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State Logos for Fresh and Processed Foods: A Case Study for Consumers in Knox County, Tennessee

University of Tennessee Agricultural Experiment Station

David B. Eastwood

John R. Brooker

Robert H. Orr

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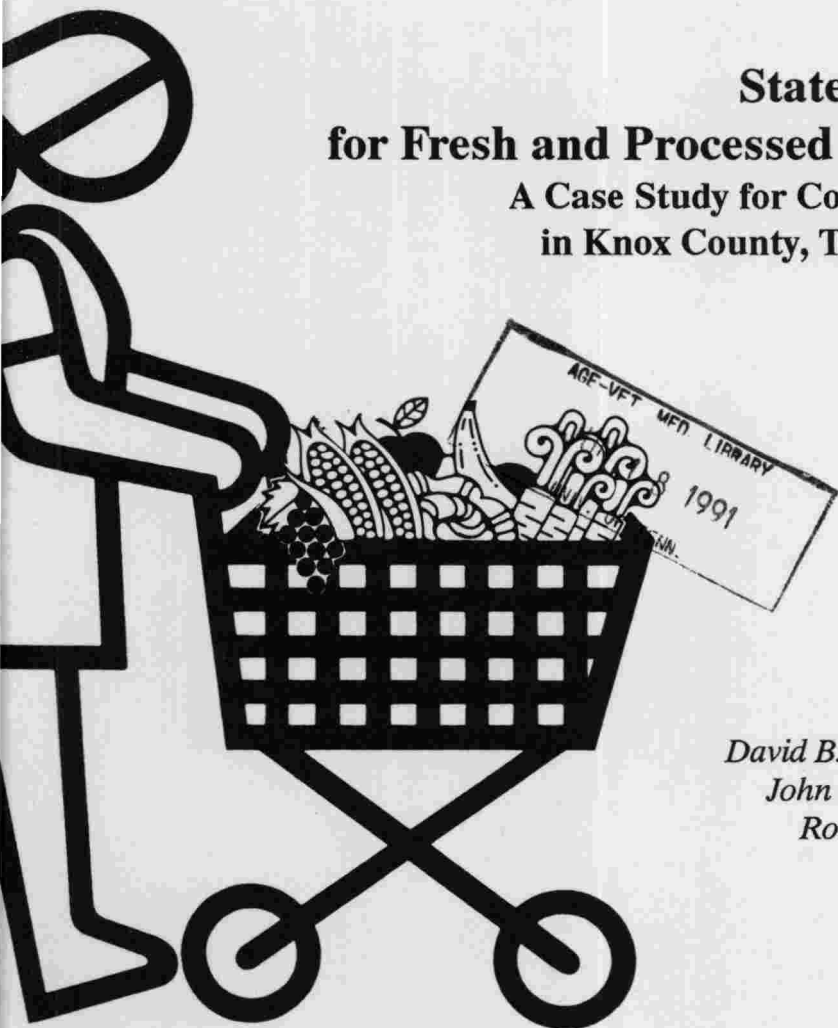
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**State Logos
for Fresh and Processed Foods:
A Case Study for Consumers
in Knox County, Tennessee**



*David B. Eastwood
John R. Brooker
Robert H. Orr*

The University of Tennessee
Agricultural Experiment Station
Knoxville, Tennessee
Don O. Richardson, Dean

*Edited by Maurine E.P. Taylor, Information Specialist, The University of Tennessee
Agricultural Experiment Station Communications. Cover design by Monica Godbole,
Staff Assistant.*

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David B. Eastwood
Professor

John R. Brooker
Professor

Robert H. Orr
Associate Professor

The University of Tennessee
Agricultural Experiment Station
Knoxville, Tennessee

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Introduction

The Tennessee Department of Agriculture, like those in many other states, is in the process of developing a more aggressive marketing stance on behalf of the state's agricultural sector. Increased regional competition, questions from farmers about alternative enterprises, and concerns about access to marketing channels have prompted the recent expansion of its marketing staff. One of the strategies being developed is a sticker-type logo to identify fresh produce grown in Tennessee and foods processed in the state. The purpose of the promotion plan is to use the logos as vehicles for increasing market opportunities for the state's farmers and food processors principally by increasing consumer demand.

Several important issues need to be addressed in order to design and implement a successful logo promotion. Underlying the strategy is the premise that consumers will react positively (from Tennessee's perspective). But this reaction is not guaranteed. Consumers' reactions depend on the messages associated with the logo and on the effectiveness of the messages in the context of foods as experience goods (Eastwood 1985). Therefore, if the logo is effective, consumers must believe that it is associated with relevant properties they value.

State logos are fairly new and have been primarily involved with fresh produce promotions. The Tennessee Department of Agriculture has proposed using two similar logos—one for fresh produce and one for processed foods. Very little research has been conducted on consumer acceptance of state logos for fresh produce, and none is reported in the literature regarding processed foods. Consequently, there is a need to obtain information about consumer acceptance of logos, in general, and their use for fresh and processed foods, separately. The information can then be used to devise more effective logo-oriented marketing strategies.

This study is based on the possibility that consumer information needs for state logos may differ by type of food. Among the possible reasons for preferring own-state food items are the following: consumer pride in the state, help for local farmers and industry, fresher products, and lower transportation costs shared in part with consumers. If consumer information needs and/or perceptions vary by product, then marketing strategies may need to vary. Research (Eastwood, Orr, and Brooker 1987 and Eastwood, Brooker, and Orr 1986) has found this to be the case for tomatoes and peaches in contrast to apples, broccoli, and cabbages. No study has examined the differences between fresh and processed foods. It would be administratively easier to use a single logo, but, if consumer information needs differ, then separate logos may be necessary in order to increase marketing effectiveness. Therefore, there is an important empirical question to be examined.

Because foods are experience goods, there is a great deal of inertia and reliance on the past. Effective promotion entails providing information the consumer can use to make a purchase decision. Successful promotion, then, is more likely to occur with strategies designed to address information problems that eliminate or reduce the uncertainty associated with the purchase-before-

assessment situation. Possibilities include associating specific products with past experiences or providing information about unique features of Tennessee agricultural products as compared with the competition. One of the best ways to accomplish this is to begin with a survey of consumer attitudes and perceptions of the the products to be promoted.

Objectives and Procedure

The goal of this research project is to obtain information about consumers' attitudes toward logos in order to identify consumer marketing options for Tennessee logos. The overall strategy is to survey a random sample of urban consumers to record their responses to questions about their perceptions of logos in general and of fresh and processed foods. Responses are used to determine whether a single or separate logos should be developed and introduced. The timing of the study is propitious since the state has not engaged in any logo-oriented promotion, so it is possible to survey consumers without the complicating factor of responses being influenced. This goal is achieved through completing these steps:

1. Develop a sampling methodology;
2. Design a survey instrument and gather data about consumer information needs for fresh and processed foods and background information of respondents;
3. Analyze the data to learn about consumer information needs for fresh and processed foods; and
4. Draw inferences and implications for logo promotion.

In an effort to keep survey costs to a minimum, the decision was made to use a mail survey, as opposed to telephone or personal interviews. The total design method (TDM) of Dillman (1978) was followed. Follow-up mailings went to nonrespondents in an effort to decrease the nonresponse bias.

However, little research has been published regarding the effects these follow-ups may have on the characteristics of the sample or on the distribution of responses to attitudinal questions. Should follow-ups change the distributions, drawing inferences from the sample would be much more tenuous and would depend on response rates by follow-up. Consequently, the initial discussion of the survey centers on the effects of TDM on the sample. These need to be established to form the basis for proceeding with subsequent analyses of responses associated with steps 3 and 4.

Previous Research

Fresh produce demand analyses have focused on attitudes, socioeconomic characteristics, purchase habits, and preferences of urban consumers. Kezis, King, Tonesmeyer, Jack, and Kerr (1984) and Jack and Blackburn (1985) used mail surveys of households in Maine, Delaware, and West Virginia to identify consumer attitudes and preferences. They concluded that quality was the most important factor. Beierlein, Vroomen, and Connell (1986) found that Pennsylvania consumers used quality, appearance, and nutritional value as the main

criteria. They also concluded that consumers preferred locally grown fresh produce as compared with produce from other states because of freshness, taste, and appearance.

Urban consumers' stated preferences for selected fresh produce were examined via personal interviews with a random sample of Knox County, Tennessee, households in the early summer of 1985 (Eastwood, Orr, and Brooker 1987). The survey instrument was designed to gather information about consumers' satisfaction with available selected fresh produce (apples, broccoli, cabbages, peaches, and tomatoes), purchase frequency, awareness of retail outlets, and criteria for judging selected fresh produce.

Several results of the Eastwood, Orr, and Brooker survey have implications for the present logo study. Consumer satisfaction with fresh produce varies significantly by product. Therefore, it may be difficult to use a single marketing approach for all fresh produce, let alone for processed foods. The most important criteria for judging fresh produce, in descending order, are quality, convenience of shopping, competitive prices, and freshness. Results imply that locally-grown produce needs to be of consistently high quality, competitively priced and available at convenient outlets. Consumers were asked to compare their impressions of the selected locally-grown fresh produce to produce grown in other areas. Except in the case of tomatoes, the vast majority of responses were "do not know," which indicates that consumers have information gaps with respect to the quality of locally-grown produce. It also suggests that consumers have no bias, either for or against, local produce, even though they consistently rated locally-grown tomatoes as being of better quality.

Eastwood, Brooker, and Orr (1987) used these survey data to analyze hypothesized determinants of consumers' satisfaction—frequency of purchase, willingness-to-pay, and concern with origin—using the probit regression technique. The results indicate a mixed pattern of significant socioeconomic variables across products. This is consistent with the descriptive analyses (Eastwood, Orr, and Brooker 1986), because it suggests that product-specific promotion strategies that emphasize freshness and taste should be developed, starting with tomatoes. Since tomatoes were purchased by a wide spectrum of the households surveyed, a general media campaign is appropriate. Then, the promotion could be expanded to other fresh produce.

In-store experiments of consumer preferences for locally-grown fresh produce have been conducted by Trotter and Brewer (1977) and Brooker, Stout, Eastwood, and Orr (1987). The former study pertained to Pennsylvania apples and concluded that consumers preferred those that were state-grown. The latter study examined consumers' bulk purchases of local and other tomatoes in Knox County, Tennessee, in July 1986. It concluded that consumers recognized differences in the appearance of local tomatoes because bulk sales of locally grown U. S. No. 1 large and extra-large tomatoes were 61 percent of total sales without any origin identification. Local sales increased to 69 percent when the logo was displayed (without any media advertising) and the two types of tomatoes were the same price. As the relative price of local tomatoes increased,

sales declined, but the data suggested that the demand for locally-grown tomatoes was much less elastic than that for other tomatoes.

Analysis of questionnaires distributed to these tomato purchasers in Knox County indicated that 61 percent of surveyed purchasers were influenced by the logo. Responses to questions about concern with origin, about the logo affecting purchases, and about shopping at supermarkets with local tomatoes indicated that the quality of tomatoes was the most important criterion consumers used. Food shoppers who considered local tomatoes to have better attributes were more likely to be concerned with origin, to be influenced by the logo, and to shop at supermarkets having local tomatoes for sale. The overall conclusion from the in-store tomato experiments was that the sales response was favorable and that more than just the display of a logo was needed to influence consumer choice.

The use of a state logo to promote processed foods is a new marketing strategy (Northdurft 1986). Only a few states are involved. (Texas and Wisconsin have been most active.) No research has been published regarding the effectiveness of these programs, so states that are interested in developing similar strategies must create them with little guidance. Given the analyses of fresh produce promotion, however, it is clear that careful consideration should be directed toward the questions of whether separate logos should be used for fresh and processed foods and whether different informational content should be presented for each logo. The latter issue is particularly important since freshness is not a major consideration for processed foods. This bulletin is an initial step in addressing these concerns.

A Modified Total Design Method

The nature of the present research problem necessitates gathering data from food shoppers. Personal interviews, telephone surveys, and mail surveys are the primary avenues of gathering the needed information. Telephone and mail surveys have cost advantages over personal interviews. Consequently, unless there are overriding concerns, such as a need to use a visual display, a taste test, or a lengthy questionnaire, telephone and mail surveys tend to be used to gather primary data.¹ But the initial contact with a prospective respondent is more distant than with a personal interview, and this distance can lead to lower response rates. To circumvent the problem researchers have stressed the need to design and implement telephone and mail surveys in ways that will elicit the highest response rates possible without introducing any biases into the process.² The motivation has been to minimize nonresponse problems. One proposed technique is Dillman's TDM.

TDM for a mail survey is defined as a procedure that begins with the creation of the survey instrument and continues through a series of follow-ups

¹For a discussion of advantages and disadvantages of various types of surveys see Miller (1983).

²Most of these techniques have been developed by sociologists and rural sociologists. See Miller (1983) for a summary.

to nonrespondents. It focuses on those aspects of the survey process that affect the quality or quantity of responses and helps to organize sampling efforts. TDM encompasses the design and length of the questionnaire, the basic appeal to respondents, and the use of follow-ups to increase responses. The questionnaire should be short (only a few pages), contain a statement of purpose and rationale for participation, have clear directions, and have return mail convenience. In addition to the initial mailing, (1) a postcard is mailed seven days later; (2) a follow-up letter is mailed two weeks after the postcard; and (3) a final appeal via a certified letter is mailed one month later. Steps (2) and (3) only apply to people who have not responded by the follow-up date.

Viewed from a statistical perspective, TDM has two alternative implications for sampling. One is that the characteristics of the sample could change as potential respondents are encouraged to complete their questionnaires and return them. This suggests that sampling that does not entail follow-ups may underrepresent segments of the population and contain nonresponse biases, which could result in drawing incorrect inferences. The second implication is that the characteristics of the sample do not change significantly during the follow-up process, suggesting that the effects of follow-ups are primarily related to benefits associated with increased sample size.

There appears to be little published research about the effects of mail survey follow-ups, and none has been found that examined the effects in terms of sample and response characteristics by follow-up wave. That is, discussions have tended to focus on the effects of follow-ups on response rates without paying much attention to their effects on the distribution of the sample.

These problems could arise: First, the response bias, *ceteris paribus*, may be relatively small if follow-ups primarily increase sample size. Second, if additional subgroups of the target population are more likely to respond as the follow-up proceeds, then the possibility of nonresponse biases would be diminished. A third possibility is that follow-ups may prompt a subgroup of the population to respond disproportionately, so that follow-ups would lead to biased samples.

The first would lead to the identification of the optimal number of follow-ups to obtain samples of desired size. The other two would lead to more complicated sampling techniques and consequent impacts on the distributions of sample characteristics.

This section of the bulletin presents an initial analysis of these issues based upon the application of a modified TDM. Results have implications for using TDM and for its impacts on sample characteristics. Once the effects of the follow-ups have been identified, attention can turn to evaluating the survey results and drawing marketing implications.

Since the majority of the state's consumers live in urban settings, attention was restricted to a metropolitan area. Knox County was chosen in order to minimize costs by keeping the sample relatively small and because Knox County could be used as a test market (Sales and Marketing Management 1985).

A survey instrument was developed based upon previous consumer pref-

erence research (Eastwood, Brooker, and Orr 1987). The questionnaire was kept very short in accordance with TDM (both sides of one legal-size sheet). It is reproduced in the Appendix. The questionnaire was printed to enhance its visual appeal. Proposed logos were shown at the beginning. A basic appeal statement was included explaining the purpose of the survey and the importance of returning a completed questionnaire. Surveys were sent in business-size envelopes by first class mail. All a respondent had to do to return it was to put the questionnaire in the mail; no postage stamp or return envelope were involved.

TDM involves questionnaires that are mailed to specific people using individualized introductions. However, a decision was made to address correspondence to "Resident" based upon the following considerations. Higher turnover rates for renters versus homeowners could lead to higher incidences of undeliverable surveys and lower representation of renters. For those potential respondents who had left the area, there was no need to forward the questionnaire. Furthermore, time would be lost in forwarding mail outside the county. Names could also be misleading. Questionnaires were to be completed by the household's primary food shopper. But these people were not known, so there was no way to address the survey to specific persons. Use of "Resident" was felt to be more consistent with the respondents' perceptions of protecting confidentiality, and, thereby, encouraging returns. The final point, as noted by Dillman (1978), is that personalization is more than just using a name. Visually appealing materials, individually typed letters on official letterhead stationery, a clear explanation of the respondent's involvement with an important study, and first class mail contribute to personalization, and all of these were used.

Several other modifications were made to TDM. First, the initial follow-up postcard was not sent. The reason was that undeliverable questionnaires were returned and had to be sent to newly selected addresses. This process was expected to take more than one week, leaving insufficient time to use postcards. The first follow-up went to those who had not returned a questionnaire within two weeks of the initial mail-out. It included an individually typed and signed appeal on department stationery and another copy of the survey. First class mail was used.

TDM utilizes a certified letter as a final appeal. Originally, the information received about the U.S. Postal Service indicated that certified letters could be addressed to "Resident." Subsequently, it was learned that branch managers had the authority to decide whether or not to deliver such mail. Entire geographic areas might have been eliminated from the final appeals using this method, so the third (and last) mailing to nonrespondents was sent by first class mail one month after the initial contact.

Residential listings were obtained from the 1985 edition of the City Directory of Knoxville (City Directory Company), which contains a listing of addresses for the entire county. A random sample of residences was generated in the following manner. The directory contained 537 pages of addresses, each having three columns with 97 lines. A modified random number generator

program provided random sets of values for these parameters. Businesses were included in the address listings. Therefore, whenever business addresses were encountered, the corresponding random selections were omitted. Similarly, blanks and nonaddress related sets were also omitted.

The survey was conducted during the early summer of 1987. This period was chosen because it was felt that consumers' interest in fresh produce, especially locally grown, would be most positive. However, it necessitated mailing the questionnaire at the time the public schools closed, and the last follow-up letter was sent just prior to the Fourth of July weekend. These two factors could have had adverse impacts on likelihood to respond.

Follow-Up Effects

Questionnaires were mailed to 750 residential addresses. Those that were returned as undeliverable were replaced with other randomly selected addresses in order to keep the number of initial contacts fixed. Table 1 presents the distribution of responses according to the dates they were returned.

Table 1. Distribution of survey responses by initial and follow-up mailing

Mailing of Questionnaire	Number of Responses	Percent of Total Contacted	Percent of Returned Surveys
Initial ^a	61	8.1	25.3
First Follow-Up	138	18.4	57.3
Second Follow-Up	42	5.6	17.4
Totals	241	32.1	100.0

^aSample size of 750 residential addresses.

The overall response rate of 32 percent, while higher than some mail surveys without follow-ups, was lower than others with follow-ups (Miller 1983). This was felt to be due to three considerations: (1) the decision against the use of certified mail to "Resident"; (2) the fact that the initial contact occurred after the close of public schools; and (3) the timing of the last follow-up, which was sent just prior to the long Fourth of July weekend.

Frequency data for the socioeconomic variables are displayed in Table 2. The specific measures were based upon previous consumer fresh produce preference surveys (Eastwood, Brooker, and Orr 1987). Categories represent aggregated groups because there were too few observations in some of the unaggregated cells for the chi square tests described below. Comparing these sample measures with county data from the 1980 census led to the following conclusions. The average income of the respondents is somewhat higher than the census income adjusted for inflation. Blacks are underrepresented in the sample. Most respondents are women. Respondents on average have higher educational levels than the county's population. Also, the average household size of 2.7 was slightly larger than the county average in 1980.

Table 2. Socioeconomic characteristics of the sample: Frequencies

Income: n: ^a	≤ \$19,999 67	\$20,000-39,999 74	≥ \$40,000 74	Average^b 29,641
Education: n:	No College 70	Attended College 151		NC
Respondent's Occupation: n:	Professional 76	Other 58	Not Employed 94	NC
Respondent's Employment: n:	Full-Time 166	Unemployed and Part-Time 72		NC
Respondent's Age: n:	15-34 58	35-54 80	≥ 55 83	45
Household Size: n:	Single 46	2-Person 81	> 2-Person 107	2.7
Respondent's Sex: n:	Male 76	Female 159		NC*
Race: n:	White 227	Nonwhite 9		NC*

*Not computed.

^aThe number of respondents answering the question.

^bBased upon the assumption of an even distribution of responses within unaggregated cells.

At first blush these observations suggest that the sample is not representative, but several factors must be recognized. First, interest centers on whether the characteristics of the sample change by follow-up, not whether the total sample is representative. Also, the predominance of higher income, higher educated, professional respondents is not unexpected. Mail surveys typically are associated with overrepresentation of these respondents (Miller 1983). Duncan, Juster, and Morgan (1984) report on similar difficulties with longitudinal surveys and reinterviews. With respect to fresh produce consumption, the sample reflects consumers who are more inclined to purchase these commodities (Blaylock and Smallwood 1985).

The effects of the modified TDM on sample characteristics are presented in Table 3. It displays the results of a series of chi square tests between the timing of returns and measures of the respondent households. Most of the chi square statistics are not significant, and the inferences in these instances are that the respondents' characteristics do not change by follow-up. These measures are income, respondent's occupation, employment, age, and sex. A significant relationship was found for education. There is a tendency for respondents who attended college to be more likely to return the survey initially. This result is consistent with other mail surveys (Miller 1983).

There could be a systematic relationship between the set of independent variables and the time the questionnaires were returned. In order to test this

Table 3. Questionnaire returns versus respondent characteristics^a

	Questionnaire Returns									
	Initial			First Follow-Up			Second Follow-Up			Total Percent
	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	
Income										
< \$19,999	15	18	7.0	44	38	20.5	8	11	3.7	31.2
\$20,000-\$39,999	19	20	8.8	43	42	20.0	11	11	5.1	34.0
≥ \$40,000	24	20	11.2	36	43	16.7	15	12	7.0	34.9
	<u>58</u>	<u>58</u>	<u>27.0</u>	<u>123</u>	<u>123</u>	<u>57.2</u>	<u>34</u>	<u>34</u>	<u>15.8</u>	<u>100.0</u>
Chi Square = 4.73										
Education										
No College	13	21	5.6	57	48	24.5	13	14	5.6	35.6
Attended College	46	38	19.7	79	88	33.9	25	24	16.7	64.4
	<u>59</u>	<u>59</u>	<u>25.3</u>	<u>136</u>	<u>136</u>	<u>58.4</u>	<u>38</u>	<u>38</u>	<u>22.3</u>	<u>100.0</u>
Chi Square = 7.13*										
Respondent's Occupation										
Professional	23	19	10.0	38	44	16.7	15	13	6.6	33.1
Other	14	15	6.1	36	34	15.7	9	10	3.9	25.8
Not Employed	21	24	9.2	58	54	25.3	15	16	6.5	41.1
	<u>58</u>	<u>58</u>	<u>25.3</u>	<u>132</u>	<u>132</u>	<u>57.7</u>	<u>39</u>	<u>39</u>	<u>17.0</u>	<u>100.0</u>
Chi Square = 2.78										
Respondent's Employment										
Full-Time	24	27	10.5	65	61	28.5	17	18	7.5	46.5
Less Than Full	34	31	14.9	66	70	29.0	22	21	9.7	53.6
	<u>58</u>	<u>58</u>	<u>25.4</u>	<u>131</u>	<u>131</u>	<u>57.7</u>	<u>39</u>	<u>39</u>	<u>17.2</u>	<u>100.0</u>
Chi Square = 1.26										

Table 3. Continued

	Questionnaire Returns									
	Initial			First Follow-Up			Second Follow-Up			Total Percent
	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	
Respondent's Age										
15-34	18	15	7.8	27	33	11.7	13	10	5.6	25.1
35-54	26	23	11.3	49	52	21.2	15	15	6.5	39.0
≥55	15	21	6.5	57	48	24.7	11	14	4.8	36.0
	59	59	25.6	133	133	57.6	39	39	16.9	100.0
	Chi Square = 7.75									
Respondent's Sex										
Male	18	19	7.8	43	44	18.6	14	12	6.1	32.5
Female	39	38	16.9	93	92	40.3	24	26	10.4	67.6
	57	57	24.7	136	136	58.9	38	38	16.5	100.0
	Chi Square = .40									

^aSample sizes are determined by the number of respondents who answered the respective questions.

*Significant at .10 level.

Table 4. Responses to fresh produce logo questions: Frequencies

Question	Variable	Response ^a
How useful to you would a logo identifying Tennessee fresh produce be when shopping?	FRESHUSE	Not at all: 9 Not too: 23 Somewhat: 85 Very: 124
Check which statement most closely represents your feelings about buying Tennessee-grown fresh produce.	FRESHQUAL	No difference: 47 Buy because state-grown TN is better: 105 87
Should labels be used to identify produce that has been grown in Tennessee?	FRESHIDEN	No: 18 Yes: 220
Would you like to have information about where fresh produce was grown in super-market displays?	FRESHINFO	No: 27 Yes: 207
If a supermarket identified Tennessee-grown fresh produce, would you think the store is trying to help you?	FRESHHELP	No: 14 Yes: 224
A logo that identifies fresh produce grown in Tennessee would:	FRESHPURC	Influence me to buy produce grown elsewhere: 1 Have no affect on me: 34 Influence me to buy produce grown in Tennessee: 193
Labeling Tennessee-grown fresh produce may involve some additional cost. Would you be willing to pay a slightly higher price to cover this cost?	FRESHCOST	No: 104 Yes: 129

^aNumber of respondents answering.

possibility a probit regression model was developed in which the dependent variable was the return category (= 1, 2, or 3).³ Independent variables are those presented in subsequent sections. The specific form of the probit equation is that described by McKelvey and Zavoina (1975). The resulting chi square statistic leads to the inference of no significant overall relationship, and the only significant coefficient is for attending college. These results are taken as evidence that there was no systematic relationship among the set of household characteristics and the return of the questionnaire.

³A more complete discussion of the probit regression model is provided in a subsequent section.

Tables 4-6 display summary information regarding logo attitude responses. They are grouped according to fresh produce, processed foods, and a single logo respectively. These tables present the questions, shorthand names for the questions, and the distributions of responses.

Fresh produce attitude responses versus follow-up are shown in Table 7. The chi square statistics led to inferences that the responses did not change by follow-up. This suggests the distribution of responses was not significantly affected by the appeals to nonrespondents. It means that respondents who might be particularly interested in using logos when making fresh produce purchases were not inclined to respond initially, and those who were less interested were inclined to respond due to follow-up prompts.

A similar analysis was conducted for processed foods attitudes versus follow-up. The results are shown in Table 8. Comparable inferences were drawn. Follow-ups did not appear to affect the distributions of responses.

Table 5. Responses to processed foods logo questions: Frequencies

Question	Variable	Response ^a
How useful to you would a logo identifying Tennessee processed food be when shopping?	PROCUSE	Not at all: 16 Not too: 58 Somewhat: 88 Very: 78
Check which statement most closely represents your feelings about buying Tennessee-processed foods.	PROCQUAL	No difference: 75 Buy because state-grown: 120 TN is better: 43
When you consider purchasing processed food (like dairy products) in supermarkets, would you like to know if it was processed in Tennessee?	PROCIDEN	No: 43 Yes: 189
A logo that identifies foods processed in Tennessee would:	PROCPURC	Influence me to buy produce grown elsewhere: 4 Have no affect on me: 52 Influence me to buy produce grown in Tennessee: 174
Labeling Tennessee-processed foods may involve some additional cost. Would you be willing to pay a slightly higher price to cover this cost?	PROCCOST	No: 113 Yes: 125

Survey Results

This section of the bulletin presents a descriptive analysis of the consumers' responses to the logo-related questions. First, consumer attitudes toward a state fresh produce logo are discussed. Second, consumer attitudes toward a state processed foods logo are presented. Third, responses to the fresh and processed questions are compared. Fourth, regression analyses of attitude responses as functions of socioeconomic measures are described.

One concern that needs to be addressed at the outset pertains to whether respondents had pervasive attitudes, either positive or negative, about logos. That is, were the questionnaires returned by food shoppers who were for or against logos across-the-board, or did the responses reflect a diversity of feelings about logos in general and fresh and processed logos in particular? This possibility is examined with chi square tests of independence between the first question that was asked (Should the same logo be used? Yes or no.) and the distributions of the other attitude responses. No significant computed chi squares were found, and this suggests that respondents did not complete the questionnaire in an entirely positive or negative manner.

Table 4 reveals a diversity of opinions on various dimensions of logos for state-grown fresh produce. Responses indicate that the large majority (87 percent) feel such a logo would be at least somewhat useful and slightly more than half (52 percent) feel it would be very useful. Feelings about buying Tennessee fresh produce reveal that most consumers buy because these products are state-grown or because they feel these products are better. Almost all respondents (92 percent) feel that Tennessee fresh produce labels should be used, would like information, and feel that supermarkets' use of Tennessee fresh produce labels is helpful. Another positive attitude toward logos is seen in the responses to a question about the influence they would have on purchases. Of the respondents, 85 percent indicated the logo would influence them to buy Tennessee-grown fresh produce.

Altogether, food shoppers' responses to these six fresh produce attitude questions suggest a logo-oriented promotion could be quite effective in giving

Table 6. Responses to fresh versus processed logo question: Frequencies

Question	Variable	Response ^a
Do you think the State Department of Agriculture should use the same logo for foods that have been processed in Tennessee (not necessarily grown here) and for fresh produce grown in Tennessee?	SAMELOGO	No: 169
		Yes: 64

Tennessee-grown fresh produce a competitive edge in the state. However, responses to the cost question point to a caveat. The sample is nearly evenly divided on the willingness-to-pay part of the additional cost, suggesting that, although consumers would like the information, they do not value it enough to warrant paying much of the cost. An inference is that the promotion must be carefully designed to attract attention and provide information that consumers value, but the cost cannot be passed on to the consumer.

Responses to the processed foods attitude question are contained in Table 5. The majority of food shoppers surveyed (69 percent) said they feel a logo for these foods would be somewhat or very useful. Nearly twice as many respondents (32 percent) think that Tennessee-processed foods are no different from foods from other states as think the Tennessee products are better (18 percent). Labeling Tennessee-processed foods would have a positive effect on most of the food shoppers surveyed (76 percent). Food shoppers are almost evenly divided on the willingness-to-pay part of the cost due to the logo. As with the fresh produce logo, these observations lead to the conclusion that a substantial proportion of food shoppers feel the processed logo would be useful as long as retail prices are not affected adversely.

Two crucial issues in this study are whether the same logo ought to be used for fresh and processed foods and whether different marketing strategies ought to be used. A preliminary answer is found in Table 6. One attitude question simply asked for the respondent's opinion about using the same logo. The clear preference is for separate ones, as nearly three-quarters (73 percent) responded negatively.

Cursory comparisons of Tables 4 and 5 suggest that attitudes about the two logos are different, so the question becomes: Are the distributions of responses significantly different? An answer can be obtained by conducting chi square tests between each of the related pairs of response distributions.

Table 9 contains the data for the chi square test of the distributions of responses. The low frequency of responses in some cells of the original contingency tables necessitated grouping categories. The responses "not at all useful" and "not too useful" were combined. Since the computed chi square is greater than the corresponding critical value (.05 level), the inference is that the distributions are not independent. Comparisons of the actual and expected frequencies reveal there is a tendency for respondents to answer questions in a related way. For example, those who responded with "very" on one question tended to do so on the other.

Similar results are obtained from comparisons of the other related questions. These are fresh produce versus processed foods attitudes (FRESHQUAL versus PROCQUAL in Table 10), information (FRESHINFO versus PROCINFO in Table 11), influence (FRESHPURC versus PROCPURC in Table 12), and willingness-to-pay (FRESHCOST versus PROCCOST in Table 13). In each case the statistical tests lead to inferences that the proportions favoring the use of logos are different, as are the distributions of the responses.

Table 7. Returns versus fresh produce logo attitudes^a

	Returns									Total Percent
	Initial			First Follow-Up			Second Follow-Up			
	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	
SAMELOGO										
No	48	44	20.7	90	95	38.8	31	30	13.4	72.8
Yes	12	16	5.2	41	36	17.7	10	11	4.3	27.2
	60	60	25.9	131	131	56.5	41	41	17.7	100.0
	Chi Square = 2.85									
FRESHUSE										
No	7	8	2.9	18	18	7.5	6	5	2.5	12.9
Somewhat	20	22	8.3	48	49	20.0	17	15	7.1	35.4
Very	34	32	14.2	71	71	29.5	19	22	7.9	51.7
	61	62	25.4	137	138	57.1	42	42	17.5	100.0
	Chi Square = 1.125									
FRESHQUAL										
No Difference	8	12	3.4	30	26	12.6	8	8	3.4	19.3
Buy Tennessee	29	26	12.2	56	60	23.5	20	19	8.4	44.1
Tennessee Better	23	22	9.7	50	50	21.0	14	15	5.9	36.6
	60	60	25.3	136	136	57.1	42	42	17.7	100.0
	Chi Square = 2.44									

^aSee Table 4 for variable descriptions. Sample sizes are determined by the number of respondents who answered the respective question. FRESHIDEN and FRESHHELP have too few observations in some calls to conduct tests.

Table 7. Continued^a

	Returns									
	Initial			First Follow-Up			Second Follow-Up			Total Percent
	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	
FRESHINFO										
No	6	7	2.5	16	15	6.8	5	5	2.1	11.4
Yes	<u>54</u>	<u>53</u>	<u>22.8</u>	<u>119</u>	<u>120</u>	<u>50.2</u>	<u>37</u>	<u>37</u>	<u>25.6</u>	<u>88.6</u>
	60	60	25.3	135	135	57.0	42	42	17.7	100.0
	Chi Square = 0.154									
FRESHPURC										
No Effects	6	9	2.6	22	20	9.7	7	6	3.1	15.4
Buy TN	<u>51</u>	<u>48</u>	<u>22.5</u>	<u>106</u>	<u>108</u>	<u>46.7</u>	<u>35</u>	<u>36</u>	<u>15.4</u>	<u>84.6</u>
	57	57	25.1	128	128	56.4	42	42	18.5	100.0
	Chi Square = 1.4093									
FRESHCOST										
No	24	26	10.2	62	59	26.3	18	19	7.6	44.1
Yes	<u>35</u>	<u>33</u>	<u>14.8</u>	<u>73</u>	<u>76</u>	<u>30.9</u>	<u>24</u>	<u>23</u>	<u>10.2</u>	<u>55.9</u>
	59	54	25.0	135	135	57.2	42	42	17.8	100.0
	Chi Square = 0.489									

^aSee Table 4 for variable descriptions. Sample sizes are determined by the number of respondents who answered the respective question. FRESHIDEN and FRESHHELP have too few observations in some cells to conduct tests.

Table 8. Returns versus processed foods logo attitudes^a

	Returns									
	Initial			First Follow-Up			Second Follow-Up			Total Percent
	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	
PROCUSE										
No	20	16	9.8	33	35	16.2	9	11	4.4	30.4
Somewhat	18	19	8.8	39	41	19.1	16	13	7.8	35.8
Very	<u>15</u>	<u>18</u>	<u>7.4</u>	<u>42</u>	<u>38</u>	<u>20.6</u>	<u>12</u>	<u>13</u>	<u>5.9</u>	<u>33.8</u>
	53	53	26.0	114	114	55.9	37	37	18.1	100.0
	Chi Square = 2.98									
PROCQUAL										
No Difference	19	19	8.2	42	42	18.0	12	12	5.2	31.4
Buy Tennessee	31	31	13.3	69	69	29.6	19	19	8.1	57.1
Tennessee Better	<u>10</u>	<u>10</u>	<u>4.3</u>	<u>24</u>	<u>214</u>	<u>10.3</u>	<u>7</u>	<u>7</u>	<u>3.0</u>	<u>17.6</u>
	60	60	25.8	135	135	57.9	38	38	16.3	100.0 ^b
	Chi Square = .06									
PROCINFO										
No	8	10	3.5	25	23	11.0	7	7	3.1	17.6
Yes	<u>51</u>	<u>49</u>	<u>22.5</u>	<u>105</u>	<u>107</u>	<u>46.3</u>	<u>31</u>	<u>31</u>	<u>13.7</u>	<u>82.4</u>
	59	59	26.0	130	130	57.3	38	38	16.8	100.0
	Chi Square = .92									

^aSee Table 5 for variable descriptions. Sample sizes are determined by the number of respondents who answered the respective questions.

^bDue to rounding error.

Table 8. Continued

	Returns									Total Percent
	Initial			First Follow-Up			Second Follow-Up			
	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	
PROPURCH										
No	14	13	6.8	26	29	12.6	11	9	5.3	24.8
Yes	<u>39</u>	<u>40</u>	<u>18.9</u>	<u>90</u>	<u>87</u>	<u>43.7</u>	<u>26</u>	<u>28</u>	<u>12.6</u>	<u>75.2</u>
	53	53	25.7	116	116	56.3	37	37	17.9	100.0
	Chi Square = .91									
PROCCOST										
No	28	28	12.4	65	64	28.8	17	18	7.5	48.7
Yes	<u>29</u>	<u>29</u>	<u>12.8</u>	<u>66</u>	<u>67</u>	<u>29.2</u>	<u>21</u>	<u>20</u>	<u>9.3</u>	<u>51.3</u>
	57	57	25.2	131	131	58.0	38	38	16.8	100.0
	Chi Square = .29									

^aSee Table 5 for variable descriptions. Sample sizes are determined by the number of respondents who answered the respective questions.

^bDue to rounding error.

Table 9. Usefulness of fresh produce versus processed foods logos

	PROCUSE									Total Percent
	No			Somewhat			Very			
	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	
FRESHUSE ^a										
No	31	10	12.9	0	12	.0	1	10	.4	13.3
Somewhat	31	26	12.9	48	31	20.0	5	27	2.1	35.0
Very	12	38	5.0	40	45	16.7	72	40	30.0	51.7
	74	74	30.8	88	88	36.7	78	77 ^b	32.5	100.0

Chi Square = 137.91*

*Significant at .05 level.

^aSee Tables 4 and 5 for definitions.

^bDue to rounding error.

Table 10. Feelings about quality Tennessee fresh produce versus processed foods

	PROCQUAL									Total Percent
	No Difference			Tennessee Origin			Tennessee Better Quality			
	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	
FRESHQUAL ^a										
No difference	46	15	19.4	1	24	.4	0	9	.0	19.8
Tennessee origin	10	33	4.2	92	53	38.8	3	19	1.3	44.3
Tennessee better quality	<u>18</u>	<u>27</u>	<u>7.6</u>	<u>27</u>	<u>43</u>	<u>11.4</u>	<u>40</u>	<u>15</u>	<u>16.9</u>	<u>35.9</u>
	74	75 ^b	31.2	120	120	50.6	43	43	18.1	100.0

Chi Square = 202.85*

*Significant at a .05 level.

^aSee Tables 4 and 5 for definitions.

^bDue to rounding error.

Table 11. Information attitudes about fresh produce origin versus processed foods^a

	PROCINFO						
	No			Yes			
	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	Total Percent
FRESHINFO ^b							
No	17	3	7.4	0	14	.0	7.4
Yes	<u>26</u>	<u>40</u>	<u>11.4</u>	<u>186</u>	<u>172</u>	<u>81.2</u>	<u>92.6</u>
	43	43	18.8	186	186	81.2	100.0
Chi Square = 79.43*							

*Significant at a .05 level.

^aInferences based upon this table are tenuous in that 25 percent of the cells have an expected frequency of less than 5.

^bSee Tables 4 and 5 for definitions.

Another concern with the distribution of responses pertains to how consistently respondents answered the attitude questions. That is, with respect to fresh produce and with respect to processed foods, did respondents answer the questions the same way? For example, did respondents who felt fresh produce logos were useful also indicate they had positive attitudes toward quality? Since this consistency issue centers on the distributions of responses, the chi square test is a convenient way to proceed.

Table 14 presents the fresh produce analyses. Results of two tests (FRESH-HELP versus PROCHELP and FRESHPURC versus PROCPURC) are not included because of too few observations in some cells. In each of the remaining tests, the inferences are that the responses are not independent. Those who feel a logo to identify Tennessee fresh produce would (not) be useful tend to feel the quality is better (worse), logos should (not) be used to identify fresh produce, would (not) like fresh produce information, and would (not) be willing-to-pay a slightly higher price. Further inspection of the actual and expected values suggests that emphasis should be given to stressing quality in state promotions.

Table 12. Logo influence when purchasing fresh produce versus processed foods

	PROCINFO						
	No			Yes			Total Percent
	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	
FRESHPURC ^a							
Buy Tennessee	32	8	14.0	3	27	1.3	15.3
Do not buy Tennessee	23	47	10.1	170	146	74.6	84.7
	55	55	24.1	173	173	75.9	100.0

Chi Square = 102.33*

*Significant at a .05 level.

^aSee Tables 4 and 5 for definitions.

Table 13. Willingness to pay for extra cost labelling of fresh produce versus processed foods (n = 231)

	PROCCOST						
	No			Yes			Total Percent
	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	
FRESHCOST ^a							
No	100	50	43.3	2	52	.9	44.2
Yes	13	63	5.6	116	65	50.2	55.8
	113	113	48.9	118	117 ^b	51.1	100.0

Chi Square = 176.37*

*Significant at a .05 level.

^aSee Tables 4 and 5 for definitions.

^bDue to rounding error.

Similar results obtained for consumers' attitude responses for processed foods (Table 15). Food shoppers who feel a logo to identify foods processed within the state would be useful tend to feel state-processed foods are better or would (not) buy simply because of origin, would (not) like the information, and would (not) be willing to pay a slightly higher price to cover the logo cost.

There are two important differences between the fresh produce and processed foods logo attitudes, however. One is the lower proportions of favorable processed foods responses vis-a-vis fresh produce (discussed above). The second is that relatively more of the PROCQUAL responses are concentrated

Table 14. Usefulness of fresh produce logo versus other fresh produce logo attitudes

	FRESHUSE									Total Percent
	No			Somewhat			Very			
	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	
FRESHQUAL:										
No	25	6	10.5	17	17	7.1	5	24	2.1	19.7
Origin	4	14	1.7	44	37	18.4	57	54	23.8	43.9
Better	3	12	1.3	24	31	10.0	60	44	25.1	36.4
	<u>32</u>	<u>32</u>	<u>13.5</u>	<u>85</u>	<u>85</u>	<u>35.5</u>	<u>122</u>	<u>122</u>	<u>51.0</u>	<u>100.0</u>
Chi Square = 92.20*										
FRESHIDEN:										
No	17	2	7.2	1	7	.5	0	9	.0	.7
Yes	13	28	5.5	83	77	35.3	121	111	51.5	92.3
	<u>30</u>	<u>30</u>	<u>12.7</u>	<u>84</u>	<u>84</u>	<u>35.8</u>	<u>121</u>	<u>120</u>	<u>51.5</u>	<u>100.0</u>
Chi Square = 116.9*										

*Significant at .05 level.

^aSee Tables 4 and 5 for definitions.

^bDifference due to rounding.

Table 14. Continued

	FRESHUSE									Total Percent
	No			Somewhat			Very			
	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	
FRESHINFO:										
No	13	3	5.5	7	10	3.0	7	14	3.0	11.5
Yes	<u>18</u>	<u>28</u>	<u>7.6</u>	<u>77</u>	<u>74</u>	<u>32.5</u>	<u>115</u>	<u>108</u>	<u>48.5</u>	<u>88.6</u>
	31	31	13.1	84	84	35.5	122	122	51.5	100.0 ^b
	Chi Square = 33.3*									
FRESHCOST:										
No	29	14	12.3	44	37	18.6	31	53	13.1	44.0
Yes	<u>3</u>	<u>18</u>	<u>1.3</u>	<u>39</u>	<u>46</u>	<u>16.5</u>	<u>90</u>	<u>68</u>	<u>38.1</u>	<u>65.9</u>
	32	32	13.6	83	83	35.1	121	121	51.2	100.0 ^b
	Chi Square = 47.5*									

*Significant at .05 level.

^aSee Tables 4 and 5 for definitions.

^bDifference due to rounding.

Table 15. Usefulness of processed foods logo versus other processed foods logo attitudes

	PROCUSE									
	No			Somewhat			Very			Total Percent
	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	Actual	Expected	Actual Percent	
PROCQUAL:										
No	54	23	22.8	18	28	7.6	3	24	1.3	31.7
Origin	16	37	6.8	53	44	22.3	50	38	21.1	50.2
Better	<u>3</u>	<u>13</u>	<u>1.3</u>	<u>17</u>	<u>16</u>	<u>7.2</u>	<u>23</u>	<u>14</u>	<u>9.7</u>	<u>18.2</u>
	73	73	30.9	88	88	38.1	76	76	32.1	100.0 ^b
	Chi Square = 94.5*									
PROCINFO:										
No	34	13	14.8	6	16	2.6	2	13	.9	18.3
Yes	<u>37</u>	<u>58</u>	<u>16.1</u>	<u>80</u>	<u>70</u>	<u>34.8</u>	<u>71</u>	<u>60</u>	<u>30.9</u>	<u>81.8</u>
	71	71	30.9	86	86	37.4	73	73	31.8	100.0 ^b
	Chi Square = 60.9*									
PROCCOST:										
No	56	35	24.5	36	42	15.7	20	36	8.7	48.9
Yes	<u>15</u>	<u>36</u>	<u>6.6</u>	<u>49</u>	<u>43</u>	<u>21.4</u>	<u>53</u>	<u>37</u>	<u>23.1</u>	<u>51.1</u>
	71	71	31.1	85	85	37.1	73	73	31.8	100.0
	Chi Square = 40.5*									

*Significant at .05 level.

^aSee Tables 4 and 5 for variable definitions.

^bDifference due to rounding.

in the "origin" category, not "better," which applies to FRESHQUAL. These discrepancies suggest that food shoppers may be more reluctant to pay for processed logos and that it may be more difficult to promote processed foods via a logo.

Descriptive analyses of the attitude responses point to several possibilities regarding the promotion of Tennessee agricultural products. A need for information is revealed for fresh produce and for processed foods. However, the results indicate that distinct logos are preferred by food shoppers. Responses to the influence questions provide evidence that respondents would be influenced positively by the logo, although the impact would seem to be somewhat greater for fresh produce.

Determinants of Logo Attitudes

An implication of the descriptive analyses is that a carefully designed and implemented logo-oriented campaign could have a positive effect on sales of Tennessee agricultural products. The data gathered in the survey can help to identify those food shoppers who have the greatest potential for increasing consumption of the state's food products. The crux of the marketing problem is to relate the socioeconomic characteristics of food shoppers to those logo attitudes that reflect positive feelings toward these foods. Based upon the existing literature, hypotheses are constrained with respect to causal relationships among socioeconomic measures and logo attitudes. Tests of the hypotheses are conducted using regression analysis. Inferences are drawn, and promotion strategies are outlined.

Since all dependent variables are qualitative, two appropriate statistical models are logit and probit regression techniques. The probit formulation is used because it assumes a dependent variable is a crude ordinal scale of an underlying (unmeasured) variable. Underlying variables are assumed to be functions of observed independent variables. McKelvey and Zavoina have developed the model used here. The approach is outlined as follows.

Let Z be the unmeasured dependent variable and X represent a vector of observed independent variables. The relationship between Z and X is shown as equation (1), where ϵ is a normally distributed error term, and β is the vector of coefficients which transforms X into $(Z-\epsilon)$.

$$(1) Z = X'\beta + \epsilon .$$

Although Z is not observed, response categories Y related to Z can be observed such that as Z increases higher response categories are observed. Let Z_i^* denote the values of Z , which comprise the bounds for the observed categories Y_i . M is the number of categories.

$$Y_1 = 1 \text{ if } Z \leq Z_1^*, = 0 \text{ otherwise,}$$

$$(2) Y_2 = 1 \text{ if } Z_1^* < Z \leq Z_2^*, = 0 \text{ otherwise,}$$

.

.

$$Y_M = 1 \text{ if } Z_{M-1}^* \leq Z, = 0 \text{ otherwise,}$$

These relationships can be transformed into probabilities that $Y_i = 1$. Assuming that ϵ is normally distributed with a mean of 0 and a variance of 1, leads to the probabilities having a normal distribution. The log likelihood function is shown as equation (3).

$$(3) \log(\beta, Z^* | Y, X) = \sum_{t=1}^T \sum_{i=1}^M Y_{ti} \log [\phi(Z_i^* - X' \beta) - \phi(Z_{i-1}^* - X' \beta)],$$

where T = the number of observations, and $\phi(a)$ is the standard normal density.

$$\phi(a) = \int_{-\infty}^{\infty} \frac{1}{\sqrt{2\pi}} e^{-\frac{\epsilon^2}{2}} d\epsilon.$$

Coefficients obtained from estimating the probit equation (3) pertain to probabilities of observing successively higher categories of Y and the corresponding unobserved Z .

Maximum likelihood estimation techniques are required. Estimated coefficients are asymptotically unbiased and efficient, and these two properties seem to hold for samples having at least 100 degrees of freedom (Aldrich and Nelson). Independent variables can be either categorical or continuous, and omitted categories must be employed as in ordinary least squares. Since the relationships are nonlinear, interpretation of the coefficients is less straightforward than with ordinary least squares. The sign of the coefficient is the direction of change, but the magnitude of the effect depends on the levels of the independent variables.

There are thirteen logo attitude statements (see Tables 4-6): seven fresh produce, five processed foods, and one involving both. Although each pertains to slightly different dimensions of attitudes, responses to every situation involve positive and negative reactions. Some also have neutral categories. Therefore, there is no need to express hypothesized relationships between a socioeconomic variable and each of the thirteen statements. Rather, it is feasible to state each hypothesis in terms of positive and negative attitudes and to assume they apply to every situation.

One difference may occur in the results that ought to be recognized from the outset. Results from the previous section indicate that attitudes toward Tennessee processed foods are expected to have lower measures of overall fit and estimated coefficients may be different, although of the same sign as with fresh produce. The socioeconomic measures collected in the present survey (see Table 2) and the hypotheses derived here are based upon the 1987 Eastwood, Brooker, and Orr work, which examined consumer perceptions of available fresh produce.

Income measured in actual dollars or categories helps determine the ability to buy. Eastwood, Brooker, and Orr (1987) have found that various income categories have effects on consumer fresh produce preferences. Their work is consistent with that of Buse (1986) who analyzed cross-sectional expenditure data for specific meat products. Smallwood and Blaylock have shown that produce consumption increases with income. It appears the types of fresh

produce purchased change with income, as well (Vance 1985), with consumption of more exotic and expensive fresh fruits and vegetables increasing with income. Many of these higher income products are not grown or processed in Tennessee so higher income food shoppers may be less interested in a state logo. Taken together, these studies lead to the hypothesis that various income categories affect attitudes toward Tennessee agricultural products, and, therefore, food shoppers' information needs for state logos. But not all income categories need have significantly different effects, and these effects could be positive or negative by income category and by type of product.

Educational attainment of the food shopper has been found to affect diets (Adrian and Daniel, Searce and Jensen 1976). The higher the level of education, the greater the ability of the food shopper to process relevant information and to ignore irrelevant promotional strategies. The expectation is that respondents with higher levels of education are more informed about the relationships between fresh produce nutrients and health. Consequently, a positive relationship between education and fresh produce logo attitudes are hypothesized. With respect to processed foods, however, more educated shoppers are assumed to be more aware that there is no apparent reason to believe Tennessee processed foods have better quality, including freshness, than those from out-of-state. Therefore, a hypothesis is that those with higher educational attainment are less interested in a processed logo.

Different occupations of food shoppers are expected to affect logo attitudes. Capps notes that different jobs help to determine the opportunity cost of food preparation time. A similar effect is associated with shopping time. Homemakers and retired people tend to have lower opportunity costs of time in shopping activities; whereas those in professional and managerial occupations are expected to value the logos as time-saving shopping aids that could help in their decision making. This would be especially true for fresh produce where locally grown items have an advantage in terms of freshness. However, with respect to processed foods managerial/professional workers are felt to be less attached to a state due to job mobility. These food shoppers would consider a Tennessee-processed logo to be less informative, so they are hypothesized to have less favorable attitudes toward the concept.

The consumer's age also affects consumption. Buse (1986), Smallwood and Blaylock (1985), and Vance (1985) show that older people eat more produce. Eastwood, Brooker, and Orr (1987) find that older consumers are more concerned about the origin of selected fresh produce. Different life-styles associated with age are considered to be the cause, and the age effects vary by product. Therefore, the hypothesis is that older consumers are more concerned with fresh produce and are more likely as a result to have positive attitudes toward fresh produce. Furthermore, their life-styles may permit them to pay more attention to point of purchase information so they would be more likely to consider the processed food logo useful.

In addition to the age of the food shopper, the age distribution of household members is expected to affect attitudes (Blaylock and Burbee 1985; Blay-

lock and Smallwood 1986; Eastwood, Brooker, and Orr 1987; and Smallwood and Blaylock 1985). Very young children are unable to eat most fresh produce. Children and teenagers eat less produce than adults. The hypothesis is that as the proportion of household members in older age groups increases, attitudes toward both types of logos become more positive.

Single-person and two-person households use more convenience foods per person than larger households, and they have a tendency to consume relatively more food away from home (Capps 1986). Eastwood, Brooker, and Orr (1987) find that larger households tend to buy selected fresh produce more regularly. These considerations suggest that smaller households would have less interest in logos.

Men do not eat as much produce as women, and females are more health

Table 16. SAMELOGO and fresh produce dependent variables for probit regressions^a

Variable	Measure	Category Sample Sizes		
		1	2	3
SAMELOGO	Do respondents want the same logo for fresh produce and processed foods (1 = no, 2 = yes)?	148	53	
FRESHUSE	How useful a Tennessee fresh produce logo would be when shopping (1 = not useful, 2 = somewhat useful, 3 = very useful).	23	69	109
FRESHQUAL	Feeling about buying Tennessee-grown fresh produce (1 = no difference, 2 = just because Tennessee-grown, 3 = better quality for Tennessee.	33	89	78
FRESHIDEN	Should logos be used to identify Tennessee-grown fresh produce (1 = no, 2 = yes)?	14	186	
FRESHINFO	Would information about fresh produce origin in supermarkets be useful (1 = no, 2 = yes)?	22	179	
FRESHHELP	Is a supermarket helpful if it identifies Tennessee-grown fresh produce (1 = no, 2 = yes)?	10	190	
FRESHPURCH	Would you be influenced by a fresh produce logo (1 = no, 2 = yes)?	28	172	
FRESHCOST	Would you be willing to pay a slightly higher price to cover the logo cost (1 = no, 2 = yes)?	78	122	

^aSample size totals vary due to different response rates.

and diet conscious (Vance 1985). Viewed from a household production perspective, women also have more human capital associated with shopping skills (Becker 1981). Consequently, males are hypothesized to be less interested in both types of logos.

Estimation of the Attitude Models

Data from the survey that are used in the probit regressions are described in Tables 16 through 18. The first two present the dependent variable measures, the number of categories for each, and the frequencies for the categories. Notice that higher numbered categories are associated with more positive feelings about logos, so that in subsequent analyses positive coefficients are interpreted as greater likelihood of positive attitudes toward this promotional strategy. Omitted independent variable categories are provided with the information contained in Table 18.

Discussion of the estimated equations is in the order they appear in Tables 16 and 17. Asymptotic t-ratios were used to identify significant coefficients. Four measures of overall fit were used to assess the equations: the log likelihood, the chi square, McFadden's R-square, and the percentage of the sample correctly predicted. The last measure was generated as follows. Predicted probabilities for belonging to categories were computed. Respondents were assigned to that category for which they had the highest probability of mem-

Table 17. Processed foods dependent variables for probit regressions^a

Variable	Measure	Category Sample Size		
		1	2	3
PROCUSE	How useful a Tennessee processed foods logo would be when shopping (1 = not useful, 2 = somewhat useful, 3 = very useful).	61	73	67
PROCQUAL	Feelings about buying Tennessee-processed foods (1 = no difference, 2 = just because Tennessee-processed, 3 = better quality for Tennessee).	57	104	38
PROCINFO	Would information about processed foods' origin in supermarkets be useful (1 = no, 2 = yes).	33	167	
PROCPURCH	Would you be influenced by a processed food logo (1 = no, 2 = yes)?	48	153	
PROCCOST	Would you be willing to pay a slightly higher price to cover the logo cost (1 = no, 2 = yes)?	89	110	

^aSample size totals vary due to different response rates.

bership. Actual categories were compared with the predicted ones, and the percent correctly predicted was calculated.

The hypotheses that are tested here are somewhat different than more conventional situations, as explained by Eastwood, Brooker, and Orr (1987). Expectations are that for each independent variable identified in the left-hand column of Table 18, only a subset of its categories would have the hypothesized effects, and these can vary by attitude dimension and fresh versus processed food. Finally, there is no a priori basis for determining which categories to include. These considerations led to the following estimation methodology.

Initial probit equations for each of the models identified in Tables 16 and 17 were calculated using all the independent variables shown in Table 18. The estimated equations are provided in the Appendix. As expected, many of the coefficients have insignificant asymptotic t-values, and the computed chi squares are less than the respective critical values. Results obtained from these regressions were used to delete variables from subsequent equations using the following criteria. These criteria were established in an effort to reduce the possibility of pretest bias. Variables whose asymptotic t-values were small in absolute value were omitted and new probit equations estimated. Coefficients obtained from the new equations were compared to their initial counterparts to determine whether there were relatively large changes in the estimated values. If this occurred, multicollinearity was assumed, and the corresponding variable was reintroduced.

A final statistical check was employed for each model. Once a reduced equation was found, modified for multicollinearity as noted, a nested hypothesis test was conducted. The null hypothesis was that the omitted variables had coefficients of zero, and likelihood ratio tests were performed. In every instance the results were consistent with using the reduced models, which are described below. No elasticities are presented given the predominance of categorical independent variables.

Four variables have significant effects on the probability of respondents feeling that the same logo should be used (Table 19). In addition the computed chi square leads to the inference that a significant overall relationship exists. Two-person households and households of more than two-persons are less likely to feel that the same logo should be used. Food shoppers over the age of 55 tend to prefer a single logo, as do respondents from the highest income households.

The measure of respondents' opinions about the usefulness of a fresh produce logo has several significant determinants and a significant chi square. As the proportion of teenagers increases, households are less likely to feel a logo is useful. Food shoppers between the ages of 35 and 54 are more inclined than those under 35 to reply that a logo is useful, and a positive but smaller effect is observed for respondents over the age of 55. A negative attitude toward usefulness occurs for the highest income group.

The FRESHQUAL trinomial probit regression has a significant chi square, and the following variables are significant. Households having more than two persons are more apt to buy fresh produce because it has been grown in Tennessee or because they feel Tennessee fresh produce is better. Similarly, respondents over the age of 35 have greater probabilities of being Tennessee-oriented. Attending college has a negative impact.

Determinants of attitudes about whether fresh produce logos should be used are in the FRESHIDEN column. A significant chi square is obtained. Two person households have higher probabilities than single person households in thinking that logos should be used. Food shoppers between the ages of 35 and 54 tend to feel that labels are desirable. Males are less inclined to respond positively to this question.

Table 18. Independent variables hypothesized to influence consumer behavior

Variable	Measurement	Frequency ^a
Respondent's income		
INC1 = 1 if \$0-\$19,999	= 0 otherwise (omitted)	68
INC2 = 1 if \$20,000-\$39,999	= 0 otherwise	76
INC3 = 1 if \$40,000 and over	= 0 otherwise	75
Respondent's education		
COLL = 1 if went to college	= 0 otherwise	152
Respondent's occupation		
OCUP1 = 1 if white collar	= 0 otherwise (omitted)	76
OCUP2 = 1 if blue collar	= 0 otherwise	62
OCUP3 = 1 if other	= 0 otherwise	94
Respondent's age		
AG1 = 1 if 15-34	= 0 otherwise (omitted)	59
AG2 = 1 if 35-54	= 0 otherwise	93
AG3 = 1 if 55 or over	= 0 otherwise	83
Number in specific age groups		
PP1 10 and under (omitted)		.14*
PP2 11-18		.13*
PP3 19 and over		.73*
Household size		
SIZ1 = 1 if one person	= 0 otherwise (omitted)	
SIZ2 = 1 if two persons	= 0 otherwise	
SIZ3 = 1 if > two persons	= 0 otherwise	
Respondent's sex		
MALE = 1 if male	= 0 otherwise	76

^aFrequency of 1's for the respective independent variables for the entire sample.

*Percent for the proportion, not the frequency.

**Table 19. SAMELOGO and fresh produce logo attitudes probit regressions:
Reduced models (asymptotic t-values in parentheses)**

Independent variables	SAMELOGO	FRESHUSE	FRESHQUAL	FRESHIDEN
Constant	-.450 (-1.51)	.695* (2.74)	.564* (1.81)	1.174* (3.39)
INC2				
INC3	.478* (2.03)	-.391* (-2.06)		
COLL	-.275 (-1.21)		-.350* (-1.91)	
OCCUP2			.195 (1.03)	.381 (.88)
OCCUP3				-.300 (-.89)
AG2		.917* (3.90)	.454* (2.17)	.660* (1.76)
AG3	.646* (2.71)	.518* (2.31)	.699* (3.04)	
PP2	.547 (.84)	-1.457* (-2.38)		
PP3		.642 (1.27)		1.073 (1.56)
SIZ2	-.802* (-2.80)	.198 (1.23)	.343 (1.44)	.638* (1.81)
SIZ3	-.627* (-2.07)	.383 (1.19)	.486* (2.05)	
MALE	.272 (1.28)	-.248 (-1.38)	-.270 (-1.55)	-.579* (-1.85)
Log likelihood	-105.08	-178.11	192.00	-43.85
Chi square	21.75*	24.45*	25.94*	13.75
R square	.09	.06	.06	.14
Percent correctly predicted	77	57	48	93

*Significant at the .05 level.

Table 19. Continued

Independent variables	FRESHINFO	FRESHHELP	FRESHPURCH	FRESHCOST
Constant	.531 (1.29)	2.033* (6.09)	.509 (1.19)	-.609* (-2.30)
INC2	.746* (2.17)			
INC3	.904* (2.37)		.351 (1.21)	
COLL	-.410 (-1.20)	-.347 (-.98)	-.322 (-1.07)	
OCCUP2	-.685* (-1.87)		.268 (.92)	
OCCUP3				.170 (.82)
AG2			.758* (2.34)	.675* (2.91)
AG3	.799* (2.16)		.402 (1.28)	.675* (2.62)
PP2	-1.331 (-1.43)			
PP3				
SIZ2			.629* (1.94)	.516* (1.96)
SIZ3	1.003* (2.52)		.473 (1.42)	.394 (1.49)
MALE	-.414 (-1.50)	-.360 (-1.17)	-.434* (-1.74)	
Log likelihood	-56.04	-38.46	-70.53	-125.48
Chi square	27.76*	2.49	20.92	16.55
R square	.20	.03	.13	.06
Percent correctly predicted	89	95	87	65

*Significant at the .05 level.

Those factors that affect whether respondents would like information about the origin of fresh produce are shown in the FRESHINFO column. In addition to a significant chi square, there are five significant variables. Blue collar workers are more inclined to want the information as are households of more than two people and female shoppers over the age of 55. Households with incomes of \$20,000 or more are more likely to want the information.

No significant overall relationship was found for respondents' opinions regarding the helpfulness of a supermarket identifying state-grown fresh produce. An interpretation is that food shoppers' attitudes toward the motivation of supermarket behavior are based upon criteria unrelated to household characteristics. The likely factor is profit maximization expectations on the part of consumers.

A significant overall relationship for the influence of a fresh produce logo on purchase decisions is shown under the FRESHPURCH heading. Food shoppers between the ages of 35 and 54 are more likely to be influenced positively. Male respondents indicate they are less inclined to be affected by such logos. Two-person households are more likely to be influenced by a logo.

The final fresh produce attitude relationship pertains to willingness-to-pay part of the logo cost. People 35 years old and older are more willing to pay than are younger food shoppers. Two-person households are more likely to be willing to pay part of the cost.

Overall, several conclusions can be drawn from the fresh produce attitude models. Males are less interested in fresh produce logos than females. Respondents aged 35 and older tend to have positive attitudes toward them. Larger households also are more likely to have responded favorably.

Probit regression estimates for the processed foods logo attitude measures are displayed in Table 20. In two instances the computed chi square is not significant: PROCINFO and PROCPURCH. With respect to the former, an interpretation is that consumers' opinions of the availability of processed foods logos in supermarkets are unrelated to household characteristics. Similarly, household characteristics do not determine the effect of a processed foods state logo on purchase decisions. These two results are consistent in the sense that, if responses reveal consumer interest in having the information available in supermarkets is not related to household characteristics, then this type of logo should not affect processed food purchases.

Three household characteristics affect food shoppers' attitudes toward perceived usefulness of a state processed food logo, as shown in the PROCUSE column. Respondents aged 35 and older tend to have more positive attitudes. Households with at least \$40,000 in income are apt to feel the logo is not useful.

The attitudes about buying Tennessee-processed foods regression results are presented in the PROCQUAL column. Blue collar workers have greater likelihood of buying these foods because they are processed in the state or because they have better quality. Respondents who are not gainfully employed are also more inclined to feel Tennessee-processed foods have higher quality, but the size of this coefficient is half that of blue-collar workers. Households of two

Table 20. Processed foods logo attitudes probit regressions: Reduced models (asymptotic t-values in parentheses)

Independent variables	PROCUSE	PROCQUAL	PROCINFO	PROCPURCH	PROCCOST
Constant	-.135 (-.54)	.069 (.21)	1.373* (5.13)	.012 (.05)	-1.162* (-3.72)
INC2		.233 (1.34)			
INC3	-.326* (-1.80)				
COLL		-.375* (-1.80)	-.284 (-1.16)		
OCCUP2	.232 (1.25)	.718* (3.18)		.383 (1.51)	.300 1.25
OCCUP3		.358* (1.66)	-.514* (-2.07)	.339 (1.46)	.307 (1.33)
AG2	.643* (3.09)				.468* (2.00)
AG3	.586* (2.74)	.330 (1.61)	.350 (1.36)		.667* (2.54)
PP2					
PP3		-.492 (-1.08)			
SIZ2	.315 (1.33)	.662* (2.73)		.623* (2.24)	.852* (3.08)
SIZ3	.377 (1.56)	.515* (1.70)		.596* (2.32)	.885* (3.19)
MALE		-.196 (-1.09)	-.308 (-1.32)		
Log likelihood	-211.84	-183.56	-86.11	-106.36	-125.91
Chi square	16.88*	36.23*	6.94	8.26	21.83*
R square	.04	.09	.04	.04	.08
Percent correctly predicted	42	54	84	76	61

*Significant at the .05 level.

or more people also have positive feelings about state-processed foods. Food shoppers who have at least attended college are less inclined to have favorable attitudes toward Tennessee logos.

Willingness-to-pay for processed foods logos (PROCCOST) has four significant socioeconomic variables. Two-person households and households of three or more people are more likely to be willing to pay a somewhat higher price. Food shoppers 35 and older have higher probabilities of being willing to pay.

Across the processed food attitude responses, a varied pattern of significant variables is observed. Households of two or more people have positive effects on Tennessee-logo attitudes in two of the three equations that have significant chi squares. Similarly, the respondents aged 35 to 54 and 55 and older have positive, significant coefficients in two instances. Households with incomes of \$40,000 or more, those made up of blue collar workers, and those whose members have attended college are significant once in the equations.

Comparisons between fresh produce and processed foods logo attitudes, where appropriate, are also informative. These pertain to dependent variables that have identical letters following the food type (. . . USE, . . . QUAL, . . . INFO, . . . PURCH, and . . . COST). Since sample sizes and distributions of responses are different, the overall comparisons are based on the computed chi square and McFadden's R-square statistics. In four of the five comparisons, processed food equations have lower chi squares and R-squares (. . . USE, . . . COST, . . . INFO, and . . . PURCH). A slightly better fit is indicated for the PROCQUAL equations because the R squares are the same but the PROCQUAL chi square is larger. With respect to the significant coefficients in the . . . USE equations, respondents over the age of 35 have positive effects in both, and an income of \$40,000 or more has a negative impact. College attendance and three or more person households have comparable effects on probabilities between the . . . QUAL equations. The age of the respondent and two person households have similar effects between the . . . COST equations.

Marketing Implications

Results of the preceding analyses, combined with previous surveys, provide direction with respect to the design and implementation of retail-level logo-oriented promotion strategies for Tennessee. The marketing strategies outlined here are based upon demand considerations. No attention has been given to supply factors. However, as in any market exchange situation, supply and demand interact to determine prices and quantities bought and sold. Marketing implications are derived from the perceived information needs revealed in the surveys of food shoppers and their relationships to household characteristics. Implicit in the marketing recommendations is the assumption that effective promotional efforts directed at consumers should provide information that consumers feel is relevant.

A single logo should not be used to identify both fresh produce grown in Tennessee and food processed in the state because such a high proportion of those surveyed indicated preferences for separate logos. The differences in . . . PURCH and . . . COST pairs of responses also have a bearing on the two-logo decision. Significantly higher proportions of respondents gave positive answers to the fresh produce statements of the logo's effects on purchase decisions and willingness-to-pay slightly higher prices than to those for processed foods. Responses to the other dimensions of consumers' attitudes toward state logos also show predisposition in favor of fresh produce logos. The differences in proportions reflect within-state advantages of fresh produce that are not as important for processed foods. Previous research found that quality has the highest criteria ranking among consumers, and this criterion has several dimensions including freshness, appearance, and taste. In-state fresh produce has clear advantages over out-of-state in these areas, but they are not as crucial for processed foods.

Consumer perceptions of fresh produce vary by product. Aside from tomatoes consumers are not very knowledgeable about the relative quality of Tennessee fresh produce. When asked about their perceptions of Tennessee apples, broccoli, cabbages, and peaches in comparison to out-of-state products, the most frequently reported response was "do not know" (Eastwood, Orr, and Brooker 1986). The measures were freshness, taste, appearance, storage life, and nutrition, so all of the conventional measures of quality were involved. These responses indicated the absence of biases either for or against state produce and point to a consumer information gap that logos could fill.

By themselves, however, logos are not expected to generate much of an increase in state-oriented food demand. That is, availability of stickers should be only a part of the marketing effort. In order for them to be effective, the logos must have meaning for food shoppers. That is, since a logo really is a point-of-purchase advertisement, it must convey a relevant message. From the consumer's perspective the message should indicate the advantages of Tennessee's products.

The logical starting point would be a promotion strategy for tomatoes because they have the best consumer image. Media advertisements could focus on the quality of vine-ripe Tennessee tomatoes. These promotions should make clear connections among locally-grown tomatoes, their desirable qualities, and a familiar logo displayed in supermarkets. After food shoppers have had the opportunity to process these ads, use of the logo could be expanded to other fresh produce.

Expansion to additional commodities should be done quite selectively. The basic idea is to incorporate other produce gradually under the "Tennessee quality umbrella" represented by the logo. These commodities should be introduced as they become available during the harvest season. Two criteria are recommended for selecting additional commodities. One is the importance of freshness and quality to the consumer. The other is the size of the retail mar-

Table 21. Fresh produce consumers would like identified: Frequency and percent of respondents

Commodity	Frequency*	Percentage of all respondents
Total Vegetables	278*	
Beans	30	12.4
Broccoli	4	1.7
Cabbage	3	1.2
Carrots	2	0.8
Cauliflower	1	0.4
Corn	38	15.7
Cucumbers	6	2.5
Lettuce	21	8.7
Mushrooms	3	1.2
Okra	2	0.8
Onions	2	0.8
Peas	1	0.4
Peppers	2	0.8
Potatoes	10	4.1
Squash	2	0.8
Tomatoes	114	47.1
Vegetables†	37	15.3
Total Fruits	95	
Apples	22	9.1
Berries	1	0.4
Cantaloupe	4	1.7
Melons	5	2.1
Oranges	1	0.4
Peaches	6	2.5
Strawberries	21	8.7
Watermelons	3	1.2
Fruits†	32	13.2

*Consumers were asked to list two fresh items they could like identified.

†No specific item was listed.

ket. With respect to the former, emphasis could be given to highly perishable fresh produce.

Some insight into the latter is found in Table 21. Respondents to the survey who answered that they felt fresh produce logos would be “somewhat useful” or “very useful” were asked to indicate two fresh produce commodities they would like identified as locally grown. The question was intentionally open-ended for two reasons. One was to avoid the problem of providing a comprehensive list of commodities in a brief questionnaire. The other was an effort to avoid suggesting items. Consequently, the responses had to be grouped into related categories. Some respondents only indicated “vegetables” or “fruits” instead of specific items.

Altogether, 186 respondents answered this question, listing 24 different commodities. Tomatoes clearly dominate the fresh vegetable commodities, being

mentioned nearly three times more often than the next most frequent commodity, corn. Beans then potatoes follow in terms of frequency. Consumer interest in fresh fruit is centered on apples and strawberries.

Given the nature of the fresh produce growing season in Tennessee, the promotional campaign is not expected to be used year-round. Rather, it is one that would be reintroduced every season. Each year when the promotion is reintroduced, a good starting emphasis would be the tomato, followed by other produce promotions from previous years, and then new commodities to be incorporated.

Foods processed in Tennessee will be more of a challenge to promote effectively to consumers. Fewer food shoppers are interested in the origin of processed foods. Those who are interested are more evenly divided between buying Tennessee processed foods just because they are processed here and because of anticipated greater quality. Also the quality advantages of Tennessee processed foods are less apparent to most consumers. Therefore, a processed product logo should be clearly distinguished from the fresh produce logo because a different message is to be recalled. Emphasis should be placed on state pride and care in the processing steps, and these steps lead to enhanced quality.

Selection of products to be included could follow a procedure analogous to that suggested for fresh produce. Items for which it is straightforward to identify a "Tennessee advantage" and for which food shoppers indicate there is interest should be stressed initially. Table 22 contains the categorized responses from the survey's open-ended processed foods question. Dairy products followed by canned vegetables were identified most frequently. There also appears to be interest in logos for meat products.

Advertisements explaining the logo should be targeted to specific market segments. They should be directed at households that have three or more members, older consumers, and especially female food shoppers. Radio and television promotions should be aimed at those times and programs when these types of consumers are most apt to be members of the audiences. Similarly, print media read by these food shoppers should be used. The ads should contain straightforward messages that point clearly to the "Tennessee advantage."

Supermarkets could be approached to participate in the promotions. Recall that very high proportions of the respondents felt it would be helpful for stores to provide these logos. Cooperative advertisements and the use of in-store displays that complement the media advertising should be pursued.

Two elements of consumer preferences have important implications for sellers. One is the importance of quality to consumers. The Tennessee logos should be restricted to the highest produce grades and processed foods standards. Consequently, a mechanism for ensuring quality at the retail level must be in force. The other is the need to sell the food products at competitive prices. A slight price differential can exist and can help defray the extra handling costs and expenses related to ensuring quality standards are followed.

Table 22. Processed foods consumers would like identified: Frequency and percent of respondents

Commodity	Frequency ^c	Percentage
Total Meats	58	
Meat†	37	15.5
Beef	4	1.7
Pork	5	2.1
Fish	3	1.3
Poultry	9	3.7
Eggs	10	
Dairy products†	23	9.6
Cottage cheese	3	1.3
Milk	36	15.0
Butter	3	1.3
Cheese	22	9.2
Yogurt	1	0.4
Ice cream	2	0.8
Total Dairy Products	90	
Canned Fruits†	21	
Total Canned Vegetables	64	
Vegetables†	33	13.8
Beans	15	6.3
Tomatoes	10	4.2
Corn	6	2.5
Total Cereal Products	11	
Cereal products†	1	0.4
Cereals	1	0.4
Flour	3	1.3
Bread	6	2.5
Total Miscellaneous	14	
Frozen food	9	3.8
Fruit juices	2	0.8
Honey	2	0.8
Margarine	1	0.4

*Consumers were asked to list two fresh items they would like identified.

†No specific item was listed.

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Appendix

May 20, 1987

Dear Resident:

The Department of Agricultural Economics and Rural Sociology is working on a project dealing with consumer demand for food products. Your address had been selected at random, and we would like to include your responses to a survey of consumers' reactions to signs/logos that could be used to identify Tennessee food products. Participation in the survey is voluntary and responses will be kept completely confidential. They will be used to help develop a profile of consumers' reactions.

If you have any questions or want more information about the project, you can contact Drs. Brooker, Eastwood, or Orr at the Department of Agricultural Economics and Rural Sociology, University of Tennessee, Knoxville (974-7231).

The Questionnaire is to be completed by the person who is the primary food shopper. After the survey has been completed, fold it so the address is showing on the outside and place it in the mail. **NO POSTAGE IS NECESSARY.**

Thank You,
Department of Agricultural Economics
and Rural Sociology

Logo Questionnaire

Logos are being considered to identify Tennessee agricultural products. The questions listed below are asked to get your feelings about logos.

1. Do you think the State Department of Agriculture should use the same logo for foods that have been processed in Tennessee (not necessarily grown here) and for fresh produce grown in Tennessee? (circle yes or no)

Yes, the same logo should be used.

No, different logos should be used.

2. How useful **to you** would a logo identifying Tennessee fresh produce be when shopping? (circle)

- a. Very useful
- b. Somewhat useful
- c. Not too useful
- d. Not at all useful

3. If you circled a or b to question 2, please indicate the two most important fresh produce commodities you would like identified.

4. How useful **to you** would a logo identifying Tennessee-processed food be when shopping? (circle)

- a. Very useful
- b. Somewhat useful
- c. Not too useful
- d. Not at all useful

5. If you circled a or b to question 4, please indicate the two most important processed foods you would like identified.

6. Check which statement most closely represents your feelings about buying Tennessee-grown fresh produce.
- It has better quality than out-of-state-grown produce.
 - I would buy it just because it was grown in Tennessee.
 - It makes no difference to me.
7. Check which statement most closely represents your feelings about buying Tennessee-processed foods.
- It has better quality than out-of-state-processed foods.
 - I would buy it just because it was processed in Tennessee.
 - It makes no difference to me.
8. Should labels be used to identify produce that has been grown in Tennessee? (circle yes or no)
- Yes, they should be used.
 - No, they should not be used.
9. Would you like to have information about where fresh produce was grown in supermarket displays? (circle yes or no)
- Yes, I would like this information.
 - No, I do not like this information.
10. If a supermarket identified Tennessee-grown fresh produce, would you think the store is trying to help you? (circle yes or no)
- Yes, the supermarket is helpful.
 - No, the supermarket is not helpful.
11. Labeling Tennessee-grown fresh produce may involve some additional cost. Would you be willing to pay a slightly higher price to cover this cost? (circle yes or no)
- Yes, I would be willing.
 - No, I would not be willing.
12. When you consider purchasing processed food (like dairy products) in supermarkets, would you like to know if it was processed in Tennessee? (circle yes or no)
- Yes, I would like to know.
 - No, it would not matter to me.

13. Labeling Tennessee-processed foods may involve some additional cost. Would you be willing to pay a slightly higher price to cover this cost? (circle yes or no)

Yes, I would be willing.

No, I would not be willing.

14. A logo that identifies fresh produce grown in Tennessee would (circle response letter):

a. Have no effect on my purchase decision.

b. Influence me to buy produce grown in Tennessee.

c. Influence me to buy produce grown elsewhere.

15. A logo that identifies foods processed in Tennessee would (circle response letter):

a. Have no effect on my purchase decision.

b. Influence me to buy Tennessee-processed foods.

c. Influence me to buy processed foods from out of state.

Background Information

1. What is your occupation? _____

2. Is it full-time or part-time (circle)

Unemployed

Part

Full

3. What is your spouse's occupation? _____

4. Is it full-time or part-time? (circle)

Unemployed

Part

Full

5. How many people reside in this dwelling, including yourself? _____

6. Of those who live here, how many are

___10 and under

___11 through 18

___19 and over

7. What is your age? (circle)
- a. 15-24
 - b. 25-34
 - c. 35-44
 - d. 45-54
 - e. 55-64
 - f. 65 or over
8. What is your race? (circle)
- a. White
 - b. Black
 - c. American Indian
 - d. Hispanic
 - e. Asian
9. What is your sex? (circle)
- Male
 - Female
10. Please circle the category that corresponds best to the years of school you have completed.
- a. 0-8th grade (grade school)
 - b. 9th-12th grade (high school)
 - c. 13th or more (college)
11. Please check the income category listed below that best describes your household's total income for last year. This includes all members of the household and all sources of income (wages, rent, dividends, interest, social security, etc.)
- a. \$0 to \$9,999
 - b. \$10,000 to \$19,999
 - c. \$20,000 to \$29,999
 - d. \$30,000 to \$39,999
 - e. \$40,000 to \$49,999
 - f. \$50,000 or more

Table A-1. SAMELOGO and fresh produce logo attitudes probit regressions: All independent variables (asymptotic t-values in parentheses)

Independent variables	SAMELOGO	FRESHUSE	FRESHQUAL	FRESHIDEN
Constant	-.303 (-.71)	.758* (2.10)	.416 (1.19)	.799 (1.33)
INC2	-.023 (-.09)	.163 (.71)	.159 (.73)	.149 (.37)
INC3	.521 (1.60)	-.434 (1.59)	.130 (.50)	-.038 (-.07)
COLL	-.318 (-1.27)	-.083 (-.38)	-.347* (-1.68)	.001 (.01)
OCCUP2	-.212 (-.71)	.158 (.66)	.308 (1.33)	.402 (.77)
OCCUP3	.246 (.88)	.048 (-.20)	.180 (.79)	-.603 (-1.36)
AG2	-.158 (-.52)	.908 (3.58)	.448* (1.89)	1.152* (2.23)
AG3	.447 (1.48)	.518* (2.04)	.647* (2.62)	.894* (1.95)
PP2	.746 (1.04)	-1.548* (-2.48)	-.389 (-.67)	-1.116* (-.93)
PP3	-.130 (-.22)	.655 (1.27)	-.122 (-.25)	1.951* (1.78)
SIZ2	-.888* (-2.94)	.364 (1.44)	.322 (1.30)	.572 (1.40)
SIZ3	-.658* (-1.73)	.443 (1.33)	.555* (1.75)	-.065 (-.12)
MALE	.329 (1.49)	-.250 (-1.36)	-.246 (-1.39)	-.502 (-1.52)
Log likelihood	-103.45	-177.18	-191.11	-41.04
Chi square	25.01*	26.31*	27.72*	19.38
R square	.10	.07	.07	.19
Percent correctly predicted	80	57	49	92

*Significant at the .05 level.

Table A-1. Continued

Independent variables	FRESHINFO	FRESHHELP	FRESHPURCH	FRESHCOST
Constant	.609 (1.10)	2.002* (2.38)	.502 (1.05)	-.910* (-2.27)
INC2	.727* (1.98)	3.759 (.26)	.005 (.02)	.238 (.96)
INC3	.919* (1.93)	.456 (.81)	.385 (.96)	.296 (.99)
COLL	-.514 (-1.38)	-.706 (-1.38)	-.303 (-.97)	.081 (.35)
OCCUP2	-.674 (-1.58)	.019 (.04)	.290 (.82)	.273 (1.04)
OCCUP3	-.144 (-.38)	-.112 (-.22)	.016 (.05)	.371 (1.40)
AG2	-.240 (-.58)	-.317 (-.53)	.690* (1.99)	.593* (2.22)
AG3	.782* (1.69)	-.224 (-.37)	.379 (1.10)	.653* (2.34)
PP2	-1.395 (-1.40)	-.668 (-.51)	.587 (.55)	.154 (.23)
PP3	.521 (.55)	.184 (.16)	-.279 (-.38)	-.056 (-.10)
SIZ2	.200 (.56)	-.172 (-.36)	.625* (1.89)	.476* (1.68)
SIZ3	1.053* (1.86)	.596 (.78)	.517 (1.15)	.336 (.95)
MALE	-.450 (-1.59)	-.420 (-1.15)	-.433* (-1.71)	.003 (.02)
Log likelihood	-55.29	-31.60	-70.34	-124.45
Chi square	28.26*	16.21	21.31	18.61
R square	.20	.20	.13	.07
Percent correctly predicted	88	95	87	67

*Significant at the .05 level.

Table A-2. Processed foods logo attitudes probit regressions: All independent variables (asymptotic t-values in parentheses)

Independent variables	PROCUSE	PROCQUAL	PROCINFO	PROCPURCH	PROCCOST
Constant	-.042 (-.12)	-.077 (-.22)	.732 (1.58)	.009 (.02)	-1.321* (-3.23)
INC2	1.54 (.71)	.371* (1.69)	.239 (.82)	.322 (1.20)	.140 (.56)
INC3	-.381 (-1.48)	.258* (.99)	.396 (1.10)	.348 (1.08)	.143 (.49)
COLL	-.054 (-.27)	-.408 (-2.01)	-.291 (-1.01)	-.221 (-.85)	.061 (.27)
OCCUP2	.271 (1.19)	.771* (3.28)	.327 (.99)	.425 (1.46)	.362 (1.36)
OCCUP3	.082 (.37)	.414* (1.82)	-.358 (-1.16)	.325 (1.15)	.388 (1.49)
AG2	.652* (2.77)	.137 (.57)	.134 (.43)	.160 (.55)	.424 (1.58)
AG3	.525* (2.17)	.393 (1.60)	.524 (1.55)	.074 (.25)	.672* (2.39)
PP2	-.187 (-.32)	.074 (.13)	-.158 (-.19)	-.377 (-1.51)	.182 (.27)
PP3	.111 (.23)	-.519 (-1.08)	-.031 (-.05)	-.439 (-1.70)	.041 (.08)
SIZ2	.372 (1.49)	.609* (2.41)	.254 (.79)	.567* (1.93)	.807* (2.80)
SIZ3	.389 (1.24)	.400 (1.27)	.272 (.63)	.683* (1.73)	.804* (2.24)
MALE	-.138 (-.78)	-.199 (-1.11)	-.293 (-1.21)	-.165 (-.76)	.078 (.38)
Log likelihood	-210.93	-182.51	-83.92	-104.00	-125.53
Chi square	18.71	38.31*	11.31	12.97	22.58*
R square	.04	.09	.06	.06	.08
Percent correctly predicted	41	57	83	77	62

*Significant at the .05 level.

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