessee tomatoes sold under treatment B, relative to the quantity sold of the other tomatoes.

Treatment C consisted of the locally grown bin of tomatoes being priced slightly higher per pound than the other bin of tomatoes. In week one, the locally grown tomato was priced at \$.15 per pound higher than the other tomato and identified as a Tennessee-grown product by the logo attached to each tomato. In the second week, the locally grown tomato was priced at \$.30 per pound higher than the other tomato and identified by the logo.

Treatment D consisted of the locally grown tomato being priced \$.30 per pound higher than the other tomato and labeled with the logo in week one. In the second week, treatment D consisted of pricing the locally grown tomato at \$.50 per pound higher than the other tomato and identifying its origin with the logo.

The C and D treatments in both weeks were designed to obtain some insight regarding consumers' price responsiveness for Tennessee-grown tomatoes. That is, to see how sensitive consumers are to higher prices for the Tennessee tomato. Also, by analyzing their responses to the price adjustments, it could be determined how much of a premium, if any, those consumers were willing to pay for Tennessee-grown tomatoes.

Combinations of the treatments were coordinated so that the same treatments would not be conducted on the same day in the same store during the two week period. Also, each treatment was conducted in only one store on each day of the study. One store was randomly selected and each of the four treatments were randomly assigned to that store. Each of the other two stores were drawn and treatments were arranged to ensure that a different treatment was conducted in each store on any given day. The arrangement of the treatments for the experiment period is shown in Table 2.

It should be noted that the price of the other tomato was set by each individual store. During the two week period of the experiment, both participating retail organizations priced these tomatoes at \$.89 per pound. A particular price level per pound for tomatoes was not of critical interest in this study, only the price difference between the

Table 2. Ordering of Treatments in Three Retail Outlets During the In-store Experiment Period

Experiment Date	Store 1	Store 2	Store 3
Week One:			
Wednesday, July 9	A-equal price/no logo (\$1.04) ^a	D-30¢ higher/logo (\$1.19)	C-15¢ higher/logo (\$1.04)
Thursday, July 10	B-equal price/logo (\$1.04)	A-equal price/no logo (\$1.19)	D-30¢ higher/logo (\$1.19)
Friday, July 11	C-15¢ higher/logo (\$1.04)	B-equal price/logo (\$1.19)	A-equal price/no logo (\$1.04)
Saturday, July 12	D-30¢ higher/logo (\$1.19)	C-15¢ higher/logo (\$1.04)	B-equal price/logo (\$1.19)
Week Two:			
Wednesday, July 16	D-50¢ higher/logo (\$1.39)	C-30¢ higher/logo (\$1.19)	B-equal price/logo (\$1.19)
Thursday, July 17	C-30¢ higher/logo (\$1.19)	D-50¢ higher/logo (\$1.39)	A-equal price/no logo (\$1.19)
Friday, July 18	B-equal price/logo (\$1.19)	A-equal price/no logo (\$1.39)	D-50¢ higher/logo (\$1.39)
Saturday, July 19	A-equal price/no logo (\$1.19)	B-equal price/logo (\$1.39)	C-30¢ higher/logo (\$1.19)

^aPrice per pound for the locally grown tomatoes.

locally grown and the other tomato was relevant. In microeconomic theory relative prices are generally of more importance than money prices. Relative price is the price of one good in relation to other prices of goods. After the store had set a price per pound for their bulk display tomatoes, the locally grown tomato price was set equal to or \$.15, \$.30, or \$.50 per pound higher than that base price.

During the day of an experiment, each store was visited four times. The first visit of the morning was to ensure that the correct experiment was being performed in each store and to verify the delivery of the locally grown tomatoes. At this time a beginning and ending inventory count of both bins of tomatoes was taken. In each store this visit was made no later than 9:30 a.m. High sales volume times are usually later in the day at supermarkets than in the early morning hours. Therefore, even though all three stores were not visited at the same time, sales volumes from any of the three stores were probably not biased as to the time of the first visit in which the inventory counts were taken. Two more random visits were made during the day to ensure correct management of the experiment. Therefore, problems arising during the day could be corrected as soon as possible. A final visit was made at 10 p.m. This visit was done mainly in conjunction with the questionnaire survey.

The three participating stores were asked not to use special advertising for tomatoes during the experiment period. This stipulation was made in order to reveal consumers' perceptions between the two competing bins of tomatoes based purely on in-store differences in

the pricing and identification of the tomatoes. Also, advanced advertising and promotion may have attracted consumers who didn't normally shop at those stores and that lived in areas outside of the region for which the stores were selected. The stores' own tomatoes were unchanged from what they normally stocked.

Questionnaire Survey

Each customer buying bulk display tomatoes from either experimental bin was given a postage paid mail-in questionnaire (Appendix). In two of the three stores the questionnaires were given out by store personnel at the produce weighing area in the produce department. The other store did not weigh produce in the department, but had weighing scales at each check-out register. For convenience, a graduate student located in the produce department handed out questionnaires to customers buying bulk display tomatoes in that store. Only customers buying tomatoes from either experimental bin were given a questionnaire. Questionnaires were not distributed on the days that the locally grown tomatoes were unlabeled, because on those days consumers would not be able to identify which tomatoes they had bought. Therefore, the purchasers would be unable to answer the majority of the questions on the questionnaire.

Each questionnaire was coded as to the store, day, and week that the tomatoes were purchased. This was done in order to make comparisons among purchasers' answers under each individual treatment and according to store location. The first part of the questionnaire

gathered information pertaining to the purchase of fresh tomatoes in general, and the purchase of Tennessee Country Fresh produce specifically. The questions used were designed to reveal consumers' preferences concerning fresh tomatoes, satisfaction with their purchases, the effects of promotional material on their purchase decisions, and selection criteria used by the purchasers to determine fresh tomato quality.

The second part of the questionnaire was designed to gather socioeconomic information from the purchaser. Purchasers were asked personal background questions such as occupation, sex, age, education, income, etc. The background information was collected partly to determine if the survey sample was representative of Knox County consumers. Based on the assumption that the sample would be representative, the background information could be used to compare the purchasers' responses to determine if there are differences among consumers' preferences or attitudes toward locally grown produce based on certain socioeconomic factors.

Questionnaires to be handed out each day were given to the produce staff at the first visit each morning. The remaining questionnaires left over after each day were collected on the last visit each day. A total of 1,167 questionnaires were handed out in the three stores. Questionnaires were received beginning July 10, 1986. There was no cut-off date for receipt of questionnaires, and the last questionnaire was received on September 3, 1986.

CHAPTER IV

RESULTS AND ANALYSES

The first portion of this chapter presents the initial results of the in-store sales experiment. Actual sales amounts are reported, and initial comments on the sales of the tomatoes are made according to the store in which the tomatoes were bought. From the actual sales amounts for each tomato, adjustments are made to omit the effect of the day on which the tomatoes were bought. The last part of the discussion deals with shares of sales for each tomato group. Given this discussion, conclusive statements are made regarding the effect on the sales of the Tennessee-grown tomato under each experiment treatment. Also, initial results of the questionnaire survey are presented. The primary methods used for analyzing the initial questionnaire results were descriptive statistics and frequency distributions.

The second portion of the chapter presents a more detailed and indepth look at relationships that exist based on the results of the in-store pricing and labeling experiment and the questionnaire survey. Cross-classifications of questions were designed to provide insight regarding relationships that might exist among purchasers' responses to the questionnaires. These analyses of purchasers' responses to the questions were further used to provide insight into consumers' behaviors concerning the in-store pricing and labeling experiment.

Results of the In-store Experiment

An initial inventory count for each week was taken of the amount of tomatoes on hand at the beginning of Wednesday morning for both the Tennessee tomato and the other tomato. On the following morning, another inventory count was taken of the amount of tomatoes on hand. Included in this count were the tomatoes in the bins and the amount of tomatoes in the stock room. This became the beginning inventory count for Thursday morning. By subtracting the Thursday morning inventory count from the Wednesday morning inventory count, the quantity of tomatoes sold on Wednesday was determined. Using this method, a separate count was taken for both bulk tomato displays. Quantities of both bins of tomatoes sold for each day of the two week experiment period were determined using this process.

Produce department managers, and in some cases produce department staff members, were responsible for keeping accurate records of both bins of tomatoes. This also included any shipments that might have been received during the day of an experiment after the beginning morning inventory count had been taken. Actual quantities of the local and the other tomato sold during the two week experiment period are shown in Table 3.

There was only one incident in which the locally grown tomato did not outsell the other tomato under the treatment of both bins being priced equally with neither bin's origin identified. In store one on Wednesday of the first week, the other tomato accounted for a 14 percent greater share of the total amount sold over the locally grown

Table 3. Quantities of Tomatoes Sold During the In-store Experiment Period

Store and experiment	Week One		Week Two	
	Tennessee	Other	Tennessee	Other
	tomato	tomato	tomato	tomato
	- - - pounds - -		- - - pounds - -	
Store 1:				
Wednesday-equal price/no logo	100	130	70	20
Thursday-equal price/logo	120	75	70	20
Friday-15¢ higher/logo	200	125	240	35
Saturday-30¢ higher/logo	120	175	230	125
Store 2:				
Wednesday-30¢ higher/logo	110	45	60	50
Thursday-equal price/no logo	80	50	40	85
Friday-equal price/logo	90	100	140	50
Saturday-15¢ higher/logo	240	155	180	50
Store 3:				
Wednesday-15¢ higher/logo	90	25	120	50
Thursday-30¢ higher/logo	130	50	100	50
Friday-equal price/no logo	140	63	60	150
Saturday-equal price/logo	220	100	180	100
Total	1640	1093	1490	785

tomato. The most probable explanation for this occurrence was the color difference between the two bins of tomatoes. On that day the Tennessee tomato, although vine-ripened, was not fully colored red. The other bin had tomatoes that were more uniformly colored and were vivid red.

In store two in the first week, the labeling of the locally grown tomato seemed to adversely affect the sales of that tomato. Under the treatment of both bins being equally priced and neither bin's origin identified, the Tennessee tomato accounted for a 24 percent greater share of the total amount sold over the other tomato. Yet, when the logo was placed on the Tennessee tomato and both tomatoes were equally priced, the other tomato accounted for a six percent greater share of the total amount sold over the locally grown tomato. This was the only incident in which the other tomato outsold the Tennessee tomato when both were equally priced, and the locally grown tomato was identified by the logo.

From the actual results of the in-store study, the above two incidents are the only relationships that can be easily identified as being aberrant from the expected pattern. To make conclusive statements of the effect that each treatment had on the sales of each bin of tomatoes, the actual quantities sold are unimportant. Of relevance is the relative relationship of sales between the two competing bins of tomatoes under each treatment regardless of the day. In order to make these comparisons, the actual quantities of each tomato sold must be weighted in order to alleviate the day effect on sales that is present. Since the largest quantity of tomatoes was

sold on Saturday, for convenience each day's quantity sold was weighted to a Saturday equivalent. The weighting procedure involved calculating total sales volumes of both groups of tomatoes according to each of the four days in both weeks. These four days' sales volumes were converted to the percentage of Saturdays' volume by division of each days' total volume by Saturdays' total volume. Thus, Saturday equivalent measures for each day could be used to adjust actual sales volumes, and to eliminate the day-of-week effect. Based on these adjusted quantities, percentage shares for the two competing bins of tomatoes under each treatment in the three stores were calculated (Table 4).

In each store, both weeks, the Tennessee tomato was preferred to the other tomato by purchasers based on physical characteristics only. This can be seen by observing the percentage shares of sales for each tomato under the treatment of equal price/no logo. There was only one incident in which the Tennessee tomato did not account for the majority of sales between the two tomatoes under this treatment. In store one the Tennessee tomato accounted for 44 percent while the other tomato accounted for 56 percent of total sales, under this treatment. As stated earlier, this occurrence is probably due to the fact that the locally grown tomatoes were not as uniformly red as the other tomatoes on the day in which the equal price/no logo treatment was conducted in store one. This may be an explanation for the vine-ripened Tennessee tomato not outselling the other tomato in week one, since the purchasers in that store did prefer the Tennessee tomato to the other tomato under the same treatment in week two.

Table 4. Percentage Shares Sold of the Locally Grown Tomato and the Other Tomato

Store and Experiment	Week One			Week Two		
	Tennessee tomato	Other tomato	Total	Tennessee tomato	Other tomato	Total
	- - - percent	- - - percent		- - - percent	- - - percent	
Store 1:						
Equal price/no logo	44	56	100	65	35	100
Equal price/logo	62	38	100	87	13	100
15¢ higher/logo	62	38	100	78	22	100
30¢ higher/logo	41	59	100	78	22	100
Store 2:						
Equal price/no logo	62	38	100	74	26	100
Equal price/logo	47	53	100	78	22	100
15¢ higher/logo	61	39	100	55	45	100
30¢ higher/logo	71	29	100	32	68	100
Store 3:						
Equal price/no logo	69	31	100	67	33	100
Equal price/logo	69	31	100	71	29	100
15¢ higher/logo	78	22	100	64	36	100
30¢ higher/logo	72	28	100	29	71	100

^aBased on adjusted amounts of actual amounts sold.

By observing the percentage shares of the tomatoes under the treatment of equal price/no logo and equal price/logo, it can be seen that purchasers in store one were affected by the logo more than purchasers in the other two stores. In the first week in store one, the Tennessee tomato's percentage share of sales increased 18 percent when the locally grown tomato was identified by the logo. In the second week in store one, the logo increased the locally grown tomato's percentage share of sales 22 percent. The purchasers in store three were not affected by the logo in the first week and only moderately affected by the logo in the second week, in which sales of the Tennessee tomato increased by only four percent. The purchasers in store two appeared to be least affected by the logo. In week one, when the logo was used to identify the locally grown tomato as a Tennessee-grown product, the percentage share for the Tennessee tomato dropped from 62 percent to 47 percent. However, this occurrence probably does not reflect the true effect of the logo, since this is the only incident in the two week study period in which the Tennessee tomato's percentage share of sales was decreased when the logo was used. Also, in the second week in the same store, sales of the Tennessee tomato increased four percent with the logo.

The decrease of the percentage share of sales for the Tennessee tomato in store two in week one was probably due to a lack of coordination among produce staff members. On the third visit to store two, it was noted that the other tomato's bin had some locally grown tomatoes mixed in. The situation was corrected, however, since approximately four hours had elapsed between the second and third

visits, the percentage shares for the two tomatoes may not accurately reflect the true market behaviors of consumers in store two under the treatment of equal price/logo in the first week.

Under the treatment of raising the Tennessee tomato's price \$.15 higher than the other tomato, from \$.89 per pound to \$1.04 per pound, the percentage share of sales for the Tennessee tomato increased in stores two and three and remained unchanged in store one. This is a somewhat surprising result. Theoretically, when the price of the Tennessee tomato increased from \$.89 per pound to \$1.04 per pound, while the price of the other tomato remained at \$.89 per pound, the quantity of the Tennessee tomato bought should have declined. By the percentage share of sales for the Tennessee tomato bought rising as the price rose, it can be speculated that the purchasers in this study associated the higher price of the Tennessee tomato with higher quality.

Under the treatment of \$.30 higher for the Tennessee tomato than the other tomato, the price rose from \$1.04 per pound to \$1.19 per pound, in the first week. The percentage share of total sales for the Tennessee tomato dropped 21 percent in store one and six percent in store three. Purchasers in store one were very responsive to this price treatment in week one. In store three purchasers were somewhat responsive to this price treatment, but not as responsive as purchasers in store one. However, in store two the percentage share of sales for the Tennessee tomato increased 10 percent. Purchasers in store two must have associated the higher price with higher quality for the Tennessee tomato, while purchasers' behaviors in stores one

and three were more in line with the theoretical framework of the inverse relationship of price of a product and the quantity demanded of that product. In the second week, under this treatment, the price of the Tennessee tomato rose from \$.89 per pound to \$1.19 per pound. In all three stores consumers were responsive to the price change and the percentage shares of the Tennessee tomato declined. Purchasers were the most responsive to this treatment in store two, in which the percentage share for the Tennessee tomato fell 23 percent. However, the Tennessee tomato still accounted for the majority of sales between the two competing tomatoes in all three stores.

Under the treatment of \$.50 higher for the Tennessee tomato than the other tomato, the price rose from \$1.19 per pound to \$1.39 per pound while the other tomato's price remained at \$.89 per pound. Purchasers in stores two and three were very responsive to this price treatment, and the percentage shares of the Tennessee tomato were drastically reduced. Under this treatment the Tennessee tomato no longer accounted for the majority of sales in stores two and three. In store one the percentage share of sales for the Tennessee tomato under this treatment remained the same as before the price of the Tennessee tomato was raised. Again, it would seem that purchasers in store one must have associated the higher price with higher quality for the Tennessee tomato. However, since purchasers in store one had been affected by the price increase from \$1.04 per pound to \$1.19 per pound in the first week to decrease buying the Tennessee tomato, it would certainly be expected for the percentage share of sales for the Tennessee tomato to be reduced when the price was raised from \$1.19

per pound to \$1.39 per pound in the second week. One explanation for this inconsistent behavior among consumers could have been that purchasers in week two may have been repeat customers from week one. These purchasers may have been so pleased with the quality of the Tennessee tomato bought in week one, that they were willing to pay a higher price in week two in order to buy the Tennessee tomato.

In order to make overall conclusions from the study regarding the effect of each treatment on the sales of the two tomatoes, aggregate percentage shares of sales for each tomato were calculated, disregarding the store in which the treatments were performed. When the Tennessee tomato was priced equally with the other tomato at \$.89 per pound, the Tennessee tomato accounted for 61 percent of the total sales of the two competing bins of tomatoes (Table 5). We can conclude from this, that purchasers in this study preferred the

Table 5. Aggregate Percentage Shares Sold of the Locally Grown Tomato and the Other Tomato

Treatment	Tennessee tomato	Other tomato	Total
	percent ^a		
Equal price/no logo	61	39	100
Equal price/logo	69	31	100
15¢ higher/logo	65	35	100
30¢ higher/logo	64	36	100
50¢ higher/logo	43	57	100

^aBased on adjusted amounts of actual amounts sold.

locally grown vine-ripened Tennessee tomato to the other tomato offered for sale. Since neither bin of tomatoes' origin was identified and prices were equal, this preference was based on physical attributes of the tomatoes only.

In order to examine the effect of the TCF logo on the sales of the Tennessee tomato, the before treatment of equal price/no logo and the after treatment of equal price/logo was compared. The percentage share of sales for the Tennessee tomato increased from 61 percent for the before treatment to 69 percent for the after treatment. Therefore, by identifying the locally grown tomato as a Tennessee-grown product, the proportionate share of total sales of the locally grown tomato increased eight percent.

As stated earlier, the price-increasing treatments administered to the Tennessee tomato were designed to reveal how much of a premium, if any, consumers were willing to pay for the Tennessee-grown tomato over the other tomato offered for sale. The selection of the pricing treatments was based partly on the assumption that the vine-ripened Tennessee tomato would be somewhat preferred by consumers. By comparing the percentage shares of sales for the Tennessee tomato under each treatment, some inferences can be made about the overall willingness of consumers to purchase the locally grown tomato.

When the price of the Tennessee tomato was raised \$.15 higher than the other tomato, from \$.89 per pound to \$1.04 per pound, the percentage share of total sales fell four percent for the Tennessee tomato. Under the treatment of raising the price of the Tennessee tomato \$.30 higher than the other tomato, from \$1.04 per pound to

\$1.19 per pound, the percentage share of total sales fell an additional one percent for the Tennessee tomato. Under the treatment of raising the price of the Tennessee tomato \$.50 higher, the price rose from \$1.19 per pound to \$1.39 per pound, and the percentage share of sales for the Tennessee tomato fell 21 percent.

By looking at these fluctuations in the percentage share of sales for the Tennessee tomato, it can be concluded that the consumers in this study were willing to pay a somewhat premium price for the Tennessee tomato over the other tomato. This premium price was as high as \$1.19 per pound for the Tennessee tomato, or \$.30 higher per pound than the other tomato offered for sale. The price for which consumers substituted the other tomato for the Tennessee tomato was somewhere between \$1.19 per pound and \$1.39 per pound for the locally grown tomato.

Results of the Survey Questionnaires

Questionnaires were given to each purchaser of bulk display tomatoes from either experimental bin in the three stores. On days that the bin of locally grown tomatoes was not identified, no questionnaires were handed out, because consumers would not know which bin contained the locally grown tomatoes. Therefore, consumers would not be able to answer the questionnaire.

A total of 1,167 questionnaires was handed out during the two week study period. A total of 242 questionnaires was mailed back, representing a 21 percent response rate (Table 6). Response rates regarding the number of questionnaires handed out versus the number

Table 6. Number of Questionnaires Handed Out and Received from Purchasers

Day	Store 1		Store 2		Store 3		Total for three stores	
	Distributed	Received	Distributed	Received	Distributed	Received	Distributed	Received
Wednesday	None	--	55	15	71	6	126	21
Thursday	81	24	None	--	74	10	155	34
Friday	92	23	67	16	None	--	159	39
Saturday	<u>138</u>	<u>36</u>	<u>117</u>	<u>16</u>	<u>76</u>	<u>15</u>	<u>331</u>	<u>67</u>
Total Week One Response Rate	311	83	239	47	221	31	771	161
		27%		20%		14%		21%
Wednesday	63	15	3	0	31	4	97	19
Thursday	49	10	23	4	None	--	72	14
Friday	94	25	None	--	54	2	148	27
Saturday	<u>None</u>	<u>--</u>	<u>38</u>	<u>7</u>	<u>41</u>	<u>14</u>	<u>79</u>	<u>21</u>
Total Week Two Response Rate	206	50	64	11	126	20	396	81
		24%		17%		16%		21%
Total two weeks Response Rate	517	133	303	58	347	51	1167	242
		26%		19%		15%		21%
Percentage of Total	44%	55%	26%	24%	30%	21%	100%	100%

received is fairly equal within each store in both weeks. Considerably fewer questionnaires were handed out in the second week than in the first. One explanation for this is the ordering of treatments. Typically, busier shopping days occur toward the end of the week. In store one, which accounted for 44 percent of the total number of questionnaires handed out during the study period, treatment A fell on Saturday in week two (Refer to Table 2). On this day no questionnaires were handed out in store one. Another explanation is that there may have been fewer shoppers in week two. This inference is based on the fact that a smaller total amount of tomatoes were sold in the second week than in the first (Refer to Table 3). Therefore, fewer questionnaires were handed out. However, upon closer observation, there definitely was a failure to hand out questionnaires in store two on Wednesday of the second week. This failure is attributed to a lack of coordination and communication among the produce department staff.

The greatest response rate to the questionnaire was from consumers purchasing tomatoes in store one. Twenty-six percent of the purchasers in store one returned questionnaires. This higher return rate could possibly be explained by the presence of a graduate student handing out the questionnaires in store one. The student identified herself and gave a brief explanation of the study in order to approach the consumer. Although not intentional, this may have biased the amount of questionnaires returned from store one shoppers by heightening their interest and willingness to return the questionnaire.

The other stores did not permit the use of a nonstore employee to distribute the questionnaires, therefore, store employees handed out the questionnaires at the produce weighing scales in the produce department. This could have also biased the amount of questionnaires handed out. The graduate student in store one took great care in approaching all shoppers who purchased bulk display tomatoes. In the other two stores, customers may have bypassed the weighing scales in the produce department, and had their produce weighed at the check-out register. Therefore, those customers would not have received questionnaires. This could partly explain why store one accounted for 44 percent of the total number of questionnaires handed out.

The survey sample consisted of 55 percent of the total number of the questionnaires returned being from purchasers in store one. Twenty-four percent of the questionnaires received were from purchasers in store two. Twenty-one percent of the questionnaires received were from purchasers in store three.

Purchasers' Responses to the Questions

Consumers were asked various questions regarding the purchase of fresh tomatoes in the first portion of the questionnaire. The questions were designed to gather information concerning the attitudes of purchasers toward the purchase decision in general and toward the purchase of TCF tomatoes specifically.

The first question asked purchasers if the origin of the tomato was of interest to them when purchasing tomatoes. Of the total 242 questionnaires, 238 purchasers responded to question one (Table 7).

Table 7. Responses to Concern Over Origin of Fresh Tomatoes

Response	Number	Percentage
Yes	155	65
No	83	35
No Response	<u>4</u>	<u>--</u>
Total	242	100

Source: Mail-back questionnaire survey conducted in conjunction with an in-store experiment study dealing with locally grown produce offered for sale in three Knoxville area supermarket outlets during two weeks in July, 1986.

Sixty-five percent of the consumers responded that they do care where fresh tomatoes have been grown when purchasing. This result is higher than that found by Eastwood, Orr, and Brooker in which 52 percent of Knoxville consumers surveyed stated that they cared where fresh tomatoes are grown [page 37].

Purchasers were asked to indicate which tomato they had bought. Out of the 242 questionnaires received, 233 purchasers responded to this question (Table 8). Ninety-two percent of the consumers returning the questionnaire responded that they had purchased the locally grown tomato. This result reveals the possibility of what is termed "nonresponse bias". When nonresponse bias is present a segment of the population declines to participate. Here, it appears that a large portion of the purchasers of the other tomato declined to participate in the questionnaire survey. There may have been an identification problem with the questionnaire, since the Tennessee

Table 8. Responses to the Purchase of TCF Tomatoes

Response	Number	Percentage
Yes	215	92
No	18	8
No Response	<u>9</u>	<u>--</u>
Total	242	100

Source: Mail-back questionnaire survey conducted in conjunction with an in-store experiment study dealing with locally grown produce offered for sale in three Knoxville area supermarket outlets during two weeks in July, 1986.

tomato did not outsell the other tomato by 92 percent, and it is unlikely that purchasers of the other tomato bought consistently larger quantities than purchasers of the local tomato (Refer to Table 3). Because the bulk of the questions concerned the purchase of the TCF tomato, consumers who purchased the local tomato may have had a greater sense of participation in the project and felt compelled to fill out and return the questionnaire. Whereas their counterparts, those not purchasing the locally grown tomato, may not have been as compelled to return the questionnaire. They would not be able to fill out a majority of the questions. Therefore, they may not have been able to identify with the study as much as those purchasers buying TCF tomatoes.

Another question asked consumers if their purchase decision was affected by the logo placed on each tomato identifying it as a Tennessee-grown product. Out of the 242 questionnaires returned, 234

purchasers responded to question three (Table 9). Sixty-one percent of those purchasers responding to the question stated that their purchase decisions were influenced by the TCF logo. This seems to be a consistent result with purchasers' concerns over origin, in which 65 percent stated they cared where fresh tomatoes are grown (Refer to Table 7).

Table 9. Responses to the Effect of the TCF Logo

Response	Number	Percentage
Yes	143	61
No	91	39
No Response	<u>8</u>	<u>--</u>
Total	242	100

Source: Mail-back questionnaire survey conducted in conjunction with an in-store experiment study dealing with locally grown produce offered for sale in three Knoxville area supermarket outlets during two weeks in July, 1986.

The fourth question asked those consumers who did not buy TCF tomatoes to give reasons for not purchasing. The individual responses to this open-ended question varied. Of those answering, 52 percent indicated that they were unaware of the kind of tomato they had bought. Twenty-eight percent indicated that price prohibited the purchase of the local tomato. Appearance, feel, and size each accounted for four percent of the purchasers' responses. The remaining eight percent of the responses were comments that were not discernible.

Purchasers were asked to indicate which of several criteria listed that they used to judge fresh tomato quality. Out of 242 purchasers returning questionnaires, 239 consumers responded to at least one of the ten criteria listed (Table 10). Color was ranked by

Table 10. Criteria Purchasers Use to Judge Fresh Tomato Quality

Criteria	Number	Percentage
Color	224	94
Feel	192	80
Blemishes	165	69
Taste	151	63
Size	107	45
Origin	90	38
Shape	88	37
Price	76	32
Smell	70	29
Packaging	18	8

Source: Mail-back questionnaire survey conducted in conjunction with an in-store experiment study dealing with locally grown produce offered for sale in three Knoxville area supermarket outlets during two weeks in July, 1986.

purchasers as the most important criteria. Feel, blemishes, and taste were listed second, third, and fourth, respectively. It is interesting to note that price was of less importance to purchasers. One inference from the response to this question for Tennessee growers is that as long as good quality tomatoes are offered, they can be

priced competitively with tomatoes from other sources. It is also interesting that consumers ranked origin in the lower half of the list. One inference drawn from this is that while consumers are concerned over the origin of fresh tomatoes, origin is not used as a major criterion for judging fresh tomato quality. The ranking of these criteria parallel the findings by Eastwood, Orr, and Brooker's criteria ranking for tomatoes in almost identical order [page 33].

Purchasers were asked if they were satisfied with their tomato purchases. This question was also accompanied by an open-ended explanation for a negative response. Out of 242 questionnaires received, 234 purchasers responded to this question (Table 11). Ninety-three percent of tomato purchasers responded that they were pleased with the quality of tomatoes purchased. Since 92 percent of the purchasers returning the questionnaire purchased locally grown tomatoes, this is a positive endorsement of the quality of the local tomatoes supplied to the three retail outlets during the two week experiment study.

Table 11. Responses to Satisfaction of Purchase

Response	Number	Percentage
Yes	217	93
No	17	7
No Response	<u>8</u>	<u>--</u>
Total	242	100

Source: Mail-back questionnaire survey conducted in conjunction with an in-store experiment study dealing with locally grown produce offered for sale in three Knoxville area supermarket outlets during two weeks in July, 1986.

One question was designed to reveal any preferences consumers may have had for locally grown produce. Out of 242 questionnaires returned, 224 purchasers responded to this question (Table 12). Sixty-four percent of the purchasers stated that they would patronize a store featuring TCF produce. These results are encouraging for producers who could supply retail outlets and for retailers that carry and advertise locally grown produce.

Table 12. Responses to Patronage of a Store Featuring TCF Produce

Response	Number	Percentage
Yes	143	64
No	81	36
No Response	<u>18</u>	<u>--</u>
Total	242	100

Source: Mail-back questionnaire survey conducted in conjunction with an in-store experiment study dealing with locally grown produce offered for sale in three Knoxville area supermarket outlets during two weeks in July, 1986.

Consumers were asked to compare TCF tomatoes with other tomatoes in terms of certain criteria. Out of the 242 questionnaires returned, 234 purchasers responded to this question (Table 13). Purchasers rated TCF tomatoes better than other fresh tomatoes in terms of freshness, taste, and appearance by 67 percent, 68 percent, and 61 percent, respectively. These positive results should be encouraging to producers who can supply retailers with vine-ripened Tennessee-grown tomatoes. Forty-five percent of the purchasers were uncertain

Table 13. Comparisons of TCF Tomatoes Versus Other Tomatoes

Criterion	Number	Percentage
Freshness:		
Worse	3	1
Same	41	18
Better	157	67
Do not know	33	14
No response	8	--
Total	242	100
Taste:		
Worse	7	3
Same	38	16
Better	158	68
Do not know	31	13
No response	8	--
Total	242	100
Appearance:		
Worse	5	2
Same	59	25
Better	143	61
Do not know	27	12
No response	8	--
Total	242	100
Storage Life:		
Worse	8	3
Same	77	33
Better	43	19
Do not know	105	45
No response	8	--
Total	242	100
Price:		
Worse	65	28
Same	69	30
Better	27	12
Do not know	73	31
No response	8	--
Total	242	101 ^a

Table 13 (Continued)

Criterion	Number	Percentage
Nutrition:		
Worse	0	0
Same	62	27
Better	44	19
Do not know	128	55
No response	8	--
Total	242	101 ^a

^aDoes not equal 100 due to rounding error.

Source: Mail-back questionnaires survey conducted in conjunction with an in-store experiment study dealing with locally grown produce offered for sale in three Knoxville area supermarket outlets during two weeks in July, 1986.

as to the storage life of TCF tomatoes compared with other tomatoes. Fifty-five percent of the purchasers were also uncertain as to the nutritional value comparison. The greatest response regarding the price comparison was 31 percent of the purchasers saying that they did not know the price of the tomatoes they bought. We must assume that consumers interpreted the price comparison as being relative to the other tomatoes offered for sale during the experiment, otherwise this comparison would be of little value. According to microeconomic theory, relative prices of goods are of greater importance in evaluation of market conditions than the actual money price. Therefore, the price of the Tennessee tomato relative to the price of the other tomato offered for sale was the measure used to evaluate purchasers' behaviors with regard to the price.

Background Information of Purchasers

Part of the questionnaire was designed to gather socioeconomic information about shoppers. These questions were important for providing cross comparisons with responses to the first part of the questionnaire and for possible explanations regarding fluctuations in the sales of tomatoes resulting from the in-store experiment.

A purchaser was first asked his/her occupation. Occupations were categorized into major occupation groups using the U.S. Census Socioeconomic Status Code ratings [Miller]. Responses listed by the respondent, but not belonging to a true occupation, were assigned a code not used by the U.S. Census Socioeconomic Status Code ratings. Titles of occupations under each occupation heading and code were used

to categorize every occupation listed by respondents. Occupational codes 1,2, and 3 are typically referred to as "white collar" occupations, while codes 4,5,6, and 7 are typically referred to as "blue collar" occupations. Out of 242, questionnaires received, 229 purchasers responded to the question (Table 14). The largest response

Table 14. Occupations of Purchasers

Occupational code description	Occupational code	Responses	
		Number	Percentage
Professional, technical, and kindred workers, except farm	1	66	29
Managers, officials, and proprietors, except farm	2	26	11
Clerical, sales, and kindred workers	3	44	19
Craftsmen, foremen, and kindred workers	4	0	0
Operators and kindred workers	5	7	3
Service workers, including private households	6	7	3
Laborers, except farm and mine	7	2	1
Housewife ^a	8	52	23
Retired ^a	9	17	7
Student ^a	10	8	4
No response	--	<u>13</u>	<u>--</u>
Total		242	100

^aNot included in the U.S. Census Socioeconomic Status Code rating.

Source: Mail-back questionnaire survey conducted in conjunction with an in-store experiment study dealing with locally grown produce offered for sale in three Knoxville area supermarket outlets during two weeks in July, 1986.

was twenty-nine percent of the purchasers having occupations under code one. The next largest category of purchasers' responses was 23 percent of the purchasers being housewives. The majority, or 59 percent of the purchasers, had white collar occupations.

Purchasers were also asked to state the occupations of their spouses. Out of 242 questionnaires, 176 purchasers responded to this question (Table 15). Purchasers who indicated that they were single for this question were treated as a no response, partly explaining why this question was answered by only 73 percent of purchasers returning questionnaires. The largest response to this question was 33 percent of the purchasers listing an occupation in code one for their spouses' occupations. The next largest percentage of responses was 23 percent of the purchasers listing their spouses' occupations in code two. Seventy-three percent of the spouses' occupations were in the top three occupational codes, or, considered white collar occupations. It is interesting to note that both the purchasers' occupations and their spouses' occupations are for the majority, white collar occupations.

Next, information concerning the sex of purchasers was gathered. Out of 242 questionnaires received, 234 purchasers responded to this question (Table 16). Of those purchasers responding, 77 percent were female and 23 percent were male.

Regarding race of the purchaser, 230 purchasers responded to this question (Table 17). An overwhelming 99 percent of those purchasers returning questionnaires were white. A possible cause for this result is nonresponse bias. When nonresponse bias occurs, a segment of the population for some reason declines to participate in the study. The

Table 15. Occupations of Purchasers' Spouses

Occupational code description	Occupational code	Responses	
		Number	Percentage
Professional, technical, and kindred workers, except farm	1	58	33
Managers, officials, and proprietors, except farm	2	41	23
Clerical, sales, and kindred workers	3	29	17
Craftsmen, foremen, and kindred workers	4	2	1
Operatives and kindred workers	5	4	2
Service workers, including private households	6	2	1
Laborers, except farm and mine	7	3	2
Housewife ^a	8	12	7
Retired ^a	9	14	8
Student ^a	10	3	2
Dead ^a	0	8	5
No response	--	<u>66</u>	<u>--</u>
Total		242	101 ^b

^aNot included in the U.S. Census Socioeconomic Status Code rating.

^bDoes not equal 100 due to rounding error.

Source: Mail-back questionnaire survey conducted in conjunction with an in-store experiment study dealing with locally grown produce offered for sale in three Knoxville area supermarket outlets during two weeks in July, 1986.

Table 16. Purchasers' Sex

Response	Number	Percentage
Male	55	23
Female	179	77
No response	<u>8</u>	<u>--</u>
Total	242	100

Source: Mail-back questionnaire survey conducted in conjunction with an in-store experiment study dealing with locally grown produce offered for sale in three Knoxville area supermarket outlets during two weeks in July, 1986.

Table 17. Purchasers' Race

Response	Number	Percentage
Black	1	.4
Asian	0	0
White	229	99.6
Hispanic	0	0
No response	<u>12</u>	<u>--</u>
Total	242	100

Source: Mail-back questionnaire conducted in conjunction with an in-store experiment study dealing with locally grown produce offered for sale in three Knoxville area supermarket outlets, Knoxville, Tennessee, 1986.

extent of the bias in this study can not be determined. Whether the nonresponse purchasers are significantly different from those consumers who responded could not be addressed because of the method of questionnaire distribution employed.

Purchasers were also asked to respond to an age category. This question was answered by 235 purchasers (Table 18). Thirty percent of the purchasers were between the ages of 25 and 34, representing the largest group responding to this question. The next largest age category was ages 35 through 44 with 25 percent of the purchasers. Of the six age categories listed, 74 percent of the purchasers were in three categories comprised of purchasers ages 25 through 54.

Table 18. Purchasers' Ages

Age Group	Number	Percentage
Under 25	11	5
25-34	71	30
35-44	59	25
45-54	45	19
55-64	25	11
65 and over	24	10
No response	<u>7</u>	<u>--</u>
Total	242	100

Source: Mail-back questionnaire survey conducted in conjunction with an in-store experiment study dealing with locally grown produce offered for sale in three Knoxville area supermarkets during two weeks in July, 1986.

Table 19 shows the purchasers' responses about the composition of their households. Purchasers' responses ranged from one to seven persons living in a household. The average household size was 2.83 persons. Thirty-four percent of the purchasers were living in a two-member household. Ninety-one percent of the purchasers lived in households of four persons or less.

Purchasers were further asked to indicate the number of household members belonging to each of three age categories. Out of 242 questionnaires returned, 226 purchasers responded to at least one of the three age categories (Table 20). Twenty-four percent of the

Table 19. Number of People Living within the Household

Responses (number listed by the purchaser)	Number	Percentage
1	32	14
2	78	34
3	47	20
4	53	23
5	14	6
6	5	2
7	3	1
No response	<u>10</u>	<u>--</u>
Total	242	100

Source: Mail-back questionnaire survey conducted in conjunction with an in-store experiment study dealing with locally grown produce offered for sale in three Knoxville area supermarkets during two weeks in July, 1986.

Table 20. Household Composition

Age Group (number of members in each)	Number	Percentage
10 and under:		
1	24	45
2	25	47
3	3	6
4	1	2
Total	53	100
Percent of total responses	24%	
11-18 years:		
1	32	54
2	17	29
3	8	14
4	2	3
Total	59	100
Percent of total responses	26%	
19 and over:		
1	59	27
2	128	58
3	23	10
4	10	5
5	1	1
Total	221	101 ^a
Percent of total responses	98%	

^aDoes not equal 100 due to rounding error.

Source: Mail-back questionnaire survey conducted in conjunction with an in-store experiment study dealing with locally grown produce offered for sale in three Knoxville area supermarkets during two weeks in July, 1986.

respondents reported having household members in the ten and under age category. Purchasers' responses ranged from one to four persons ten and under. The largest response group was 47 percent of the

purchasers having two persons aged ten and under in their households. Twenty-six of the purchasers reported having household members in the 11 through 18 age category. Purchasers' responses ranged from one to four persons aged 11 through 18. The largest response was 54 percent of the purchasers having one person aged 11 through 18 in their households. Ninety-eight percent of the purchasers reported having household members in the nineteen and over age group. Purchasers' responses ranged from one to five persons aged 19 and over. The largest response was 58 percent of the purchasers having two persons aged 19 and over in their households. It is interesting to note that only one-half of the households contained children when 74 percent of the purchasers are between the ages of 25 and 54.

By comparing purchasers' responses to this last household age category to their responses to spouses' occupations, an inference can be made. Seventy-three percent of the purchasers responded to the question of spouse's occupation (Refer to Table 15). That means that 27 percent of the purchasers did not answer for spouse's occupation. Here, 27 percent of the purchasers responded to having only one person aged 19 and over in their household. Therefore, we can assume that 27 percent of the purchasers in this study, 19 and over, are unmarried persons.

With regard to formal education of the purchaser, 234 purchasers responded to this question (Table 21). The largest response was 48 percent of the purchasers indicating that they are college graduates. Seventy-three percent of the purchasers had received some education above the high school level. Even though there was not a category for

Table 21. Purchasers' Education

Education level	Number	Percentage
8th grade or less	4	2
9-11th grade	7	3
high school graduate	52	22
1-3 years of college	55	24
college graduate	113	48
Other ^a	3	1
No response	<u>8</u>	<u>--</u>
Total	242	100

^aNot listed as a choice on the questionnaire, but listed by the purchaser.

Source: Mail-back questionnaire survey conducted in conjunction with an in-store experiment study dealing with locally grown produce offered for sale in three Knoxville area supermarkets during two weeks in July, 1986.

advanced college training, three purchasers responded that they had had education above the college graduate level.

The last question asked purchasers to indicate their total household incomes in terms of six categories. Income is always a sensitive subject, and although many questionnaire surveys are totally anonymous and not traceable, respondents sometimes are reluctant to answer. However, the response rate of purchasers answering this questionnaire was very acceptable. Out of 242 questionnaires received, only 12 purchasers failed to answer this question (Table 22). The largest response was 34 percent of the purchasers stating

Table 22. Purchasers' Total Household Incomes

Income Category	Number	Percentage
Less than \$10,000	16	7
\$10,000-\$19,999	31	14
\$20,000-\$29,999	31	14
\$30,000-\$39,999	52	23
\$40,000-\$49,999	21	9
\$50,000 or more	79	34
No response	<u>12</u>	<u>--</u>
Total	242	101 ^a

^aDoes not equal 100 due to rounding error.

Source: Mail-back questionnaire survey conducted in conjunction with an in-store experiment study dealing with locally grown produce offered for sale in three Knoxville area supermarkets during two weeks in July, 1986.

that they were in an income category of \$50,000 or more. The next largest category was \$30,000 to \$39,999 with 23 percent of the respondents. When combining the last three categories, sixty-six percent of the purchasers had household income in excess of \$30,000.

Analyses of Results and Relationships

Analysis of Origin of Produce

In the questionnaire's development, one of the most important issues to be examined was whether the purchaser cared where fresh produce is grown. Merchants could use the results from this question

to adopt better marketing strategies by identifying produce origin in the case of positive response or not identifying produce origin in the case of negative response.

As stated in the initial results, 65 percent of the purchasers cared where fresh tomatoes were grown (Refer to Table 7). When purchasers' responses to origin of tomatoes were cross-classified with other questions within the survey, some interesting results appear. First, purchasers' responses to patronage of a particular supermarket that featured TCF produce was compared to their responses concerning origin. Forty-eight percent of the purchasers who cared where fresh tomatoes are grown also indicated that they would shop at a supermarket because it featured TCF produce (Table 23). The chi-square

Table 23. Responses to Origin Compared with Responses to Patronage of a Store Featuring TCF Produce

Would you shop at a store because it featured Tennessee Country Fresh produce?	<u>Do you care where fresh tomatoes are grown?</u>		
	Yes	No	Total
	----- percent -----		
Yes	48	15	63
No	<u>17</u>	<u>19</u>	<u>36</u>
Total	65	34	99 ^a
Chi-square = 19.1 ^b			

^aDoes not equal 100 due to rounding error.

^bStatistically significant at the .05 level, chi-square test.

value was statistically significant at the .05 level. One inference here is that merchants could use the TCF promotion strategy to appeal to those consumers that care where tomatoes are grown.

Ninety-two percent of the purchasers returning the questionnaire indicated that they had bought the TCF tomato (Refer to Table 8). Results from the cross-classification of those who bought the locally grown tomato with those purchasers who care where fresh tomatoes are grown, are shown in Table 24. Sixty-six percent of the purchasers who cared where fresh tomatoes are grown bought the locally grown tomato. The chi-square value of 22.1 is statistically significant at the .05 level. This indicates that there is a significant relationship between purchasers that bought the locally grown tomato and purchasers that cared where fresh tomatoes are grown. Since the number of those who actually bought the TCF tomatoes is larger than what was expected, it can be inferred that purchasers who bought the locally grown tomato

Table 24. Responses to Origin Compared with Responses to the Purchase of TCF Tomatoes

Did you buy Tennessee Country Fresh tomatoes?	Do you care where fresh tomatoes are grown?		
	Yes	No	Total
	percent		
Yes	66	27	93
No	<u>1</u>	<u>6</u>	<u>7</u>
Total	67	33	100
Chi-square = 22.1 ^a			

^aStatistically significant at the .05 level, chi-square test.

are very origin conscious. However, the sample may be biased to the extent that a proportionate number of questionnaires was not received from shoppers who purchased the other bulk tomatoes.

Purchasers' responses to concern over origin was also compared to their responses of the effect of the logo on their purchase decisions. Table 25 shows the results of cross-classification of the purchasers' concerns over origin and the logo's effect on the purchase decisions. Fifty-two percent of those purchasers who responded that they cared where fresh tomatoes are grown said that the logo affected their purchase decisions. The chi-square value of 61.6 is statistically significant at the .05 level, indicating that a relationship does exist.

From the above three comparisons, it can be assumed that purchasers interpreted question one as being related to their concern

Table 25. Responses to Origin Compared with Responses to the Effect of the TCF Logo

Did the Tennessee Country Fresh logo affect your purchase decision?	Do you care where fresh tomatoes are grown?		
	Yes	No	Total
	percent		
Yes	52	9	61
No	<u>14</u>	<u>25</u>	<u>39</u>
Total	66	34	100
Chi-square = 61.6 ^a			

^aStatistically significant at the .05 level, chi-square test.

over tomatoes grown in Tennessee. That is, "Do you care if fresh tomatoes have been grown in Tennessee when you consider purchasing them?" instead of, "Do you care where fresh tomatoes have been grown when you consider purchasing them?" Based on this assumption further important comparisons can be made, and are discussed next.

Assuming that purchasers might perceive vine-ripened locally grown Tennessee tomatoes to be fresher and, therefore, more palatable tomatoes than the other tomatoes offered for sale, purchasers' responses to criteria used to judge fresh tomato quality were compared with their responses to caring where tomatoes are grown. This comparison should provide insight into the relationship of purchasers caring that tomatoes are grown in Tennessee and selection criteria they might use to judge those fresh tomatoes. The assumption that the locally grown tomato would be fresher is based solely on the fact that it was grown near the Knoxville area, and would not have to be shipped a long distance. This would enable a wholesaler to deliver a shipment of tomatoes to the supermarket the same day that they are acquired, certainly no later than the next day after acquisition. Important cross-classifications among the different criteria purchasers use to judge fresh tomato quality were freshness indicators of feel and taste. Color was also compared, since it was listed most often as a quality indicator and since consumers may have associated color with being vine-ripened. Origin was also compared, based on the assumption that purchasers who care that fresh tomatoes are grown in Tennessee would also use origin as an item to judge fresh tomato quality.

Fifty percent of those purchasers responding that they judge fresh tomato quality by feel said that they do care where tomatoes are grown (Table 26). A chi-square value of 5.9 is statistically

Table 26. Responses to Origin Compared with Responses to Criteria for Judging Quality

Quality Criteria	Do you care where fresh tomatoes are grown?		
	Yes	No	Total
	----- percent -----		
Feel:			
Yes	50	31	81
No	<u>15</u>	<u>4</u>	<u>19</u>
Total	65	35	100
Chi-square = 5.9 ^a			
Taste:			
Yes	44	20	64
No	<u>21</u>	<u>15</u>	<u>36</u>
Total	65	35	100
Chi-square = 2.6			
Color:			
Yes	60	34	94
No	<u>5</u>	<u>1</u>	<u>6</u>
Total	65	35	100
Chi-square = 3.3			
Origin:			
Yes	35	3	38
No	<u>30</u>	<u>32</u>	<u>62</u>
Total	65	35	100
Chi-square = 50.7 ^a			

^aStatistically significant at the .05 level, chi-square test.

significant at the .05 level. One possible inference from this relationship between purchasers caring where tomatoes are grown and purchasers judging tomatoes by feel is that purchasers want a firm, but not hard tomato. This inference is based on the fact that 92 percent of the purchasers that responded to the questionnaire bought the locally grown tomato, which was more like a typical homegrown tomato and not like a shipped tomato which, in many cases, is hard because it is a mature green tomato and not vine-ripened.

Forty-four percent of the purchasers using taste as a criterion to judge fresh tomato quality also cared where fresh tomatoes are grown; however, the chi-square value was not significant. This result was not expected. Initially it was anticipated that a relationship between taste as a criterion to judge fresh tomato quality and purchasers caring where fresh tomatoes are grown would be revealed.

Sixty percent of the purchasers who care where fresh tomatoes are grown also use color as an indicator of fresh tomato quality. The chi-square value for this comparison was not statistically significant at the .05 level. Therefore, there seems to be no relationship among purchasers who care where fresh tomatoes are grown and those who use color as an indicator of quality.

With regard to origin, 35 percent of the purchasers who use origin as a criterion for judging fresh tomato quality responded that they cared where fresh tomatoes are grown. A chi-square value of 50.7 is statistically significant at the .05 level. Therefore, a significant relationship exists between purchasers caring where tomatoes are grown and purchasers using origin as a criterion for judging tomato

quality. This result was expected if the respondents were consistent in their answers. Logically, if purchasers care where tomatoes are grown they would also use origin as a quality criterion. One inference from this relationship is that, since a majority of the purchasers are concerned that tomatoes are grown in Tennessee, using promotional material to identify locally grown tomatoes should have positive results.

Among the socioeconomic factors of purchasers compared to their concerns over origin, age of the purchaser was the only factor that showed a significant relationship. The chi-square value of 13.3 is statistically significant at the .05 level, indicating a relationship between the ages of the purchasers and whether they cared if tomatoes are grown in Tennessee (Table 27). The largest percentage of purchasers responding that they care where tomatoes are grown was found in the age category 25-34 years of age, with 17 percent of the purchasers. However, the largest group for the entire survey sample, 30 percent, were in the age category 25-34 years (Refer to Table 18). Therefore, if we disregard the percentage of purchasers' responses for the entire population sample, and look at the purchasers' responses within each age group only, we can make an inference as to which age group had the highest percentage of purchasers who cared where fresh tomatoes are grown. Within each age group the percentage of purchasers who responded that they cared where fresh tomatoes are grown, increased with increasing age up to 55-64 years of age. Eighty-eight percent of the purchasers aged 55-64 responded that they cared where tomatoes are grown. The next largest percentage of

Table 27. Responses to Origin Compared with Ages of Purchasers

	Do you care where fresh tomatoes are grown?				
Age group of purchasers	Yes		No		Total entire sample
	Entire sample	Within sample	Entire sample	Within sample	
	percent				
Under 25	2	45	3	55	5
25-34	17	57	13	43	30
35-44	16	61	10	39	26
45-54	13	67	6	33	19
55-64	10	88	1	12	11
65 and over	<u>8</u>	83	<u>2</u>	17	<u>10</u>
Total	66		35		101 ^a

Chi-square = 13.3^b

^aDoes not equal 100 due to rounding error.

^bStatistically significant at the .05 level, chi-square test, however one cell exhibited an expected frequency less than five, which may reduce the reliability of the chi-square test.

purchasers who cared where tomatoes are grown is 83 percent, in the 65 and over age category. From this relationship we can infer one of three things. First, purchasers presently ages 55 and over have a more localistic-type spirit toward Tennessee grown produce than purchasers in the other age groups. Or, secondly, purchasers presently ages 55 and over perceive produce grown in Tennessee as being fresher or of higher quality and, therefore, are more inclined to be biased toward Tennessee-grown produce. Or, thirdly, consumers

presently in older age groups may be more familiar with vine-ripened tomatoes.

Because sex and race of the purchasers were not proportionate among categories, comparisons were not performed in relation to the question of concern over origin. Comparisons were made concerning the education and incomes of the purchasers and the relationship to purchasers' responses to concern over origin (Table 28). Forty-seven percent of the purchasers who responded that they cared where fresh

Table 28. Responses to Origin Compared with Education and Total Household Incomes of Purchasers

	Do you care where fresh tomatoes are grown?		
Question	Yes	No	Total
	- - - - - percent - - - - -		
Education level:			
High school graduate or less	18	9	27
Above high school	<u>47</u>	<u>26</u>	<u>73</u>
Total	65	35	100
Chi-square = 0.1			
Income:			
Less than \$10,000	5	2	7
\$10,000-\$19,999	9	4	13
\$20,000-\$29,999	10	4	14
\$30,000-\$39,999	15	8	23
\$40,000-\$49,999	6	3	9
\$50,000 or more	<u>21</u>	<u>14</u>	<u>35</u>
Total	66	35	101 ^a
Chi-square = 2.3			

^aDoes not equal 100 due to rounding error.

tomatoes are grown had educational training above the high school level, which represents the largest percentage. With regard to incomes, the largest percentage of purchasers who cared where tomatoes are grown was in the \$50,000 or more income group, comprising 21 percent of those responding positively to concern over origin. Neither comparison yielded a statistically significant relationship.

Analysis of the TCF Logo

Purchasers' responses to whether they had bought the TCF tomato were compared to responses of the effect that the TCF logo had on their purchase decisions. Sixty-two percent of the purchasers who indicated that they had been influenced by the logo also bought the locally grown tomato (Table 29). The chi-square statistic indicated that there was a relationship between those consumers who bought the locally grown tomato and those that were influenced by the TCF logo,

Table 29. Responses to the Effect of the TCF Logo Compared with Responses to the Purchase of TCF Tomatoes

Did you buy Tennessee Country Fresh tomatoes?	Did the Tennessee Country Fresh logo affect your purchase decision?		
	Yes	No	Total
	----- percent -----		
Yes	62	31	93
No	<u>0</u>	<u>7</u>	<u>7</u>
Total	62	38	100
Chi-square = 23.5 ^a			

^aStatistically significant at the .05 level, chi-square test.

at the .05 level of significance. This would seem to indicate that identifying the tomato with the logo as being a Tennessee-grown produce item, had a positive effect on influencing purchasers to buy the locally grown tomato. The influence could be based on purchasers having localistic-type spirit toward produce grown in Tennessee and/or purchasers biased toward produce grown in Tennessee because it would be perceived as being fresher, and therefore, of higher quality.

A relationship also existed between purchasers who were affected by the TCF logo and those who indicated that they would shop at a particular supermarket that featured TCF produce. The chi-square value of 12.9 was statistically significant at the .05 level (Table 30). Forty-four percent of the consumers that had been influenced by the logo, responded that they would patronize a store featuring TCF produce. This relationship was expected, since logically a person who

Table 30. Responses to the Effect of the TCF Logo Compared with Responses to Patronage of a Store Featuring TCF Produce

Would you shop at a supermarket because it featured Tennessee Country Fresh produce?	Did the Tennessee Country Fresh logo affect your purchase decision?		
	Yes	No	Total
	percent		
Yes	44	20	64
No	<u>16</u>	<u>20</u>	<u>36</u>
Total	60	40	100
Chi-square = 12.9 ^a			

^aStatistically significant at the .05 level, chi-square test.

would be influenced by a logo to buy a certain brand of produce would also be inclined to shop at a supermarket because it carried that brand of produce. Two inferences can be made from this relationship. First, this relationship could be based on consumers associating the quality of the TCF produce with the quality of the TCF tomato in this study. Purchasers rated the TCF tomato better than other tomatoes in terms of freshness, taste, and appearance (Refer to Table 13). Also, a majority of the purchasers were pleased with the overall quality of the locally grown tomato. Therefore, purchasers would shop at a particular supermarket in order to purchase produce of high quality as the TCF tomato if they are brand conscious. This is assuming that purchasers interpreted the logo as being a certain brand of produce that is grown in Tennessee. However, this is probably not the case since very little promotion has been done to associate the TCF logo with certain produce items. Secondly, the relationship may reflect purchasers' willingness to purchase Tennessee-grown produce in general, not just TCF produce specifically, which is the more probable case. Most consumers probably interpreted the logo as a means of identifying the tomato as a produce item grown in Tennessee and not as a particular brand of produce.

Among the indicators used to judge fresh tomato quality associated with the effect of the TCF logo on the purchase decision, are the packaging and origin criterion (Table 31). A statistically significant relationship did not exist among purchasers who used packaging as a criteria for judging fresh tomato quality and purchasers who were affected by the TCF logo. Although the tomatoes

Table 31. Responses to the Effect of the TCF Logo Compared with Responses to Criteria for Judging Quality

Quality Criteria	Did the Tennessee Country Fresh logo affect your purchase decision?		
	Yes	No	Total
	- - - - - percent - - - - -		
Packaging:			
Yes	6	1	7
No	<u>55</u>	<u>38</u>	<u>93</u>
Total	61	39	100
Chi-square = 3.5			
Origin:			
Yes	31	6	37
No	<u>30</u>	<u>33</u>	<u>63</u>
Total	61	39	100
Chi-square = 27.3 ^a			

^aStatistically significant at the .05 level, chi-square test.

used in this study were bulk display and not prepackaged, a possible relationship was anticipated due to the identification of the locally grown tomatoes. Since source and brand of a product are both parts of packaging, it was thought that the TCF logo would serve in identifying the tomatoes and satisfying that aspect of packaging. However, the chi-square statistic was not significant at the .05 level.

With regard to origin used as a criterion for judging fresh tomato quality, 31 percent of the purchasers who responded that they used origin as an indicator of quality, also were affected by the TCF logo. The chi-square value for this comparison indicated a relation-

ship at the .05 level. Based on the analyses of various cross-classifications previously presented, this relationship would certainly be expected and logical. Purchasers who use origin to indicate quality would also be affected by the TCF logo, which identified the origin of the locally grown product.

With regard to background information of purchasers, age of the purchaser was the only socioeconomic factor having a significant relationship with this question. The chi-square value at the .05 level indicated a relationship among purchasers who were affected by the logo and the ages of the purchasers (Table 32). The greatest response was 16 percent of the purchasers stating that they were influenced by the logo in each of two categories, comprised of purchasers aged 25-34 and 35-44. Disregarding the percentage of the entire population sample that each age category accounted for and looking at each individual category separately, the age groups 55-64 and 65 and over years of age had the greatest positive response. Eighty-four percent of the purchasers ages 55-64 were influenced by the TCF logo. Seventy-one percent of the purchasers in the 65 and over age group were influenced by the logo. One inference from this comparison is that purchasers presently in older age groups may have a more localistic-type spirit for Tennessee-grown produce than younger purchasers. Also, older age groups may be more familiar with vine-ripened tomatoes than younger age groups, and prefer vine-ripened tomatoes.

Table 32. Responses to the Effect of the TCF Logo Compared with Ages of Purchasers

	Did the Tennessee Country Fresh logo affect your purchase decision?				
	Yes		No		Total
Age group of purchaser	Entire sample	Within sample	Entire sample	Within sample	entire sample
	percent				
Under 25	1	20	3	80	4
25-34	16	51	15	49	31
35-44	16	62	10	38	26
45-54	12	65	7	35	19
55-64	9	84	2	16	11
65 and over	<u>7</u>	71	<u>3</u>	29	<u>10</u>
Total	61		40		101 ^a
Chi-square = 16.6 ^b					

^aDoes not equal 100 due to rounding error.

^bStatistically significant at the .05 level, chi-square test, however one cell exhibited an expected frequency less than five, which may reduce the reliability of the chi-square test.

Analysis of Patronage of a Store Featuring TCF Produce

Purchasers' responses to patronage of a supermarket because it featured locally grown produce was compared with their responses regarding which tomato they bought. Sixty-two percent of the purchasers who responded that they would shop at a particular store featuring TCF produce also said that they bought the locally grown tomato (Table 33). The chi-square value was statistically significant

Table 33. Responses to Patronage of a Store Featuring TCF Produce Compared with Responses to the Purchase of TCF Tomatoes

Did you buy Tennessee Country Fresh tomatoes?	Would you shop at a particular supermarket if you knew beforehand that that store featured Tennessee Country Fresh Produce?		
	Yes	No	Total
	percent		
Yes	62	30	92
No	<u>3</u>	<u>5</u>	<u>8</u>
Total	65	35	100
Chi-square = 6.9 ^a			

^aStatistically significant at the .05 level, chi-square test.

at the .05 level, indicating a relationship exists among the purchasers' responses to the two questions. One inference is that purchasers who bought the locally grown tomato are inclined to buy produce that is grown in Tennessee.

Another inference that can be made from the above comparison is that purchasers were so pleased with the quality of the TCF tomato that they would be inclined to be brand loyal to TCF produce. To test this assumption, the purchasers' responses to patronage of a store featuring TCF produce were compared to their responses regarding the satisfactions of their purchases. Sixty-one percent of the purchasers who would shop at a supermarket because it sold TCF produce also were pleased with their tomato purchases (Table 34). The chi-square value is significant at the .05 level, indicating that a significant relationship exists. Although it may be a valid assumption that

Table 34. Responses to Patronage of a Store Featuring TCF Produce Compared with Satisfaction of Purchases

Were you pleased with the overall quality of the tomatoes you purchased?	Would you shop at a particular supermarket if you knew beforehand that that store featured Tennessee Country Fresh Produce?		
	Yes	No	Total
	percent		
Yes	61	32	93
No	<u>3</u>	<u>4</u>	<u>7</u>
Total	64	36	100
Chi-square = 4.1 ^a			

^aStatistically significant at the .05 level, chi-square test.

purchasers would be inclined to be brand loyal to TCF produce, the case is more probable that consumers interpreted the logo as simply a means for identifying the tomato as a Tennessee-grown product and not as a brand of product. However, as more promotion is done with the labeling of Tennessee-grown produce as TCF, consumers may interpret the logo as a brand of produce. Of course if this should happen, there may need to be some type of regulation among producers to only label and sell produce of high quality as TCF produce.

Building on the above inference that consumers who were pleased with their purchases of the locally grown tomato and that, therefore, they would shop at a store because it featured TCF produce, we can make some cross-classifications to determine the factors that would influence purchasers to become brand loyal to TCF produce, or to purchase produce grown in Tennessee. Purchasers' responses to the

comparison of the TCF tomato with other tomatoes in terms of six items listed on the questionnaire were each compared with their responses to shopping at a store that sold TCF produce. Statistically significant relationships existed among purchasers' comparisons in terms of freshness, taste, appearance, storage life, and nutrition, at the .05 level (Table 35). Roughly half of purchasers' responses were in the "better" and "yes" rankings for the Tennessee tomato opposed to other tomatoes in terms of freshness and taste, at 50 percent and 49 percent, respectively. The largest group of purchasers' responses for appearance was 43 percent of the purchasers rating the TCF tomato in the "better" and "yes" ranking than other tomatoes. The largest group of purchasers' responses for storage life and nutrition were in the "do not know" and "yes" ranking for the Tennessee tomato as opposed to other tomatoes. Price comparisons had no relationship with purchasers' responses to patronage of a store featuring TCF produce. By observing the above relationships, the reasons purchasers might exhibit brand loyal behavior for TCF produce is due to the TCF tomato being better than other tomatoes in terms of freshness, taste, and appearance.

With regard to background information of the purchaser, no socioeconomic factor showed a significant relationship when compared to purchasers' responses to patronage of a supermarket featuring TCF produce. A significant relationship was anticipated with regard to ages of purchasers, since significant relationships among purchasers' concerns over origin and the effect of the TCF logo was revealed when compared with ages of purchasers. However, the chi-square value was

Table 35. Responses to Patronage of a Store Featuring TCF Produce Compared with Purchasers' Comparisons of TCF Tomatoes Versus Other Tomatoes

Tennessee Country Fresh tomatoes compared to other tomatoes in terms of:	Would you shop at a particular supermarket if you knew beforehand that that store featured Tennessee Country Fresh Produce?		
	Yes	No	Total
	percent		
Freshness:			
Same or Worse	8	10	18
Better	50	18	68
Do not know	<u>6</u>	<u>8</u>	<u>14</u>
Total	64	36	100
Chi-square = 17.6 ^a			
Taste:			
Same or Worse	10	10	20
Better	49	18	67
Do not know	<u>5</u>	<u>8</u>	<u>13</u>
Total	64	36	100
Chi-square = 17.2 ^a			
Appearance:			
Same or Worse	16	10	26
Better	43	19	62
Do not know	<u>5</u>	<u>6</u>	<u>11</u>
Total	64	35	99 ^b
Chi-square = 6.2 ^a			
Storage Life:			
Same or Worse	21	15	36
Better	16	4	20
Do not know	<u>28</u>	<u>17</u>	<u>45</u>
Total	65	36	101 ^b
Chi-square = 7.1 ^a			

Table 35 (Continued)

Tennessee Country Fresh tomatoes compared to other tomatoes in terms of:	Would you shop at a particular supermarket if you knew beforehand that that store featured Tennessee Country Fresh Produce?		
	Yes	No	Total
	percent		
Price:			
Same or Worse	36	21	57
Better	10	3	13
Do not know	<u>18</u>	<u>12</u>	<u>30</u>
Total	64	36	100
Chi-square = 2.7			
Nutrition:			
Same or Worse	13	12	25
Better	16	2	18
Do not know	<u>35</u>	<u>22</u>	<u>57</u>
Total	64	36	100
Chi-square = 14.0 ^a			

^aStatistically significant at the .05 level, chi-square test.

^bDoes not equal 100 due to rounding error.

not statistically significant at the .05 level, indicating that no relationship existed between purchasers who would patronize a store because it featured TCF produce and the ages of the purchasers (Table 36). The cross-classification of purchasers' responses to this question and their ages revealed a consistent pattern observed in previously analyses with regard to age. The largest response was 17 percent of the purchasers indicating that they would patronize a supermarket because it featured TCF produce, comprising the 25-34 age group. Again, if we disregard the entire population sample and look

Table 36. Responses to Patronage of a Store Featuring TCF Produce Compared with Ages of Purchasers

Would you shop at a particular supermarket if you knew beforehand that that store featured Tennessee Country Fresh produce?					
Age group of purchasers	Yes		No		Total Entire sample
	Entire sample	Within group	Entire sample	Within group	
	percent				
Under 25	3	60	2	40	5
25-34	17	54	14	46	31
35-44	15	60	10	40	25
45-54	13	66	7	34	20
55-64	8	82	2	18	10
65 and over	<u>8</u>	83	<u>2</u>	17	<u>10</u>
Total	64		37		101 ^a
Chi-square = 9.9					

^aDoes not equal 100 due to rounding error.

only at purchasers' responses within each age group, purchasers 65 and over had the largest percentage response with 83 percent of those purchasers indicating that they would shop at a particular supermarket for TCF produce. The next largest response was from purchasers in the 55-64 age group with 82 percent.

Analysis of Socioeconomic Characteristics of Purchasers

The selection of the three stores used in this study was based largely on the income levels of consumers living in areas immediately surrounding the store and certain socioeconomic factors commonly associated with levels of income. It was the intention as the basis of selection to choose one store which was patronized by lower income level consumers, one store patronized by middle income level consumers, and one store patronized by middle to upper income level consumers.

The breakdown of the income level associated with purchasers for each of the three stores is shown in Table 37. In each case the survey sample was fairly representative of the income levels for which the store was selected. Store one was selected to represent consumers belonging to the middle income level. Although the greatest percentage of persons in store one was not in the middle income level group, this store still had the greatest percentage of consumers in the middle income level group as opposed to the other two stores. Thirty-eight percent of the purchasers were in the \$20,000-\$39,999 income category. Store two was selected to represent consumers in the middle to upper income levels. The majority, 63 percent, of the purchasers

Table 37. Incomes of Purchasers, According to the Store in Which the Tomatoes were Bought

Total household income	Store one	Store two	Store three
	percent		
Lower income level:			
Less than \$10,000	6	2	17
\$10,000-\$19,999	9	4	39
Middle income level:			
\$10,000-\$29,999	14	7	20
\$30,000-\$39,999	24	25	15
Upper income level:			
\$40,000-\$49,999	11	12	0
\$50,000 or more	<u>36</u>	<u>51</u>	<u>9</u>
Total	100	101 ^a	100

^aDoes not equal 100 due to rounding error.

were in the upper income level alone. When combined with the upper middle income group, 88 percent of the purchasers were in the \$30,000 or more income category. Store three was selected to represent consumers belonging to the lower income levels. The majority, 56 percent, of the purchasers were in the lowest income category. Only 9 percent of the purchasers were in the \$40,000 or more category.

In order to determine the representativeness of the survey sample, five socioeconomic factors were compared to 1980 Census data collected for Knox County. With regard to household size, the survey sample is slightly larger than the census data (Table 38). The average household size for the survey sample was 2.85 persons, while the census data reported the average size of the Knox County household to be 2.62 persons.

Table 38. Questionnaire Survey Sample Compared with Population Characteristics, Knox County, Tennessee

Characteristic	1986 sample ^a	1980 census ^b
Average household size	2.85	2.62
Percent age 25 and older completing high school	95.3	64.4
Race - percent black	.4	8.7
Median family income	\$37,123	\$18,055
Family composition percent under 18 years	50.0	48.5

^aBased on a sample of 242 households.

^bU.S. Bureau of the Census, 1980 Census of Population, characteristics of the population--Tennessee.

Ninety-five percent of the survey sample aged 25 and over were high school graduates, compared to 64 percent reported by the Census Bureau. One reason for this result not being representative of Knox County consumers is due to the location of the stores and the number of questionnaires returned from the three stores. Seventy-nine percent of the questionnaires were from purchasers in stores one and two (Refer to Table 6). In store one, 66 percent of the purchasers listed having a white collar occupation, while in store two, 64 percent of the purchasers' occupations were classified as white collar (Table 39). In store three, from which only 21 percent of the questionnaires were received, the majority of the purchasers did not have occupations that are considered white collar. By referring to the occupational code descriptions, one can see that the top three codes,

Table 39. Purchasers' Occupations, According to the Store in Which the Tomatoes were Bought

Occupational code description	Occupational code	Store one - - - -	Store two percent - - -	Store three - - - -
Professional, technical, and kindred workers, except farm	1	32	29	19
Managers, officials, and proprietors, except farm	2	12	7	15
Clerical, sales, and kindred workers	3	22	18	13
Craftsmen, foremen, and kindred workers	4	0	0	0
Operatives and kindred workers	5	1	6	7
Service workers, including private	6	4	0	7
Laborers, except farm and mine	7	0	0	4
Housewife ^a	8	21	33	15
Retired ^a	9	6	2	17
Student ^a	10	<u>2</u>	<u>6</u>	<u>4</u>
Total		100	101 ^b	101 ^b

^aNot included in the U.S. Census Socioeconomic Status Code rating.

^bDoes not equal 100 due to rounding error.

which are referred to as white collar occupations, involve careers that usually require educational training, and to a large extent, educational training above the high school level. Occupational codes

following the top three, for the most part, do not require advanced educational training or high school training. Therefore, this may be one explanation as to why the survey sample was comprised of a substantially greater percentage of purchasers age 25 and over that completed high school, than the U.S. Census population percentage.

The survey sample was not representative of Knox County consumers with regard to race (Refer to Table 38). Only .4 percent of the survey sample was black, while the U.S. Census Bureau reported 8.7 percent of Knox County consumers are black. The most probable explanation that can be offered for this occurrence is nonresponse bias.

Purchasers in the survey were not representative of Knox County consumers with regard to income. The median household income of purchasers in the survey was \$37,123 compared with \$18,055 reported by the U.S. Census Bureau for Knox County consumers. The reason for this result may be partly due to the selection of the stores and to the return rate of the questionnaires from the three stores. Two of the three stores were chosen because they were in middle and upper income level neighborhoods. Therefore, only one store represented consumers in lower income levels. Also, seventy-nine percent of the questionnaires returned had been distributed to customers in stores one and two which were chosen for the middle and upper income levels. Related to income is the occupations of the purchasers in the study. The majority of purchasers and their spouses had occupations which are considered "white collar" occupations. Therefore, this may also

explain why the median income of purchasers in the survey was higher than reported in the census data for Knox County consumers.

With regard to the number of persons under 18, the survey sample is very representative of Knox County consumers. Fifty percent of the households in the survey contained persons aged 18 and under. The U.S. Census reported 48.5 percent of Knox County households having persons aged 18 and under. Therefore, purchasers in this study survey are representative of Knox county consumers with respect to household members aged 18 and under.

Analysis of the In-store Experiment

Insight into consumers' marketplace behaviors resulting in fluctuations in the shares of the Tennessee tomato sold as opposed to the shares sold of the other tomato offered for sale is provided through the analyses of the purchasers' responses to the questionnaire. As stated earlier, each questionnaire was coded as to the day, week, and store in which the tomatoes were bought. By coding each questionnaire, comparisons can be made among respondents' answers relative to the experiment under which the purchaser bought bulk display tomatoes.

First, purchasers' responses to the effect of the logo were compared to the treatment under which the tomatoes were bought (Table 40). We can use this cross-classification to partly explain the fluctuations in the percentage shares of sales for the Tennessee tomato. The largest response was 24 percent of the purchasers indicating they were influenced by the TCF logo under the treatment of

Table 40. Responses to the Effect of the TCF Logo Compared to the Treatment Under Which the Tomatoes were Bought

<u>Did the Tennessee Country Fresh logo affect your purchase decision?</u>						
Pricing ^a and labeling treatment	<u>Yes</u>		<u>No</u>		<u>Total</u>	Tennessee tomato share of sales
	<u>Entire sample percent</u>	<u>Within treatment distribution</u>	<u>Entire sample percent</u>	<u>Within treatment distribution</u>		
	----- percent -----					
equal price/ logo (\$.89)	24	64	13	36	37	69
\$.15 higher/ logo (\$1.04)	11	58	8	42	19	65
\$.30 higher/ logo (\$1.19)	19	54	16	46	35	64
\$.50 higher/ logo (\$1.39)	<u>7</u>	76	<u>2</u>	24	<u>9</u>	43
Total	61		39		100	

^aPrice per pound.

equal price/logo. This would explain largely why the percentage share of sales for the Tennessee tomato increased eight percent under this treatment in comparison to the treatment of equal price/no logo (Refer to Table 5).

Because each treatment in the experiment was not conducted the same number of times we should disregard the entire population sample and look at the distributions of responses within each treatment in order to make a further inference. By observing consumers' responses to the influence of the TCF logo and the treatment under which they bought tomatoes compared with the shares of sales for each tomato

under the four labeling treatments, an interesting parallel emerges. When the price of the TCF tomato was raised from \$.89 per pound to \$1.04 per pound, the share of sales for the TCF tomato fell four percent, and purchasers responded that they were less influenced by the logo than under the previous treatment. When the price of the TCF tomato was raised from \$1.04 per pound to \$1.19 per pound, the share of sales for the TCF tomato fell an additional one percent, and the stated influence of the logo also was less than under the previous treatment.

When the price of the TCF was raised from \$1.19 per pound to \$1.39 per pound, the share of sales for the TCF tomato fell 21 percent, however, the percentage of purchasers' responses to the influence of the logo increased. Seventy-six percent of the purchasers within the treatment distribution under this treatment were influenced by the logo. This may partly explain why purchasers in store one of the second week were not responsive to this price treatment (Refer to Table 4). Also, the greatest stated influence of the logo was under this last treatment. Therefore, the large decrease in sales of the TCF tomato under this treatment would be more probably explained by the reduction in quantities bought. That is, each purchaser, while greatly influenced by the logo, bought a fewer amount in pounds of the TCF tomatoes due to the high price.

With regard to the purchasers' comparisons of Tennessee tomatoes with other tomatoes, price was the only item in which a large percentage of purchasers rated TCF tomatoes worse than other tomatoes (Refer to Table 13). We assume that purchasers interpreted this

question as the price of the Tennessee tomato compared to the other tomato offered for sale in the study. Based on this assumption, purchasers' responses to the price comparison were compared to the treatment under which the tomatoes were bought (Table 41).

Table 41. Price Comparisons of the Tennessee Tomatoes Versus Other Tomatoes, According to the Treatment Under Which the Tomatoes were Bought

Price comparison	Price treatment ^a				Total
	\$.89	\$1.04	\$1.19	\$1.39	
	percent				
Worse	5	7	13	3	28
Same	16	6	7	1	30
Better	5	1	5	1	12
Do not know	<u>12</u>	<u>6</u>	<u>10</u>	<u>3</u>	<u>31</u>
Total	38	20	35	8	101 ^b

^aPrice per pound.

^bDoes not equal 100 due to rounding error.

When the price of the Tennessee tomato was equal to the other tomato, five percent of the purchasers rated the price of the Tennessee tomato worse, 16 percent correctly identified the price as being equal, five percent said the price was better, and 12 percent did not know. Assuming that purchasers would perceive a higher price as being worse than an equal or lower price, comparisons were made for the combined treatments of \$.15, \$.30, and \$.50 per pound higher for the Tennessee tomato than the other tomato. When the price was worse

(higher) for the Tennessee tomato than the other tomato, 23 percent of the purchasers correctly identified the price as being worse, 14 percent said the price was equal, seven percent said the price was better, and 19 percent did not know. According to the initial results, 28 percent said the price of the Tennessee tomato was worse, therefore, five percent of the purchasers' responses were erroneous in identifying the price as worse when it in fact was not.

In reality, in 67 percent of the treatments when the questionnaires were distributed, the price of the Tennessee tomato was worse (higher) than the other tomato. Therefore, purchasers' comparisons for the price being worse should logically have been much higher than 23 percent. From this analysis we can infer that purchasers are not affected by a stated price per pound for tomatoes, but that they make point-of-purchase comparison decisions. That is, consumers do not go into a store with the thought of paying a certain price for an item, but that they compare among available items at the point-of-purchase, and make their decision based on the information available at that time. This would explain why less than one-quarter of the purchasers in the study could correctly recall that the price of the Tennessee tomato was worse when it actually was higher than the other tomato.

The above analysis could also explain why purchasers in total were not as responsive to the price treatments of the in-store experiment as expected a priori. Overall, purchasers were responsive to the price treatments, but, even at \$1.39 per pound for the Tennessee tomato opposed to \$.89 per pound for the other tomato, the locally grown tomato accounted for 43 percent of total sales (Refer to

Table 40). From this we may infer that purchasers are influenced more by nonprice point-of-purchase comparisons than by price. These nonprice comparisons could be physical appearance, feel, smell or even the identification of the origin by the use of a logo.

CHAPTER V

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

This study was designed to determine the receptability of locally grown produce marketed to urban consumers in Knox County supermarkets with the purpose of exploring the possibilities of utilizing retail outlets as an alternative form of direct marketing for small growers of fresh produce. This overall objective was obtained through an in-store produce sales experiment conducted in three Knoxville area supermarkets in which urban consumers' actual marketplace purchasing behaviors were observed. The specific objectives of the study were to:

- 1) measure and evaluate consumers' actual retail store purchases of locally grown produce when confronted with various pricing and labeling situations;
- 2) analyze the perceptions, attitudes, and socioeconomic characteristics of retail customers who purchase bulk display produce; and
- 3) estimate the impact on sales of labeling locally grown produce as grown in Tennessee by the use of a logo and to evaluate the effectiveness of that labeling.

The first objective attempted to reveal urban consumers' actual marketplace behaviors when confronted with the opportunity to purchase locally grown produce in their local supermarket outlet. Two bins of bulk display tomatoes were set up in each of three Knox County supermarkets. One bin contained the locally grown vine-ripened

tomatoes, while the other bin contained tomatoes which the store usually sold at that time of the year and were supplied by their own warehouses. In each store pricing and labeling treatments were administered to the locally grown tomato and quantities sold of each tomato were recorded. Thus, the effect on the sales of both tomatoes could be determined when the origin of the locally grown tomato was revealed and when the price of the locally grown tomato was increased above the price of the other tomato. Information obtained from this objective will aid Tennessee growers of fresh produce, retailers, and wholesalers concerning the potential success of establishing a direct-marketing system which utilizes locally grown produce to be sold at retail outlets.

Obtaining the second objective involved the use of a questionnaire survey. Questionnaires were distributed to purchasers of bulk display tomatoes from either experimental bin. The first part of the questionnaire gathered information from the purchaser concerning the purchase of fresh tomatoes in general, and the purchase of TCF produce specifically. The second part of the questionnaire gathered socio-economic information of the purchaser. Therefore, purchasers' attitudes and perceptions of locally grown produce along with socio-economic factors could be cross-classified to provide insight into the purchasers' in-store purchasing behaviors.

The prime initiative of the third objective was to provide information concerning the labeling of the origin of produce in order to determine if a bias exists among urban consumers surveyed toward or against locally grown produce. Also, the receptability of locally

grown produce to urban consumers was revealed and inferences were made as to the existing demand for locally grown produce among urban supermarket shoppers in Knox County, Tennessee. Information gathered from this objective will be beneficial to retailers in adopting marketing strategies and promotional material.

Information gathered from the consumer by these three objectives will aid Tennessee producer growers, retailers, and wholesalers who are considering this form of direct marketing. Also, retailers will have more information about produce that the consumer prefers and could offer that preferred produce, thus, benefiting the consumer.

Conclusions and Implications of the In-store Experiment

Three conclusive statements can be made based on the results of the in-store pricing and labeling experiment. First, more than half of the urban consumers of bulk display tomatoes in the study preferred the locally grown produce over the other tomato offered for sale. This can be seen by comparing the percentage share of sales for the Tennessee tomato to the percentage share of sales for the other tomato under the treatment of equal price/no logo. In the study, the locally grown tomato outsold the other tomato by 22 percent. Since the price of the two competing tomatoes were equal and neither tomato's origin identified, consumers' purchasing decisions were based on physical attributes of the tomato only. These attributes are assumed to be color, feel, the absence of blemishes, or taste. From these results it appears that urban consumers are receptive to locally grown tomatoes. Retailers could utilize local growers, and/or wholesalers,

to supply locally grown tomatoes to be sold in retail outlets. This would aid local producers in finding a viable market for their produce. Retailers would benefit by offering produce that the consumer desires.

The second conclusion that can be made is that sales of the locally grown tomato were increased eight percent by the TCF logo used to identify the origin of the tomato. This result may be interpreted in two ways. First, consumers may have used the logo as a means of indication of the freshness and quality of the tomato. By being grown locally, Knox County consumers may have perceived the Tennessee tomato as being fresher because it would not have been shipped as far as other tomatoes offered for sale. Also, a fresher product should generally mean a better tasting product. Secondly, consumers may have been influenced by the logo to buy the TCF tomato because of a localistic-type spirit. Whether the influence was based on consumers having a localistic-type spirit toward produce grown in Tennessee, or, purchasers being biased toward produce grown in Tennessee because it was perceived as fresher, and therefore, of higher quality, is uncertain. Nevertheless, identifying the origin of the locally grown tomato with the TCF logo did have a positive effect in increasing the total sales of the locally grown tomato. Retailers who carry locally grown produce or who are considering pursuing a direct-marketing produce system may benefit from identifying the produce items as locally grown in Tennessee. Also, promotional material such as point-of-purchase displays and signs identifying produce origin should also be beneficial in attracting consumers' attentions. Of course,

costs incurred from establishing this type of system should be weighed against other forms of produce acquisition and promotion. Whether these costs would be inhibitive for retailers wishing to pursue this form of marketing approach is outside the scope of this study.

The third conclusion from the in-store sales experiment is that consumers were willing to pay a somewhat premium price for the Tennessee grown tomato. This conclusion was drawn by observing the sales of the Tennessee tomato under the price-increasing treatments of \$.15, \$.30, and \$.50 per pound. When the price of the Tennessee tomato increased \$.15 per pound, above the base price of \$.89 per pound for the other tomato, the sales of the locally grown tomato decreased four percent, but still accounted for 65 percent of the total sales of the two competing bins of tomatoes. When the price of the Tennessee tomato was raised another \$.15 per pound above the other tomato, sales dropped an additional one percent for the Tennessee tomato. However, when the price of the Tennessee tomato was raised to \$.50 per pound above the other tomato, the Tennessee tomato accounted for 43 percent of total sales, and the majority of total sales was accounted for by the other tomato. Local producers, retailers, and wholesalers should be encouraged by these results to pursue some direct-marketing activities of locally grown produce utilizing retail outlets. According to these results, there exists the possibility of increased revenues for all three parties in the event that a successful direct-marketing system could be established for which locally grown produce is sold through retail outlets.

Evidently, at least some urban Knox County consumers preferred the locally grown tomatoes used in this study. This preference is based on physical attributes of locally grown tomatoes offered for sale in this study. Some consumers were also inclined to buy locally grown tomatoes because they were identified as being grown in Tennessee. Some consumers seem to prefer locally grown tomatoes to the point that they may be willing to pay a premium price for the opportunity to purchase produce grown in Tennessee. Of course, it should be pointed out that the locally grown tomatoes used in this study were inspected to ensure high quality. Therefore, parties which may base establishment of a farmer-to-wholesaler-to-retailer system such as used in this study, should realize that consumers' purchasing behaviors may have been a direct reflection of the high quality, consistent sizing, and fairly uniform color of the locally grown tomato which made an attractive display.

Conclusions and Implications of the Questionnaire Survey

Purchasers of bulk display tomatoes in Knox County, Tennessee, are origin conscious. This conclusion is based on purchasers' responses to three questions. First, when asked if origin mattered when purchasing fresh tomatoes, 65 percent of the purchasers responded positively. Second, 61 percent of the purchasers responded that they were influenced by the TCF logo which identified the produce item in this study as locally grown. Third, purchasers indicated that they would shop at a particular supermarket because it featured locally grown produce, with 64 percent responding positively. This may arise

from the fact that purchasers perceive local produce to be fresher, and therefore, more palatable. It could also arise out of a localistic-type spirit toward produce which is locally grown in Tennessee. The results from purchasers' responses to these three questions indicates that retailers who sell locally grown produce may benefit from identification of the product's local origin.

An overwhelming majority, 92 percent, of the purchasers returning questionnaires bought the TCF tomato. Since the locally grown tomato did not account for 92 percent of the total sales of the bulk display tomatoes and it is unlikely that purchasers of the other tomato bought consistently higher quantities than purchasers of the locally grown tomato, this would indicate the presence of nonresponse bias by purchasers of the other tomato. The most probable cause for this bias was an identification problem with the questionnaire among non-purchasers of the locally grown tomato. It would have been more beneficial to have received a relatively equal number of questionnaires from nonpurchasers and purchasers of the locally grown tomato in order to make comparisons among responses to other questions. A majority of the purchasers who did not buy the TCF tomato, which was eight percent of the questionnaire respondents, indicated that they were unaware of which tomato they had bought. Price, appearance, feel, and size, and some indiscernible answers accounted for the remaining responses. Again, if more questionnaires had been received from purchasers not buying the locally grown tomato, this question would have been more beneficial in identifying purchasers' attitudes

and perceptions toward the locally grown tomato as opposed to the other tomato.

When buying fresh tomatoes consumers use color, feel, blemishes, taste, and size as the major indicators of quality. Origin, shape, price, smell, and packaging are of less importance. It is particularly interesting that purchasers did not perceive origin as a indicator of quality because it was determined from responses to various questions that purchasers were origin conscious. However, when purchasers' responses to origin used as an indicator of quality were compared to concerns over origin, a statistically significant relationship existed. Therefore, we can conclude that consumers do use origin as a freshness indicator of quality, but that physically apparent and tangible indicators are more important at the point-of-purchase. Retailers, wholesalers, and producers, therefore, should not just rely on purchasers buying produce because it is locally grown, but they should also stress color, feel, absence of blemishes, taste and sizing when offering locally grown produce for sale.

Purchasers were pleased with the overall quality of the TCF tomatoes. This would explain largely why a majority of purchasers indicated that they would shop at a particular supermarket for TCF produce. Purchasers' satisfaction of the locally grown tomato was reinforced by their comparisons of other tomatoes to the TCF tomato. The locally grown tomato was rated better than other tomatoes in terms of freshness, taste, and appearance.

From the socioeconomic background information gathered, a general profile of the modal purchaser in the study can be proposed. She is a

white professional aged 25-34 and is a college graduate. She lives in a two-person household with her spouse, who also has a professional occupation. Together their total household income is \$50,000 or more. From the results and information presented thus far of the questionnaire survey and the in-store experiment, this profile would seem to indicate that the young urban professional is the target group for the sale and promotion of locally grown produce.

Conclusions and Implications of the TCF Logo

Knox County urban purchasers of bulk display tomatoes were receptive of the locally grown produce item tested in this study. With regard to the TCF logo, which identified the locally grown tomato as a Tennessee-grown produce item, a majority of the purchasers indicated that they were influenced by the logo. Purchasers' stated behaviors were reinforced by the results of the in-store experiment in which sales of the locally grown tomato were increased eight percent by the use of the TCF logo. From these results we can conclude that urban consumers are origin conscious and prefer to buy locally grown produce. Therefore, retailers may want to consider identifying locally grown produce offered for sale in supermarket outlets. However, further exploration of the reason purchasers were affected by the logo needs to be conducted. As stated earlier, it is uncertain whether purchasers were affected by the logo and inclined to buy Tennessee produce because they perceived it to be fresher and of higher quality, or, purchasers were affected by the logo and inclined to buy Tennessee produce because of a localistic-type spirit. Therefore, research

designed to reveal the motivation of consumers to purchase produce that has been grown in Tennessee would be particularly beneficial.

It is the conclusion of this paper that a market segment does exist for locally grown produce sold at retail outlets to urban consumers in Knox County, Tennessee. Quantity estimates of such demand are unknown and were not within the scope of this project. The fact that a preference for locally grown produce exists among some consumers may be sufficient evidence that pursuing sales and labeling of locally grown produce in supermarkets has potential for success. However, it is recommended that further research be conducted in the area of offering locally grown produce to urban consumers through supermarket outlets. Research conducted to assess further the attitudes, perceptions, and preferences of urban consumers dealing with locally grown produce would be of benefit to producers, wholesalers, retailers, and consumers.

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10. BLOWN PIPE

APPENDIX

GILBERT

GILBERT

Store No. _____ Week No. _____ Day No. _____

1. Do you care where fresh tomatoes have been grown when you consider purchasing them? _____ Yes _____ No
2. Did you buy "Tennessee Country Fresh" tomatoes?
_____ Yes _____ No
3. Did the "Tennessee Country Fresh" sticker affect your purchase decision? _____ Yes _____ No
4. If you did not purchase the "Tennessee Country Fresh" tomatoes, why didn't you? _____

5. Circle the items you use to judge fresh tomato quality?

Price	Smell	Color	Size	Packaging
Feel	Taste	Blemishes	Shape	Origin
6. Were you pleased with the overall quality of the tomatoes you purchased? _____ Yes _____ No
If no, what was wrong _____

7. Would you shop at a particular supermarket if you knew beforehand that that store featured "Tennessee Country Fresh" produce?
_____ Yes _____ No

8. How do "Tennessee Country Fresh" tomatoes compare to other fresh tomatoes in terms of: (circle your response)

<u>Freshness</u>	<u>Taste</u>	<u>Appearance</u>	<u>Storage life</u>	<u>Price</u>	<u>Nutrition</u>
Worse	Worse	Worse	Worse	Worse	Worse
Same	Same	Same	Same	Same	Same
Better	Better	Better	Better	Better	Better
Do not know	Do not know	Do not know	Do not know	Do not know	Do not know

Background Information

Occupation of purchaser _____

Sex of purchaser: _____ male _____ female

Spouse's occupation _____

Race: _____ Black _____ Asian _____ White _____ Hispanic

Age of purchaser: _____ Under 25 _____ 35-44 _____ 55-64
 _____ 25-34 _____ 45-54 _____ 65 and over

Number of people in your home, including yourself _____

Of those who live here, how many are:

_____ 10 and under _____ 11 through 18 _____ 19 and over

Formal education of purchaser:

_____ 8th grade or less _____ 1-3 years of college
 _____ 9-11th grade _____ college graduate
 _____ high school graduate

Income category for total household:

_____ Less than \$10,000 _____ \$30,000-\$39,999
 _____ \$10,000-\$19,999 _____ \$40,000-\$49,999
 _____ \$20,000-\$29,999 _____ \$50,000 or more

VITA

Carol Lin Stout was born in Lawrenceburg, Tennessee, on August 1, 1963, to Bobby and Okerleen Stout. She attended Loretto High School and was graduated in May of 1981. In the summer of 1981 she enrolled at the University of North Alabama in Florence, Alabama. She received a Bachelor of Science degree in Marketing and Management in December of 1984. In March of 1985 she accepted a research assistantship from the Department of Agricultural Economics and Rural Sociology where she began studies at the University of Tennessee, Knoxville, in Agricultural Economics with an emphasis on Fresh Fruit and Vegetable Marketing. She has been involved in the production of apples on her parents' family orchard since childhood. She completed her requirements for the Master of Science degree in June of 1987.