New Jersey Agricultural Experiment Station
P-02137-2-98
February, 1998

Consumer Response to State-Sponsored Marketing Programs: The Case of Jersey Fresh

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Acknowledgements

Appreciation is expressed to each and every participant of the consumer focus group meeting and mail survey. This study would not have been possible without their input and contribution. Appreciation is extended to Dr. Vance Young, Mr. Ronald Good, and Mr. Al Murray of the New Jersey Department of Agriculture and also to Dr. Rodolfo M. Nayga, for their help in conducting this research. The Agricultural Marketing Service of the United States Department of Agriculture, the New Jersey Department of Agriculture, and the Cook College at Rutgers University provided the funding for this study.

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Executive Summary

The Jersey Fresh Program is a leading example of state sponsored agricultural promotion. The program attempts to create consumer awareness through billboards, radio and television advertising, special promotions, and distribution of attractive point-of-purchase materials. This study empirically evaluates the effectiveness of the Jersey Fresh Program in terms of the impact the promotional logos have on consumers. This report includes a descriptive and logit analysis performed to predict the likelihood of consumers patronizing Jersey Fresh produce given certain behavioral and demographic characteristics.

Participants exhibited a clear preference for Jersey Fresh produce and indicated that they believed it to be better than other produce in terms of quality and freshness. The study indicates that the Jersey Fresh Logo is perceived with a positive attitude among consumers. Awareness of Jersey Fresh was also found to be high among consumers and participants indicated that they would be willing to purchase Jersey Fresh produce if available. Produce displays in stores and television advertisements were most often cited to be the places in which the logos were seen.

Consumers who frequently shop at direct marketing facilities such as farmers' markets and roadside stands were more likely to be aware of Jersey Fresh, more likely to have bought Jersey Fresh labeled produce, and more willing to buy Jersey Fresh produce in the future. Consumers who read food advertisements in newspapers or brochures and who shop at more than one place in order to buy advertised specials, were more likely to be aware of Jersey Fresh than consumers who do not. Females, those who were over 35 years of age, and those had completed high school or higher levels of education were more likely to have purchased Jersey Fresh labeled produce.

The results of this study may provide valuable information that can be applied not only to improve the Jersey Fresh Program but also in the promotion of other products of the state and in other states which have similar promotional programs.

Introduction

Jersey Fresh is one of the nation's leading examples of state-sponsored agricultural marketing promotion and is one of the major programs funded by the New Jersey Department of Agriculture (NJDA Annual Report, 1986). The purpose of this program is to enable consumers to easily identify quality fresh produce from New Jersey by promoting locally grown fruits and vegetables in the market with Jersey Fresh Logos. The program attempts to increase the awareness of many fresh fruits and vegetables available from New Jersey by targeting consumers of New Jersey, nearby Philadelphia, New York and the Delmarva (Delaware, Maryland and Virginia) region (NJDA Annual Report, 1985).

The importance of this program arises from many key factors that affect the market share of state-grown produce. New Jersey's agriculture constitutes a key industry for the state, contributing to income and employment. It provides livelihood for approximately 20,000 workers and accounts for 16,000 other jobs. The geographic location of New Jersey provides some distinct advantages that can translate into increased profits for farmers. The state is located in the middle of the most densely populated consumer market in the U. S., and the per capita income in the state is also one of the highest in the nation (Census, 1992). Moreover, the consumer demand for fresh and quality produce has been growing in recent years (NJDA Annual Report, 1991). Due to New Jersey's convenient location close to the big consumer markets of the northeastern states, produce can be picked at the height of ripeness and transported to these markets in minimal time and at minimal costs. The Jersey Fresh Program has been launched by the NJDA to capitalize on these competitive advantages, to boost the returns to New Jersey farmers and to increase their share of the retail market, especially during the growing season. The program campaign highlights the freshness aspect of New Jersey produce to give local growers a competitive edge over the produce that is shipped from other states.

The Jersey Fresh Program attempts to create consumer awareness through billboards, radio and television advertising, special promotions, and distribution of attractive point-

of-purchase materials. All these advertisements are well identified with an attractive Jersey Fresh Logo (see Appendix) that catches consumer attention. The NJDA also participates in many promotional events such as farmers' market fairs, trade shows, cooking competitions, and in-store Jersey Fresh produce demos held throughout the state. The program distributes price-cards, stickers, banners, paper bags, and worker's aprons. Participating retail organizations receive exposure through Jersey Fresh television commercials and billboards.

Since its introduction in 1984, the Jersey Fresh Program has undergone many changes. The logo has been enhanced many times and has undergone new designs and changes in style. The *Jersey Fresh-From the Garden State* logo, which appeared in 1984, has been the most popular and standing logo (Zeldis, 1993). Apart from this logo the other logos that have been adopted include the *Demand the Freshest* campaign theme adopted in 1987, the *Farm Fresh to You Each Morning* campaign theme adopted in 1988, the *Premium Jersey Fresh Logo* from the regulatory component of the campaign started in 1988, and the *Five-a-day for Better Health* campaign launched in 1992. All these campaigns helped the program to establish and enhance consumer awareness through the years (Gallup, 1988).

This study empirically evaluates the effectiveness of the Jersey Fresh Program in terms of the impact the promotional logos have on consumers. The results include a descriptive and logit analysis performed to predict the likelihood of consumers patronizing Jersey Fresh produce given certain behavioral and demographic characteristics. The results of this study could provide valuable information that can be applied not only to improve the Jersey Fresh Program but also in the promotion of other products of the state and in other states which have similar promotional programs.

Review of Literature

The Gallup Organization conducted surveys (Gallup, 1986; 1987; 1989) of the Jersey Fresh Program in 1986, 1987, and 1988 for Gillespie Advertising on behalf of the New Jersey Department of Agriculture. Tracking studies of the Jersey Fresh Program were

also performed in 1993 and 1994 by Zeldis Research Associates (Zeldis, 1993; 1995). The surveys showed that the share of New Jersey produce in an average buyer's total produce purchase had increased from 12% to 35% in 1987. Consumers found the promotion of local products and freshness aspects to be the program's greatest assets. It reported that the emphasis of consumers on the influence of advertising media increased from 1985 to 1986 and that there had been a decrease in consumer demand for Jersey Fresh products from 1986 to 1988. These studies gave useful descriptive results and percentages of Jersey Fresh consumer awareness which help in drawing comparisons with the trends from previous years.

Lininger (1985) examined the effects of product origin and quality on consumer demand for Jersey Fresh tomatoes in an in-store survey of tomato consumers. The study suggested that the purchase of non-Jersey Fresh tomatoes depends on the price of the Jersey Fresh tomatoes and that the preference for Jersey Fresh tomatoes has a negative impact on the purchase of non-Jersey Fresh tomatoes. The study also suggested that the Premium Jersey Fresh tomatoes could be treated as a different product from non-Jersey Fresh tomatoes, which enables the retailers to demand a premium price.

Adelaja *et al.* (1994) performed an economic analysis of the effects of promotional expenditures on the agricultural cash receipts in New Jersey. The results of the analysis suggest that the Jersey Fresh Program expanded the markets for New Jersey products by 5.5%. Each dollar spent on the program was shown to have resulted in a return of $46.90 to New Jersey agriculture. The report concluded that for every $1 spent on the program, local farmers earned an additional $15.20 in net farm income. The report presented the profitability of the Jersey Fresh Program in terms of its returns both to the farmers and to the state in the form of taxes.

Brooker *et al.* (1987; 1988) conducted a study of attitudes and perceptions of shoppers regarding the logo "Pick - Tennessee - Product" through personal interviews and mail-in questionnaires. The results of the study showed that people who were biased toward

the locally grown produce were most influenced by the logo. Highly educated people were found to be least affected by the logo. Color, feel, and lack of blemishes were ranked as the three most important qualities or attributes and branding of locally grown produce did not act as a substitute for quality when buying fresh produce.

The Michigan Department of Agriculture conducted a benchmark study (Michigan Department of Agriculture, 1989) which found that 76% of the Michigan citizens interviewed said that they would prefer to buy Michigan Products if they were clearly identified as such. The logo "Yes! Michigan" was recognized by 8% of the participants in the first attempt and by 69% with aided recall. The survey further indicated that awareness of the Premium program was 16%. This survey showed that overall, the promotional logo was more popular than the premium logo. The low awareness of the premium program was attributed to the limited exposure of the consumers to the program before the study was conducted.

Little empirical research has focused on analyzing the factors that contribute to the consumer patronage of locally grown fresh produce. The tracking studies of the Jersey Fresh Program were limited in their data analysis and sample sizes. The studies in other states were limited either in their area of focus or in that the analyses were performed on only specific products. This study employs hedonic methods of evaluation, like the product characteristics' model, to determine the likelihood of a consumer patronizing Jersey Fresh produce given certain behavioral and demographic characteristics.

Methodology and Estimation Technique

The consumer research was conducted in two phases. The first phase involved conducting a focus group meeting with consumers to discuss the key factors that could improve the effectiveness of the logos in increasing consumer awareness and the second phase involved a survey of consumers. The results of the consumer focus group meeting were published in the NJAES Bulletin P-02137-3-97. The key issues

and factors that evolved out of the focus group session were addressed in detail in the mail surveys.

The logit specification was chosen for analysis in this study. The specification of the logit model was done using *maximum likelihood estimation*, as it yields large sample properties of consistency and asymptotic normality of the parameter estimates. Conventional tests of significance could therefore be applied when logit models were used. The logit model, with the closed-form cumulative logistic probability function, estimates the log of the odds that a particular choice would be made.

In logit modeling, the likelihood of a customer being able to identify a given logo was chosen as a function of a set of predetermined variables or factors. Similarly, the likelihood that a customer was not aware of any of the logos could also be identified with a set of predetermined variables. The model assumes that the probability, P_i, of a consumer being aware of Jersey Fresh produce depends on a vector of independent variables ($\mathbf{X_i}$'s) associated with the consumer i, and a vector of unknown parameters β. A dichotomous random variable y_i is defined as $y_i = 1$ if the consumer recognizes the logo, and $y_i = 0$ otherwise. For the logit model, the probability was determined by:

$$\mathbf{P_i = F(Z_i) = F(\alpha + \beta X_i) = 1 / [1 + \exp(-Z_i)]} \qquad \textbf{(Eqn. 1)}$$

Where:

- $\mathbf{F(Z_i)}$ = represents the value of the standard normal density function associated with each possible value of the underlying index Z_i.
- $\mathbf{P_i}$ = the probability of observing a specific outcome of the dependant variable (i.e. the individual is aware of the Jersey Fresh Program) given the independent variables X_is
- **e** = the base of natural logarithms approximately equal to 2.7182
- $\mathbf{Z_i}$ = the underlying index number or βX_i
- α = the intercept

And βX_i is a linear combination of independent variables so that:

$$\mathbf{Z_i = \log [P_i/(1-P_i)] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_n X_n + \varepsilon} \qquad \textbf{(Eqn. 2)}$$

Where:

i	=	1,2,. . . ,n are observations
$\mathbf{X_n}$	=	the nth explanatory variable for the ith observation
β	=	the parameters to be estimated
ε	=	the error or disturbance term

The dependent variable in the above equation 2 is the logarithm of the odds that a particular choice would be made. The slope of the cumulative logistic distribution is greatest at P = 0.50. This implies that the changes in the independent variables will have the greatest impact on the probability of choosing a given option at the midpoint of the distribution. The low slopes at the end points of the distribution imply that large changes in X are necessary to bring about small changes in probability.

The parameters themselves do not represent directly the change in the independent variables. Such probability changes depend on the original probability and, hence, on the initial values of all the independent variables and their coefficients. For the logit model the changes in the probability P_i that $y_i = 1$ brought by the independent variable X_{ij} is given by:

$$(\partial P_i / \partial X_{ij}) = [\beta_j \exp(-\beta X_{ij})] / [1 + \exp(-\beta X_{ij})]^2 \qquad \textbf{(Eqn. 3)}$$

However, when the independent variables are also qualitative in nature, as is the case with most of the explanatory variables in this model, $\partial P_i / \partial X_{ij}$ does not exist in that X_{ij} is discrete, which means that it does not vary continuously. In this case, probability changes must be obtained by evaluating P_i at the alternative values of X_{ij}. Probability changes are then determined by:

$$(\partial P_i / \partial X_{ij}) = P_i(Y_i : X_{ij} = 1) - P_i(Y_i : X_{ij} = 0) \qquad \textbf{(Eqn. 4)}$$

Different logit models were developed for the corresponding group of consumers, farmers, wholesalers, and retailers. For example, the questionnaire to consumers inquired about their awareness of the Jersey Fresh Program. The model for estimating the preferences of consumers toward the Jersey Fresh labeled produce in terms of their demographic characteristics is given by:

$$\mathbf{Z_i = \beta_0 + \beta_1\ South + \beta_2\ Suburb + \beta_3\ Years + \beta_4\ Female + \beta_5\ House + \beta_6\ Child + \beta_7\ Gar + \beta_8\ Age2 + \beta_9\ Educ + \beta_{10}\ Job1 + \beta_{11}\ Income3} \qquad \textbf{(Eqn. 5)}$$

Where:

Z_i	=	$\log(Prob_i/(1 - Prob_i))$, and
$Prob_i$	=	1 if the individual prefers buying Jersey Fresh produce over others and 0 otherwise
South	=	1 if the person lives in South Jersey and 0 otherwise
Suburb	=	1 if the person lives in a suburban area and 0 otherwise
Years	=	1 if the person has lived in New Jersey for more than 5 years and 0 otherwise
Female	=	1 if the person is female and 0 otherwise
House	=	1 if the household of the person has more than 4 members and 0 otherwise
Child	=	1 if the person has two or more children and 0 otherwise
Gar	=	1 if the person has a vegetable garden at home and 0 otherwise
Age2	=	1 if the person's age is more than 35 years and 0 otherwise
Educ	=	1 if the persons has high school education or higher and 0 otherwise
Job1	=	1 if the person is employed by others and 0 otherwise (unemployed, self-employed or retired)
Income3	=	1 if the person's annual income is $80,000 or higher and 0 otherwise.

For estimation purposes, one classification was eliminated from each group of variables as a base group whose probability could be derived from the estimates of the probabilities of all the remaining groups. In the example above, the base group of individuals are those who satisfy the following description - those who do not live in South Jersey, do not live in a suburban area, have not lived in New Jersey for five years or more, are male, have a household size of less than four, have less than two children, have no vegetable garden in their home, are less than 35 years of age, do not have a high school or higher education, are not employed by others, and have an income of less than $80,000.

Similarly, econometric models were developed using consumer behavior variables such as shopping habits and preferences. These models focused on examining the effectiveness of the Jersey Fresh Program in encouraging and increasing the produce sales in and around the state of New Jersey.

The Target Sample

The Jersey Fresh Program targets households in the state of New Jersey. Hence, the target sample was a representative sample of New Jersey households (target population). Since the population density varies with the geography of the state, a stratified random sampling technique was used, where the number of surveys conducted was higher in regions of higher population. The number of surveys conducted was in the ratio of 47:30:23 for the Northern, Central and Southern regions of New Jersey, corresponding to the population distribution in these regions (Census, 1992). Furthermore, within each region, the number of surveys to be conducted in each county was decided by the population of the county in order to ensure a representative sample. The sample size was 500, based on the simultaneous goals of minimizing costs and maintaining a representative sample size. This report presents an analysis of the surveys completed by consumers. A copy of the survey questionnaire is included in the Appendix.

Survey Administration

The survey vehicle employed was a mailed questionnaire. Questionnaires were mailed to a sample of New Jersey residents all over the state, using the latest telephone books of each county as the sources for the addresses. The surveys were sent with a prepaid return envelope and a cover letter that introduced the Jersey Fresh Program and explained the purpose of the survey. The effort of the participant was acknowledged and a dollar was enclosed as an incentive for their participation and in appreciation of their effort.

The focus group meeting results were taken into account while designing the survey instrument. The survey was also pre-tested by several consumers and modified based

on their inputs. Of the 500 that were sent in July 1996, 186 responses were received by the end of the first due date in August 1996. A reminder was sent to all the non-responders increasing the final number of useable responses received to 209, with a response rate of 44.1%.

Consumer Survey Analysis

Descriptive Results of the Consumer Survey

The survey consisted of questions relating to consumer shopping habits, their opinion about locally grown produce, their perceived relative importance of qualitative aspects like convenience, price, quality, and freshness, and about the various promotions that were displayed in markets. The respondents who were aware of Jersey Fresh were asked to answer further questions related to where they had seen or heard of the logo and what they understood by the logo. Consumers who remembered buying produce marked as Jersey Fresh were asked for their comparison of Jersey Fresh with other produce in terms of quality, price, packaging, and freshness.

Perceptions of Consumers who were Aware of Jersey Fresh

Among the 209 respondents, 77.51% reported they were aware of the Jersey Fresh Program and that they recognized the logo while 22.49% responded they did not. A majority of consumers reported that they remembered seeing the logos on produce displays (65.2%) and television advertisements (62.0%). Table 1 indicates the frequency of the various places consumers remembered seeing Jersey Fresh Logos.

Consumers who recognized the logo (total of 162) were asked to indicate the various options they associated the Jersey Fresh Logo with. The maximum frequency was obtained for “New Jersey Farmers’ Produce” (81.7%), followed by “Quality Produce” (72.7%), followed by “NJ Department of Agriculture” (30.5%), “Dairy and Eggs” (9.8%), and the least for “Meat from New Jersey” (3.7%). This indicates that a majority of consumers perceived Jersey Fresh produce popularly as produce grown in New Jersey

and quality produce. The number of consumers who associated Jersey Fresh with "Dairy and Eggs" was very low. The reason for this could be that the logo was more commonly attached to produce than to dairy products or eggs. A very small percentage of the sample associated the logo with "Meat from New Jersey" (3.7%) indicating that brand misperception of this program was very low among consumers.

Table 1: Places Where the Jersey Fresh Logo Was Frequently Seen

Places where Jersey Fresh was seen	Frequency	Percentage	Rank
Produce displays	107	65.2	1
Television advertisements	101	62.0	2
Retailers advertisements	70	42.7	3
Roadside market stands	48	29.3	4
Price cards on produce	41	25.0	5
Billboards	37	22.6	6
Posters and stickers	37	22.6	7
Radio advertisements	32	19.6	8
From Dept. of Agriculture personnel	4	2.5	9

(N=209)

Consumers who recognized the logo were further separated into those who bought Jersey Fresh produce and those who never bought Jersey Fresh produce. This eliminated the non-sample error from the questions regarding the consumer perception of the produce. Of the 164 respondents who were aware of the Jersey Fresh Program, 81.6% (a total of 146) remembered buying Jersey Fresh produce. Table 2 shows the consumer responses regarding how often they specifically looked for Jersey Fresh marked items while shopping.

The results indicate that a majority (84.3%) of consumers looked for Jersey Fresh marked produce at least occasionally. As more fresh produce from the state farms is available during the summer months, consumers would most likely look for Jersey Fresh signs during the active production seasons of the year.

Table 2: While Shopping for Fresh Produce, Do You Specifically Look for Jersey Fresh Logo Items?

Consumer Response	Frequency	Percentage	Cum. %
Always	35	24.0	24.0
Occasionally	88	60.3	84.3
Never	15	10.3	94.6
Not Answered	8	5.4	100.0

Consumers responded very positively when asked for their opinion about the quality, freshness, price, and packaging of the Jersey Fresh produce. When asked to compare the quality of Jersey Fresh produce with other produce, of the 140 consumers who responded, 69.3% said they found Jersey Fresh produce better in quality compared to other fresh produce, while 15% said they found it the same as other fresh produce, and none of the participants indicated that Jersey Fresh produce was inferior compared to other fresh produce.

Regarding the price of Jersey Fresh compared with other fresh produce, of the 141 consumers who responded, 18.4% said they found Jersey Fresh produce priced higher than expected, 46.1% said they found it priced the same as others, 14.9% said they found it priced lower than expected, while 14.9% responded that they did not know.

Regarding the packaging of Jersey Fresh produce compared with other fresh produce, of the 141 consumers who responded, 15.0% said they found the packaging better than expected, while 57.9% said they found the packaging similar to others. Only 2.1% of those who responded indicated that Jersey Fresh produce packaging was poor, while 19.3% indicated that they did not know.

Regarding the freshness of produce marked with Jersey Fresh Logos compared to other fresh produce, of the 141 consumers who responded, 73% said they found Jersey Fresh produce to be fresher than other produce, 15.6% said they found it the same as

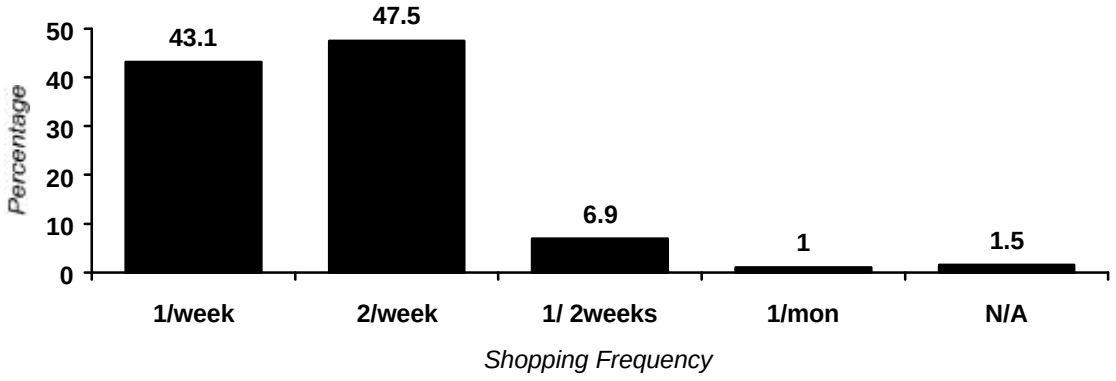
others. None of those who responded indicated Jersey Fresh produce was not fresh, while 5.7% responded that they did not know.

Shopping Habits of Consumers

A series of questions was asked in order to understand the important factors that consumers took into consideration while shopping for fresh produce. The questions were regarding where the consumers frequently shopped, how frequently they shopped, and which factors, such as origin, quality, price, convenience, and freshness, they gave most importance to while shopping. They were also given a list of different kinds of advertisements to rank from the most attractive to the least.

In response to the question on how often they purchased fresh produce during summer, of the 202 respondents, 43.1% said they shopped once a week, and 47.5% said they shopped twice a week. While 6.9% said they shopped once in two weeks, only 2% said they shopped once a month (see Figure1). The majority of the respondents (90.6%) seem to shop at least once a week for fresh produce.

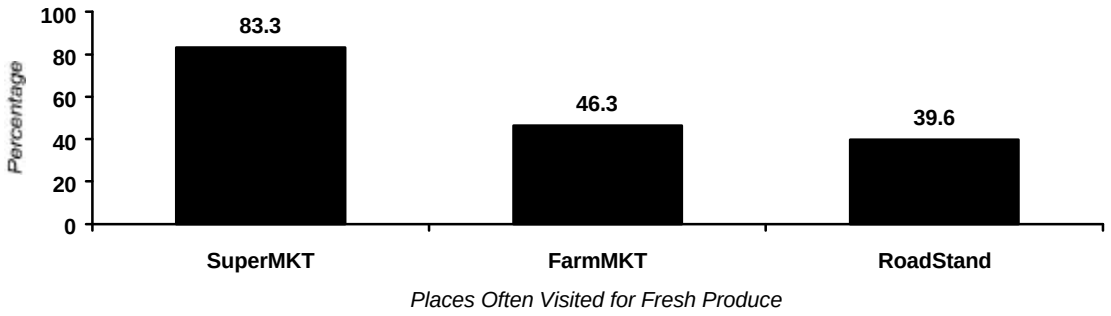
Figure 1: How Often Do You Shop for Fresh Produce During the Summer?



Regarding where consumers buy fresh produce most often during the summer, the respondents were asked to check all places that applied such as retail supermarkets, farmers' markets, and roadside stands. Of the 209 consumers who responded, a majority of 83.3% indicated that they shopped at supermarkets for fresh produce.

Consumers who shopped often at farmers' markets accounted for 46.3% while those who shopped at roadside stands accounted for 39.6% (see Figure 2). This was not surprising, as most of the respondents lived in suburban areas of New Jersey where there were greater numbers of supermarkets than other kinds of produce outlets. It is interesting to note that sizable portions of the respondents seemed to visit farmers' markets (46.3%) and roadside stands (39.6%) as well.

Figure 2: Where Do You Buy Fresh Produce Most Often During the Summer?



Several questions were asked regarding the shopping habits of consumers such as whether they planned ahead which produce they wanted to buy, whether they read food advertisements in newspapers and grocery store brochures, and whether they would consider shopping at more than one food store in order to purchase advertised specials. The answers to these questions lend valuable insight into the shopping attitudes of consumers. Of the 207 consumers who responded to the question regarding whether they planned ahead which fresh produce they wanted to buy, more consumers (69.6%) indicated that they did plan ahead compared to those who indicated that they did not (30.4%). More consumers (77.8%) indicated that they read food advertisements in newspapers and grocery brochures, compared to those who indicated they did not read advertisements regularly (22.8%). In response to whether they would consider changing their usual shopping market to be able to purchase advertised specials 51% responded that they were willing to change their shopping market while 48.3% responded that they would not consider changing their usual shopping market. These results indicate that the majority of consumers plan ahead before shopping for fresh

produce, and are aware of the marketing specials being advertised, but when it comes to changing their usual market in order to buy advertised specials, the results are not as positive.

Consumers' Opinions on Locally Grown Produce:

The survey asked consumers several questions regarding their attitude towards locally grown produce and their interest in purchasing Jersey Fresh labeled produce. When asked whether they cared about the origin of the fresh produce that they bought, 81.1% answered that they did care while 18.9% answered that they did not care. In response to the question regarding whether they would like retailers to provide information about the origin of produce, 90.2% of those who responded indicated that they would like origin information while 9.8% indicated they would not be interested. In response to the question regarding whether they wished to buy more produce grown in New Jersey farms, 88.8% were affirmative, while 0.5% indicated that they did not wish for more locally grown produce, and 10.2% responded that they did not care. On an average, 86.7% of the consumers seemed to have a very positive attitude towards purchasing New Jersey produce, while 13.13% seemed not to care about the origin of the fresh produce they buy.

Table 3 shows different consumer shopping habits and the corresponding consumer awareness of the Jersey Fresh Program. Overall, consumers who cared about the origin and liked to have information about the origin of produce, and who wished to buy produce grown in New Jersey farms were more aware of Jersey Fresh than those who did not. Consumers who were planned shoppers and who read food advertisements were also more aware of Jersey Fresh than their counterparts. Consumers who shopped at more than one store in order to purchase advertised specials were found to be more aware of Jersey Fresh than those who did not. Among those who were not aware of Jersey Fresh, the highest percentage was that of consumers who indicated that they did not read food advertisements or grocery store brochures. The highest percentage among those who were aware of Jersey Fresh was of those consumers who read food advertisements in newspapers and grocery store brochures.

Table 3: Consumer Awareness of Jersey Fresh and Shopping Habits

Aware of Jersey Fresh?	Yes	%	No	%
Total Response	162	77.5%	47	22.5%
Care about origin of produce				
Yes	133	79.6%	34	20.4%
No	29	69.1%	13	30.9%
Like information on origin				
Yes	144	77.8%	41	22.2%
No	18	75.0%	6	25.0%
Do you wish to buy produce that is grown in New Jersey farms?				
Yes	144	79.1%	38	20.9%
No	18	66.7%	9	33.3%
Do you plan before you go shopping for fresh produce?				
Yes	110	76.4%	34	23.6%
No	52	80.0%	13	20.0%
Do you read food advertisements in newspapers and grocery store brochures?				
Yes	133	82.6%	28	17.4%
No	29	60.4%	19	39.6%
Do you regularly shop at more than one food store in order to purchase advertised specials?				
Yes	86	80.4%	21	19.6%
No	76	74.5%	26	25.5%

Table 4 shows the relative importance given by consumers to various factors that they considered while shopping for fresh produce. Quality was ranked first with a mean score of 1.89, freshness was ranked second with a mean score of 1.96, followed by appearance with a mean score of 2.73 showing that it is a characteristic of moderate importance. Only two characteristics, namely convenience and price, were ranked on average above 3, showing that they were less important factors (Table 4). The results indicate that consumers give a higher weight to aspects that are directly related to the nature of the produce such as its quality, freshness and appearance than the monetary value associated with it in terms of price or the effort involved in acquiring it conveniently.

Table 4: Importance of Various Factors While Buying Fresh Produce

Determinant Factor	Mean	Std Dev
Quality	1.89	1.11
Freshness	1.96	1.15
Appearance	2.73	1.22
Price	3.23	1.36
Convenience	4.24	1.38

Note: Rating 1 = Most important … 5 = Least important

Consumers were asked to rank different types of promotions that are commonly displayed for advertisement purposes, based on the effectiveness in attracting their attention. The following Table 5 illustrates the results of the ranking. The results show that a majority of consumers indicated that they liked attractive price tags on produce the most and additional brochures given in stores the least. It is interesting to note that among those who recognized the Jersey Fresh Logo, 25% remembered it from the price cards on produce and 65.2% remembered it from the produce displays. The results suggest that the Jersey Fresh Program could target more consumers through the use of Jersey Fresh displays and price tags of fresh produce in the stores.

Table 5: Ranking of Different Advertisements Displayed in the Markets

Type Of Advertisement	Mean	Std. Dev
Special Price Tags	1.44	0.63
Special Demos	1.60	0.69
Colorful Stickers	1.64	0.66
Posters and Banners	1.75	0.75
Additional Brochures	1.94	0.79

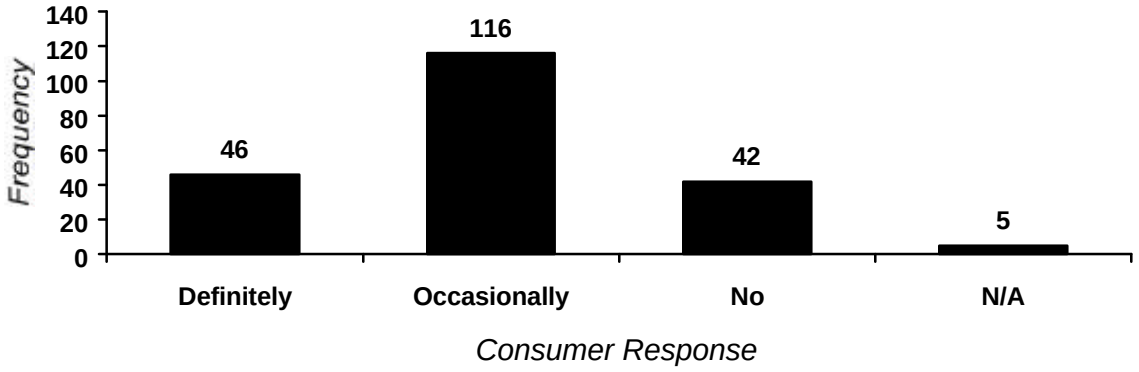
Note: The most attractive options were given a score of "one", neutral ones were given a score of "two", and the less attractive options were given a score of "three."

Opinions of Consumers on Jersey Fresh

A series of questions were asked in order to determine whether Jersey Fresh Logos were effective in terms of attracting consumer attention and to determine whether the Jersey Fresh name stood for quality New Jersey produce. When asked whether they would find Jersey Fresh Logos useful in identifying and selecting New Jersey's produce, a majority of consumers (96.1%) responded affirmatively and only 3.9% responded negatively. When questioned further if Jersey Fresh displays would prompt them to buy the produce, a majority of the consumers (64.1%) responded that they would buy more, while some consumers (35.9%) responded that they would buy only as much as they originally planned. It was notable that no one responded that they would buy less than what they planned. This implies that the consumers had no negative attitude towards Jersey Fresh Logos. Moreover, a high percentage of consumers were likely to increase their purchases if they saw the logos on the produce.

In response to the question regarding whether consumers would change their usual shopping markets in order to be able to purchase Jersey Fresh produce, of the 204 consumers who responded (Figure 3), a majority of 56.6% responded that they would occasionally consider changing their markets to buy Jersey Fresh. While 22.4% of the consumers who responded said they would definitely change, 20.5% responded that they would not consider changing their usual market. Overall, 79% of the respondents indicated that they would consider changing their usual shopping market at least occasionally in order to be able to purchase Jersey Fresh.

Figure 3: Consumer Willingness to Change Shopping Market to Purchase Jersey Fresh Produce



In response to the question regarding whether they would prefer the grocery store in their local area to have a greater selection of Jersey Fresh produce, a majority of 206 consumers (87.6%) responded affirmatively. While only 1% of the consumers indicated negatively, 10.9% said that they did not care. The results indicate that a majority of the consumers would like more produce with the Jersey Fresh Logo to be available in their local grocery stores.

Table 6 shows the responses of consumers to the question on how much above the current market price they would be willing to pay for Jersey Fresh produce. Of the consumers who indicated that they would be willing to pay more, 46.8% indicated that they would consider paying between 1% to 5% more over the market price for Jersey Fresh produce. While consumers who indicated that they would pay between 6% to 10% over the market price for Jersey Fresh produce accounted for 18.4% of the respondents, those who indicated that they would pay between 10% to 20% over the market price comprised 7% of the sample. Only 2.5% of the consumers indicated a willingness to pay more than 20% for Jersey Fresh produce.

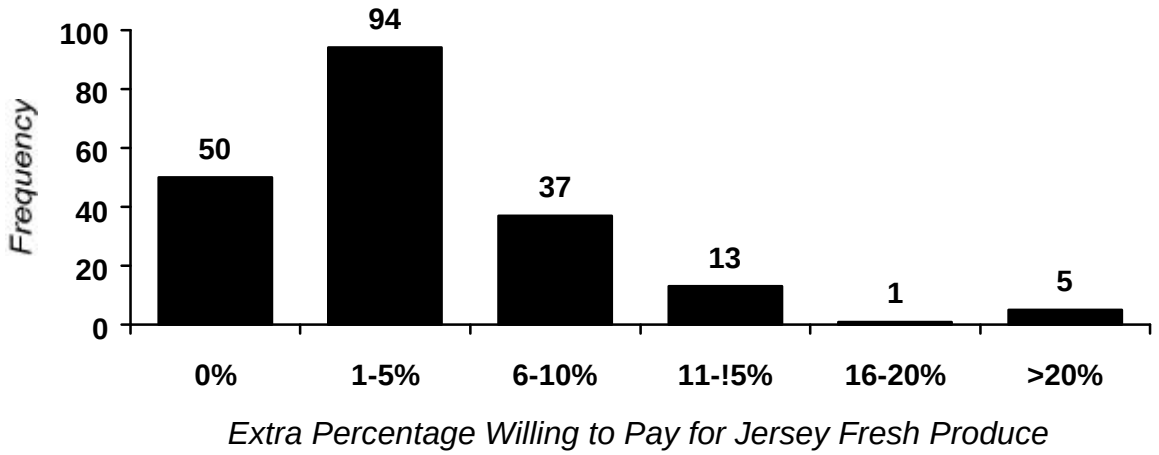
Table 6: How Much Over the Current Price Are You Willing to Pay for Jersey Fresh Produce?

Category	Frequency	Percentage	Cum. %
Up to 5% more	94	46.8	46.8
6% to 10% more	37	18.4	65.2
10% to 20% more	14	7.0	72.5
More than 20%	5	2.5	74.5
Will not pay more	50	25.5	100.0

Consumers' responses indicate that while three fourths of them (74.5%) were willing to pay 1% to 5% more over the market price for Jersey Fresh produce, another one fourth were not willing to pay anything above the market price for Jersey Fresh produce. Of those who were willing to pay, a large portion were willing to consider paying only a small percentage of up to 5% over the market price for Jersey Fresh produce (see

Figure 4). The results indicate that consumers definitely demand fresh and quality produce grown locally and were willing to pay a premium price for it over the market price, even if only a small percentage.

Figure 4: Willingness to Pay A Premium for Jersey Fresh



Demographics of Consumer Survey Respondents

Of the 206 people who responded, 51.9 % reported that they were from one of the counties of northern New Jersey, 34% were from central New Jersey and 14% were from southern New Jersey. The distribution of respondents was not uniform among the three regions of New Jersey as the number of surveys sent to each of these regions was originally in the ratio 47:30:23 respectively in accordance to their population density (NJ Statistics, 1992).

Of the 203 consumers who responded to the question inquiring about the type of neighborhood they resided in, 10.8% indicated they lived in an urban neighborhood, 82.8% indicated that they lived in a suburban neighborhood, and 6.4% indicated they lived in a rural neighborhood. Since most of the residential areas in New Jersey are suburban, these were represented by a high percentage of the respondents.

Consumers who answered the survey averaged around 37 years of residency in the state of New Jersey. The shortest period of residency reported was 6 months and the

longest period reported was 96 years. This indicates that a majority of the respondents were consumers who had been living in the state for several decades. This might imply that the survey sample was a better representation of actual New Jersey residents rather than a transient population in the state.

The average household size of the survey participants was 2.7 individuals, which ranged from a minimum of one to a maximum of six. Households with one individual made up 16.7% of the sample, while households of two people accounted for 36.5% and households of three people made up 15.8%. Households of four people accounted for 19.7% of the sample and households of five or more people accounted for 11.4 % of the sample. In terms of the number of children below age seventeen in the household, 71.6% had none, 10% had one child, 12.9% had two children, and 5.5% had three or more children in their households. Approximately 50% of the participants had a home garden.

Approximately 37% of the 203 respondents were male and 63% were female. Since it was specifically asked that the principal grocery shopper in the household should fill out the survey, this outcome implies that females were the main grocery shoppers in New Jersey households. In terms of ethnicity, the results seem somewhat skewed towards Caucasians. Out of the 199 who responded to the question, a majority (91%) were Caucasian, 3% were African American, 2.5% were Hispanic and 3% belonged to other ethnic groups.

Of the 202 respondents who revealed their age, the largest numbers (31.7%) were in the age group of 36 to 50 years while only one person was below the age of 20. The frequencies for the age groups were 14.4% for ages 21-35 years, 31.7% for ages 36-50 years, 26.2% for ages 51-65 years, and 27.2% for age over 65 years.

A majority of the respondents had at least some college education. Thirty three percent of the participants had a high school education, 21.2% had some college education, 9.9% were undergraduates and 36% were graduates. In terms of the current

occupation of the respondents, 36.5% were retired, 10.8% were self-employed, and 48.3% were employed by others.

The annual household income of the 187 people who responded averaged between $40-59,000. While 8.5% had a household income of less than $20,000, 22.3% had incomes between $20-39,000, 21.3% had incomes between $40-59,000, 15% had incomes between $60-79,000, 10% had incomes between $80-99,000 and 22.3% had an annual household income of more than $100,000.

The most important question of the survey dealt with awareness of Jersey Fresh among consumers. Table 7 shows the awareness cross tabulated with the different socio-demographic factors. The table shows that awareness of Jersey Fresh increased with the number of years lived in New Jersey and was greater among consumers who lived in rural areas compared to those who lived in suburban and urban areas. Among the different age groups, those between 36 to 50 years of age were more aware of this program compared to the other age groups (see Table 7). Results consistent with the sample were obtained for the groups classified by consumer region, education, occupation and gender. Awareness increased with increasing income, except in the first and last categories. In the income category of less than $20,000, all the respondents were aware of Jersey Fresh, whereas in the income group of $100,000 or more, only 59.5% were aware of the Jersey Fresh Program.

Conclusions from Descriptive Analysis of Consumer Data

The purpose of the Jersey Fresh Consumer study was to evaluate the effectiveness of the Jersey Fresh Program in terms of consumer awareness. Information was collected on the shopping habits of consumers and their socio-demographic statistics.

The sample size was 209 respondents of New Jersey households (population). The majority (77.5%) of consumers were aware of Jersey Fresh. The logos were most remembered from produce displays and television advertisements. Most of the

Table 7: Consumer Awareness of Jersey Fresh and Socio-Demographic Characteristics

Aware of Jersey Fresh?	***Yes***		***No***	
	Frequency	***%***	***Frequency***	***%***
Total Response	162	77.5%	47	22.5%
Region in New Jersey				
North	76	71.0%	31	28.9%
Central	57	81.4%	13	18.6%
South	28	96.6%	1	3.5%
Number of Years in NJ				
0 – 10 years	17	68.0%	8	32.0%
11 – 20 years	15	83.3%	3	16.7%
20 – 40 years	63	78.8%	17	21.2%
Over 40 years	63	79.8%	16	20.2%
Type of location				
Urban	15	68.2%	7	31.8%
Suburban	134	79.8%	34	20.2%
Rural	11	84.6%	2	15.4%
Gender				
Female	104	80.6%	25	19.4%
Male	58	72.5%	22	27.5%
Age				
Less than 20 years	0	0.0%	1	100.0%
21 – 35 years	22	75.9%	7	24.1%
36 – 50 years	52	81.3%	12	18.7%
51 – 65 years	84	77.9%	24	22.2%
Education				
High School	53	79.1%	14	20.9%
Some College	40	93.0%	3	7.0%
College Graduate	12	60.0%	8	40.0%
Advanced Degree	54	74.0%	19	26.0%
Occupation				
Retired	58	78.4%	16	21.6%
Self-employed	15	68.2%	7	31.8%
Employed by others	78	79.6%	20	20.4%
Other	8	88.9%	1	11.1%
Income				
Less than $20,000	16	100.0%	0	0.0%
$20,000 - $39,000	28	66.7%	14	33.3%
$40,000 - $59,000	34	85.0%	1	15.0%
$60,000 - $79,000	26	92.9%	2	7.1%
$80,000 - $99,000	18	94.7%	1	5.3%
$100,000 or more	25	59.5%	17	40.5%

respondents (81.7%) associated the logo with quality produce from New Jersey. Consumers who purchased Jersey Fresh produce thought that it was very good in terms of quality (69.3%) and freshness (73%) compared to other fresh produce, and the same as other fresh produce in terms of price (46.1%) and package (57.9%).

In terms of consumer-shopping habits, most shopped for fresh produce twice a week (47.5%) or once a week (43.1%). The common places they shopped were supermarkets (83.3%) and farmers' markets (46.3%). While quality and freshness were ranked most important for fresh produce, price tags and special produce demos in stores were ranked highest among the various advertisements that attracted them.

Most consumers cared about the origin of the fresh produce they bought (74.5%) and liked to be provided with such information (88.5%). Consumers were willing to purchase locally grown fresh produce (88.8%) and were willing to pay at least a minimum premium price for it (74.9%). Consumers clearly indicated that Jersey Fresh displays would prompt them to buy more than what they originally planned (64.1%) and wished grocery stores had more produce marked with Jersey Fresh Logos (87.6%).

The consumer demographic information indicated that the highest number of responses (51.9%) was received from northern New Jersey, in accordance with the stratified sample. Most of the respondents lived in suburban households (82.8%), and the average residency in the state was around 37 years. Half the respondents had a home garden and the average household size of the sample was 2.8 individuals. Females accounted for the majority (63.5%) of participants among the primary grocery shoppers who responded to the survey. The average consumer who responded to the survey was 36 to 50 years of age, had a college degree, was employed, Caucasian, and had an annual household income of $40,000 to $59,000.

Logit Analysis of Consumer Data

Three logit models were used to analyze the data obtained from the responses to the consumer survey. The first model was used to predict the odds of consumer awareness

of Jersey Fresh given certain characteristics of the consumers. The second and third models respectively attempt to predict the odds that a consumer had purchased Jersey Fresh produce, or was willing to buy Jersey Fresh produce, given certain consumer characteristics. The results of the analysis would help in understanding the characteristics of consumers that are most likely to influence whether they are aware of, or have bought, or are willing to buy Jersey Fresh produce. This section presents a description of the variables used in the logit models followed by the maximum likelihood results and the prediction success of each model.

All the explanatory variables were binary with a discrete value of 0 or 1 generated from categorical questions of the consumer survey (see Appendix). Since most of the survey questions were of a qualitative nature, corresponding dummy variables were chosen in the regression (Pindyck and Rubinfeld, 1991). In order to prevent perfect collinearity, one category was dropped from the available options. Usually the category that was highest or lowest in rating was dropped as it makes the interpretation of the other categories easier. Some variables were included in the model although they were not significant statistically, if they helped in increasing the predictive power of the model (e.g. variable CIMP in the model of Consumers of Jersey Fresh).

In the selection of a model, the number of significant variables was given more weight than the R^2 values as the R^2 values for models drawn on cross sectional data of population are not typically high (Kmenta, 1971). The likelihood ratio index, which uses maximum likelihood estimation (Pindyck and Rubinfeld 1991), was used as an alternative measure of goodness of fit for the models. In the models, significance of the variables was considered at the 0.10 level, 0.05 level, and 0.01 level. The joint p-value, which tests the hypothesis that all the independent variables together as a set are significant, was used in selecting the models. A low joint p-value indicates high significance of the set of independent variables. The p-value of most of the models in this study was in the range 0.01 to 0.0001.

There were essentially two kinds of variables in all the logit models used to analyze the consumer data. One set of explanatory variables was related to the consumer's attitude, habits while shopping for fresh produce, and their perception of local produce. The other set of variables was regarding socio-demographic and economic characteristics of the consumers. These two sets of variables were presented in separate models namely the Behavior Model and the Demographic Model, in order to increase the clarity of each model.

Dummy variables for consumer attitudes and habits in shopping for fresh produce, and their attitude towards Jersey Fresh produce were included in the behavioral models. The variables related to the consumer socio-demographic and economic characteristics were included in the demographic models (Table 8).

Model of Consumer Awareness of Jersey Fresh Logos

This model looks at the factors that contribute to the awareness of Jersey Fresh produce. The dependent variable (AWARE) was based on the survey question that asked if the consumer was aware of the Jersey Fresh Program or had seen the logo. The dependent variable was coded as one for those who said that they were aware and as zero for those who said that they were not aware of Jersey Fresh nor remembered seeing the logo. Of the 209 responses, 77.5 percent indicated that they were previously aware of Jersey Fresh, while 22.5 percent reported that they were not.

Consumer Awareness Model with Behavior Variables

The logit analysis results for the model of consumer awareness of Jersey Fresh in terms of behavior variables are given in tables 9 and 10. The goodness of fit for the model is shown by the McFadden's R^2 of 0.13. The extent of prediction is shown in Table 10. Approximately 75.6% of the survey participants were correctly classified as either aware of Jersey Fresh or not aware of Jersey Fresh using the logit specification. The predicted changes in the probabilities for each variable are given in column four of Table 9.

Table 8: Description of the Model Variables

Variable	*Freq.*	*Mean*	*Std. Dev*
Consumer Behavior Variables			
Would you find Jersey Fresh Logo useful in identifying and selecting New Jersey's produce? (LOGOUSE)			
Yes	199	0.9522	0.2134
No*	10	0.0478	0.2134
How often do you shop for fresh produce during summer in a week? (OFTEN)			
Once or more	87	0.4162	0.4941
Less than once*	122	0.5838	0.4941
Where do you shop for fresh produce most often during summer? (FMKT)			
Farmers markets	132	0.6316	0.4835
Supermarkets *	77	0.3684	0.4835
Do you care where the fresh produce you buy was grown? (CARE)			
Yes	167	0.8107	0.3927
No*	39	0.1893	0.3927
How would you react to Jersey Fresh displays of produce in stores? (REACT)			
Buy More	132	0.6316	0.4835
Will not buy more*	77	0.3684	0.4835
Do you read food advertisements in newspapers or grocery store brochures regularly? (READ)			
Yes	161	0.7703	0.4216
No*	48	0.2297	0.4216
Do you shop at more than one food store in order to buy advertised specials? (CHANGE)			
Yes	46	0.2200	0.4153
No*	163	0.7800	0.4153
When deciding where to purchase produce which do you consider most important?			
Convenience (CIMP)	47	0.2249	0.4185
Price(PIMP)	31	0.1483	0.3562
Quality (QIMP)	114	0.5455	0.4991
Would you like your local grocery store to have a greater selection of New Jersey's produce? (SELECT)			
Yes	177	0.8469	0.3609
No*	32	0.1531	0.3609

Variable	*Freq.*	*Mean*	*Std. Dev*
Consumer Demographic Variables			
Region in New Jersey			
South (SOUTH)	29	0.1388	0.3465
Central (CENTRAL)*	70	0.3349	0.4730
North (NORTH)*	07	0.5119	0.5010
Type of Neighborhood			
Suburban (SUBURB)	168	0.1053	0.3980
Urban (URBAN)*	22	0.8038	0.4834
Rural (RURAL)*	13	0.0622	0.2421
Number of Years living in New Jersey (YEARS)			
5 or more years	196	0.9377	0.2421
Less than 5 years*	13	0.0623	0.2421
Household Size (HOUSE)			
Four or more	169	0.8086	0.3943
Less than four*	40	0.1914	0.3943
Number of children below the age of 17 in the household (CHILD)			
Two or more	37	0.1770	0.3826
Less than two*	172	0.8230	0.3826
Gender of the survey participant (FEMALE)			
Female	129	0.6172	0.4872
Male*	80	0.3828	0.4872
Age of the survey participant (AGE2)			
Less than 35 years of age*	101	0.5167	0.5009
More than 35 years of age	108	0.4833	0.5009
Education (EDUC)			
Less than High School*	67	0.3205	0.4678
High School – College	63	0.3014	0.4599
Masters or more	73	0.3493	0.4778
Do you have a vegetable garden at home? (GAR)			
Yes	101	0.4832	0.5009
No*	108	0.5168	0.5009
Current Occupation			
Retired (JOB3)*	98	0.4688	0.5002
Self Employed (JOB2)*	22	0.1052	0.3076
Employed By Others (JOB1)	74	0.3541	0.4794
Annual Household Income			
Less than $40,000 (INCOME1)*	58	0.2775	0.3076
$40,000 - $79,999 (INCOME2)*	68	0.3254	0.4872
$80,000 or more (INCOME3)	61	0.2918	0.4557

Note: 1. * Refers to the category that was generally omitted in the logit analysis. 2. The three consumer models have the same specification for the explanatory variables used.

Table 9: Consumer Awareness Model with Behavioral Variables

Variable	*Estimate*	*Standard Error*	*Change in Probability*
INTERCEPT	-0.6457	0.7902	-0.0986
LOGOUSE	0.4102	0.7953	0.0627
OFTEN	0.1782	0.3895	0.0272
FMKT**	0.8500	0.3779	0.1299
PLAN	-0.2833	0.4203	-0.4327
REACT**	0.8860	0.3898	0.1353
READ**	1.0285	0.4498	0.1571
CHANGE*	1.1041	0.5906	0.1687
PIMP	-0.0322	0.5137	-0.0049
QIMP	0.0380	0.4139	0.0058
SELECT	-0.4133	0.5250	-0.0631

McFadden's R^2 is: 0.1280
Ratio of non-zero observations to the total number of observations: 0.7815

Note:
*: Significant at the 0.10 level
**: Significant at the 0.05 level
***: Significant at the 0.01 level

Table 10: Predictive Accuracy of Model One

		Predicted	
		0	1
Actual	0	4	7
	1	41	152

Number of correct predictions: 156
Percentage of correct predictions: 75.6

Table 11: Consumer Awareness Model with Demographic Variables

Variable	*Estimate*	*Standard Error*	*Change in Probability*
INTERCEPT	-1.3077	0.8592	-0.1845
SOUTH**	2.3991	0.0584	0.3385
SUBURB	0.6206	0.4661	0.0876
YEARS**	1.5608	0.7425	0.2202
FEMALE	0.3325	0.3823	0.0469
HOUSE	0.0961	0.4470	0.0135
CHILD	0.7352	0.6146	0.1037
GAR**	0.8329	0.3912	0.1175
AGE2*	-0.8422	0.5128	-0.1188
EDUC***	-1.3100	0.4549	-0.1848
JOB1**	0.0543	0.4333	0.0077
INCOME3	0.5271	0.4734	0.0743

McFadden's R^2 is: 0.155
Ratio of non-zero observations to the total number of observations: 0.775

Note: *: Significant at the 0.10 level
**: Significant at the 0.05 level
***: Significant at the 0.01 level

Table 12: Predictive Accuracy of Model Two

		Predicted	
		0	1
Actual	0	7	14
	1	40	148

Number of correct predictions: 155
Percentage of correct predictions: 74.2

Table 13: Consumers of Jersey Fresh Model with Behavioral Variables

Variable	*Estimate*	*Standard Error*	*Change in Probability*
INTERCEPT**	-3.1772	1.5296	-0.4491
LOGOUSE	1.1366	1.1641	0.1607
OFTEN	0.8467	0.7234	0.1197
FMKT*	0.8350	0.4772	0.1181
CARE	0.2286	0.5721	0.3232
REACT**	1.2550	0.4950	0.1774
READ	0.5543	0.5280	0.0784
CHANGE	0.4981	0.6088	0.0704
CIMP**	2.3488	0.9741	0.3321
PIMP*	1.6320	0.9282	0.2307
QIMP*	1.3720	0.7782	0.1940
SELECT	-0.5547	0.7167	-0.0784

McFadden's R^2 is: 0.1476
Ratio of non-zero observations to the total number of observations: 0.8121

Note: *: Significant at the 0.10 level
**: Significant at the 0.05 level
***: Significant at the 0.01 level

Table 14: Predictive Accuracy of Model Three

		Predicted	
		0	1
Actual	0	4	7
	1	27	127

Number of correct predictions: 131
Percentage of correct predictions: 79.4

Table 15: Consumers of Jersey Fresh Model with Demographic Variables

Variable	*Estimate*	*Standard Error*	*Change in Probability*
INTERCEPT	-0.8346	1.2262	-0.0902
SOUTH	0.6316	0.4913	0.0682
SUBURB	0.5673	0.8056	0.0613
YEARS*	-3.0123	1.6685	-0.3257
GAR	0.1426	0.4937	0.0154
FEMALE*	0.8387	0.4970	0.0906
HOUSE***	1.7995	0.5721	0.1946
CHILD	-0.2702	0.6422	-0.0292
AGE2**	1.3866	0.6551	0.1499
EDUC***	1.4716	0.5289	0.1591
JOB1***	1.6313	0.5666	0.1763
INCOME3	0.9049	0.7670	0.0978

McFadden's R^2 is: 0.2179
Ratio of non-zero observations to the total number of observations: 0.8121

Note: *: Significant at the 0.10 level
**: Significant at the 0.05 level
***: Significant at the 0.01 level

Table 16: Predictive Accuracy of Model Four

		Predicted	
		0	1
Actual	0	7	7
	1	24	127

Number of correct predictions: 134
Percentage of correct predictions: 81.2

Table 17: Future Consumers of Jersey Fresh Model with Behavioral Variables

Variable	*Estimate*	*Standard Error*	*Change in Probability*
INTERCEPT***	-7.2087	1.9648	-0.3079
LOGOUSE***	4.3413	1.2789	0.1855
OFTEN	0.9639	1.2926	0.0412
FMKT	-0.2068	0.6680	-0.0883
CARE**	1.4777	0.6450	0.0631
REACT	0.2945	0.6891	0.0126
READ	0.8641	0.6619	0.0369
CHANGE	1.7454	1.4469	0.0746
PIMP	1.3156	1.0012	0.0562
QIMP*	1.7154	0.7250	0.0733
SELECT***	2.2820	0.6733	0.0975

McFadden's R^2 is: 0.5124
Ratio of non-zero observations to the total number of observations: 0.8708

Note: *: Significant at the 0.10 level
**: Significant at the 0.05 level
***: Significant at the 0.01 level

Table 18: Predictive Accuracy of Model Five

		Predicted	
		0	1
Actual	0	18	5
	1	9	177

Number of correct predictions: 195
Percentage of correct predictions: 93.3

Table 19: Future Consumers of Jersey Fresh Model with Demographic Variables

Variable	*Estimate*	*Standard Error*	*Change in Probability*
INTERCEPT	0.1511	0.7247	-0.0086
SOUTH	0.7589	0.5212	0.0433
SUBURB**	1.1602	0.5931	0.0662
YEARS	-0.3144	0.9146	-0.0180
FEMALE***	1.3418	0.5111	0.0766
HOUSE	0.9027	0.8976	0.0515
CHILD**	-1.9789	0.9442	-0.1130
AGE2**	1.3351	0.5784	0.0762
EDUC*	1.9558	1.0970	0.1117
JOB1**	-1.0656	0.5237	-0.0608
INCOME3	-0.8072	0.5360	-0.0461

McFadden's R2 is: 0.2379
Ratio of non-zero observations to the total number of observations: 0.8708

Note: *: Significant at the 0.10 level
**: Significant at the 0.05 level
***: Significant at the 0.01 level

Table 20: Predictive Accuracy of Model Six

		Predicted	
		0	1
Actual	0	0	12
	1	27	170

Number of correct predictions: 170
Percentage of correct predictions: 81.3

The variable FMKT had a positive sign and was significant at the 0.05 level. The change in the probability in column four of Table 9 shows that those who shopped at farmers' markets and roadside stands for fresh produce regularly during summer were 13 percent more likely to be aware of Jersey Fresh compared to those who did not often shop at farmers' markets and roadside stands. Earlier studies (Govindasamy, 1995) showed that consumers who liked farm fresh produce mostly shopped at farmers markets and roadside stands during summer. The logit model here also confirms that this segment of produce shoppers were more likely to be aware of Jersey Fresh than others.

The variables READ, REACT, and CHANGE showed positive coefficients, and were significant at 0.05 percent level. Consumers who read food advertisements in newspapers and grocery store brochures were found to be 15 percent more likely to be aware of Jersey Fresh than those who did not. The significance of the variable REACT indicated that consumers were 13.5 percent more likely to be aware of Jersey Fresh if they bought more than what they had originally planned when they found fresh produce. Consumers who were willing to CHANGE their usual shopping place in order to buy advertised special produce, were 16 percent more likely to be aware of Jersey Fresh than those who were not. Consumers who took the extra effort to shop at various places may have been more aware of Jersey Fresh Logos as the promotions for Jersey Fresh were displayed during summer at different times in different farmers' markets and grocery or supermarkets.

Consumer Awareness Model with Demographic Variables

Logit analysis results for the model of consumer awareness in terms of demographic variables are given in Tables 11 and 12. The goodness of fit for the model is shown by the McFadden's R^2 of 0.15. The extent of prediction is shown in Table 12. Approximately 74.2 percent of the survey participants were correctly classified as either aware of Jersey Fresh or not aware of Jersey Fresh using the logit specification. The change in the probability percentages for each variable is given in Table 11.

The dummy variable SOUTH (which equaled 1 if the consumer lived in southern New Jersey) was estimated with a positive sign and was significant at the 0.05 level. This indicates that households of consumers who lived in the southern counties of New Jersey were 33.8 percent more likely to be aware of Jersey Fresh than those who lived in the central and northern regions of the state.

The dummy variables YEARS and GAR were estimated with the hypothesized positive sign and were significant at the 0.05 level. Consumers who lived in the state of New Jersey for five years or more were 22 percent more likely to be aware of Jersey Fresh than those who lived for less than five years. Similarly, consumers who had a home garden were 11 percent more likely to be aware of Jersey Fresh than those who did not.

The variables AGE2, EDUC and JOB1, for age, education, and occupation were significant in the model. Variable AGE2 was significant at the 0.10 level indicating that consumers who were more than 35 years of age were 11 percent less likely to be aware of Jersey Fresh than those who were less than 35 years of age. Variable EDUC was estimated to be negative and significant at the 0.01 level indicating that consumers with more than high school education were 18 percent less likely to be aware of Jersey Fresh than those with less than high school education. While these were not the expected results, the age and education variables seem to indicate that Jersey Fresh was more popular among young consumers and with consumers who had a high school or less education. Variable JOB1 was significant at the 0.05 level with the hypothesized positive sign indicating that consumers who were employed were more likely to be aware of Jersey Fresh than consumers who were retired or self-employed. But, as shown in Table 12, the likelihood of them being aware was found to be more only by a marginal one percent over their counterparts.

Model of Consumers of Jersey Fresh Produce

This model examined the attributes of consumers who had previously bought Jersey Fresh produce. This model would help in understanding the factors which contributed to consumers buying Jersey Fresh produce. The dependent variable was whether or

not the consumer had ever bought Jersey Fresh produce. The dependent variable was coded as one for those who had and as zero for those who had not. Of the 165 responses of those who were aware of Jersey Fresh, 81% indicated that they had also previously bought Jersey Fresh produce, while 19% indicated that they had not.

Consumers of Jersey Fresh Model with Behavior Variables

The logit analysis results for this model are given in Tables 13 and 14. The goodness of fit for the model shown by the McFadden's R^2 was 0.15. The extent of prediction is shown in Table 14. Approximately 81.2 percent of the survey participants were correctly classified as either having bought Jersey Fresh or not, using the logit specification. The change in the probability percentages for each variable is given in Table 13.

The variable FMKT was estimated with a positive sign and was significant at the 0.10 level (Table 13). This implies that those who shopped at farmers' markets and roadside stands for fresh produce regularly during summer were 11 percent more likely to have bought Jersey Fresh compared to those who did not often shop at farmers' markets and roadside stands. The variables READ, REACT and CHANGE were each estimated with the hypothesized positive coefficient. Only the REACT variable was found to be significant at the 0.05 level. This implies that consumers who liked to buy more fresh produce were 17 percent more likely to have bought Jersey Fresh produce, than those who did not. Variables READ and CHANGE were each estimated with the expected positive sign but were not statistically significant.

The variables PIMP, QIMP were estimated with positive signs in the model and both were significant at the 0.10 level. The variable PIMP indicates that consumers who believed price was the most important aspect when purchasing fresh produce were 23 percent more likely to have bought Jersey Fresh produce than those who did not think so. Similarly, consumers who considered quality was the most important factor (QIMP) while purchasing produce were 19 percent more likely to have bought Jersey Fresh, compared to those who did not think that quality was important. The results from these

two variables indicate that consumers of Jersey Fresh were mostly price and quality conscious. The variable for consumers who considered convenience to be most important while purchasing produce (CIMP) was included in the model as it was found to be significant in this model. Those who considered convenience to be most important were 33 percent more likely to have bought Jersey fresh produce than those who did not. The reason could be that consumers found the Jersey Fresh Logos to be convenient indicators of fresh local produce.

Consumers of Jersey Fresh Model with Demographic Variables

The logit analysis results for this model are given in Tables 15 and 16. The goodness of fit for the model is shown by the McFadden's R^2 of 0.22. The extent of prediction is shown in Table 16. Approximately 81.2 percent of the survey participants were correctly classified as either consumers of Jersey Fresh or not, using the logit specification. The predicted change in the probability for each variable is given in Table 15.

The dummy variable YEARS was negative and significant at the 0.10 level, indicating that consumers who resided in New Jersey for five or more years were 32.5 percent less likely to have bought Jersey Fresh than others living for less than 5 years. While this was not expected, it would seem to imply that though the awareness of the program increased with the number of years lived in New Jersey (as shown in the awareness model), consumers who have bought Jersey Fresh produce seem to remember doing so more in the past five years or less.

The variable for gender indicated that compared to males, females were 9.1 percent more likely to have bought Jersey Fresh produce in the past. Another significant variable was household size of four or more (HOUSE) which indicated that these households were 19.5 percent more likely to have bought Jersey Fresh than households of smaller size. But the variable for households with two or more children was found not significant.

The variables AGE2, EDUC, and JOB1 for age, education and occupation were significant in the model. Variable AGE2 was significant at the 0.05 level indicating that consumers who were more than 35 years of age were 15 percent more likely to have bought Jersey Fresh produce than those who were less than 35 years of age. Variable EDUC was estimated to be significant at the 0.01 level indicating that consumers with more than a high school education were 16 percent more likely to have bought Jersey Fresh than those with less than a high school education. And the variable JOB1 for occupation was estimated to be significant at the 0.01 level indicating that those who were working for others were 18 percent more likely to have bought Jersey Fresh produce in the past compared to those who were retired or self-employed. The variable for income was found not significant in the model, although it had the hypothesized positive sign.

The results from the demographic model seem to indicate that Jersey Fresh produce was more likely to have been bought by consumers with one or more of the following characteristics: females, more than 35 years of age, living in New Jersey for the past five years, and with families of 4 or more members. The education and occupation variables seem to indicate patronage among consumers with high school or greater education and working for others.

Model of Future Consumers of Jersey Fresh Produce

This model examined the attributes of consumers who wished to buy Jersey Fresh produce in the future. The comparison of this model with the previous model which described the characteristics of current consumers of Jersey Fresh would help in understanding the factors that would play an important role in increasing consumer patronage of Jersey Fresh produce in the future. The dependent variable was whether or not the consumer wished to purchase Jersey Fresh produce. For those who did, the dependent variable was coded as one and for those who did not, the dependent variable was coded as zero. Of the 209 responses received, 87.1 percent indicated that they wished to buy Jersey Fresh produce in future, while 12.9 percent indicated that they did not. Similar to the two previous consumer logit models, the dependent variable

was estimated in two models, one with consumer attitude variables and the other with demographic variables.

Future Consumers of Jersey Fresh Model with Behavior Variables

The logit analysis results for the model of future consumers of Jersey Fresh are given in Tables 17 and 18. The goodness of fit for the model is shown by the McFadden's R^2 of 0.51. The extent of prediction is shown in Table 18. Approximately 93.3 percent of the survey participants were correctly classified as either interested in buying Jersey Fresh produce or not using the logit specification. The predicted change in the probability for each variable is given in Table 17.

The variable (LOGOUSE) for finding the Jersey Fresh Logo useful in buying New Jersey produce was positive and significant at the 0.01 level (see Table 17). This would imply that consumers who thought that the Jersey Fresh Logo was useful in identifying New Jersey's fresh produce were 19 percent more likely to wish to buy Jersey Fresh produce in future than those who said they did not find the logo to be useful.

The variable (CARE) for whether the consumer cared where the fresh produce was grown, was found significant at the 0.05 level. Those consumers who cared about the origin of fresh produce they bought were 6 percent more likely to wish to buy Jersey Fresh produce in future, than those who did not care. Although both the variables PIMP and QIMP were estimated with positive signs in the model, only the variable QIMP was significant. This implies that consumers who chose quality to be the most important factor (QIMP) while purchasing produce were 7 percent more likely to be willing to buy Jersey Fresh in the future, compared to those who did not think so. This could mean that consumers of Jersey Fresh would more likely be quality sensitive implying that the more the logo stands for quality produce, the more would be the likelihood of consumers being willing to purchase Jersey Fresh produce in the future.

Consumers who wished that their usual grocery or supermarket carried more locally grown fresh produce (SELECT) were 10 percent more likely to be willing to purchase

Jersey Fresh produce in the future than consumers who did not. The reason why the variable FMKT was found insignificant and negative for the first time in this model could be because more consumers who wished to buy Jersey Fresh want a greater selection of Jersey Fresh produce in their local grocery stores or supermarkets.

Hence, the type of consumers who were willing to buy Jersey Fresh produce in the future were those who liked to use the logo to identify fresh produce, those who cared about the origin and quality of the produce they bought, and those who wanted more Jersey fresh produce in their local stores. All these factors could act positively in increasing sales of produce labeled with Jersey Fresh Logos in the future.

Future Consumers of Jersey Fresh Model with Demographic Variables

The logit analysis results for this model are given in Tables 19 and 20. The goodness of fit for the model is shown by the McFadden's R^2 which was 0.24. The extent of prediction is shown in Table 20. Approximately 81.3 percent of the survey participants were correctly classified as either consumers of Jersey Fresh or not using the logit specification. The predicted change in the probability for each variable is listed in Table 19.

The dummy variable (SUBURB) for people living in the suburban type of neighborhoods was estimated to be significant at the 0.05 level. Consumers living in the suburban type of areas were found 7 percent more likely to be willing to buy Jersey Fresh produce in the future compared to consumers living in urban or rural type of neighborhoods.

The dummy variable for presence of garden (GAR), which was used in the other two models, was not significant. Moreover as it was adversely affecting the performance of the overall model (by adversely influencing the performance of other significant variables), it was dropped from the model.

The variable for gender (FEMALE) was estimated with the hypothesized positive sign and was significant at the 0.01 level. Consumers who were females were 8 percent

more likely to be willing to buy Jersey fresh in the future than males. Since females on average were likely more involved in major decision making for produce selection and as they were also found to be more aware of Jersey Fresh on average over males (as shown in the consumer awareness model), this result seemed reasonable.

Another significant variable for households with two or more children (CHILD) indicated that these households were 11 percent less likely to willing to buy Jersey Fresh than households with less number of children or no children. This could be because the opportunity cost of time spent on shopping is very high for families with children, and they might, hence, be less willing to shop for Jersey Fresh produce.

The variables AGE2 and EDUC for age and education were found to be both positive and significant in the model. Variable AGE2 was significant at the 0.05 level indicating that consumers who were more than 35 years of age were 8 percent more likely to be willing to buy Jersey Fresh produce than those who were less than 35 years of age. Variable EDUC was estimated to be significant at the 0.10 level indicating that consumers with more than high school education were 11 percent more likely to be willing to buy Jersey Fresh produce than those with less than high school education. The variable for occupation (JOB1) was also estimated to be significant at the 0.05 level with a negative coefficient, indicating that those who were working were 6 percent less likely to be willing to buy Jersey Fresh produce in future, compared to those who were retired or self-employed. The reason could be that they have less time for shopping compared to the other two groups.

Common Observations From All the Consumer Models

The variables that showed similar trends in the consumer logit models are discussed in this section. The dummy variable FMKT, which was one if consumers shopped often at farmers' markets and roadside stands for fresh produce during the summer, was found to be significant in two of the three models. Consumers who bought fresh produce at farmers' markets and road-side stands most often during summer were more likely to be aware of Jersey Fresh, more likely to have bought produce labeled Jersey Fresh, and

were more likely to be willing to buy Jersey Fresh produce in future. The reason for this could be that displays of Jersey Fresh are more common in farmers' markets and road-side stands that mostly sell local produce than in other places like supermarkets or grocery stores that are open all year round and sell produce imported from a variety of places. The perception of freshness and quality at farmers' markets were also significant throughout the models.

The variables READ, REACT and CHANGE generally exhibited the hypothesized positive coefficient sign in all the models and were found to be significant in two of the three models. Consumers who usually read food advertisements in newspapers and/or grocery store brochures were found more likely to be aware of Jersey Fresh than those who did not read such advertisements were. Consumers who were willing to change their usual shopping places in order to buy advertised special produce were more likely to be aware of Jersey Fresh than those who were not as flexible about changing their shopping places. As the promotions for Jersey Fresh are displayed mostly during summer at different times in different farmers markets and grocery/supermarkets, those consumers who take the extra effort to shop at different places were, perhaps, more likely to be attracted by the Jersey Fresh Logo. Consumers who said that they would buy more than what they originally planned if they found local produce were more likely to be aware of Jersey Fresh and also more likely to have bought Jersey Fresh.

Consumers who considered quality as the most important aspect when shopping for fresh produce (dummy variable QIMP=1) compared to convenience, were more likely to have bought the Jersey Fresh produce and were also likely to buy produce labeled Jersey Fresh in the future. Variable QIMP had the hypothesized positive sign in all the models and was significant in two of the three models. This may be attributed to the fact that Jersey Fresh labels indicate local produce that is fresh and of good quality.

For consumers who considered price to be more important than convenience when shopping for fresh produce (PIMP), the results were not as clear as the variable did not show consistency in sign across the three models. For instance, the variable had the

hypothesized negative sign in the awareness model but a positive sign in the second and third models. The remaining explanatory variables were included in the model to measure the effectiveness of the logo (LOGOUSE), shopping habits of fresh food shoppers (OFTEN), if they cared about the origin of the produce (CARE), and if they wanted a greater selection of Jersey Fresh produce to be available in the grocery stores (SELECT). The results in the consumer model of future users of Jersey Fresh indicate significantly that consumers who wanted a greater selection of fresh local produce in their grocery stores were more willing to buy Jersey Fresh produce in the future than those who did not care.

In the consumer demographic models age (AGE) and education (EDUC) were significant and generally showed the hypothesized positive sign. Generally, the older age groups were more likely to have bought Jersey Fresh in the past, and also more likely to be willing to buy Jersey Fresh in the future, compared to the younger age groups. Consumers with more than a high school education were more likely to have bought Jersey Fresh, and were more willing to buy Jersey Fresh produce in the future. Although highly educated consumers were less likely to be aware of Jersey Fresh, they did desire fresh quality produce and indicated a desire to buy Jersey Fresh in the future.

The gender (FEMALE) was estimated with the hypothesized positive sign in all the models implying females were more likely to have bought the Jersey Fresh produce and also wished to purchase Jersey Fresh produce in the future. The gender variable was not significant but positive in the awareness model. This may be due to the fact that most of the survey respondents were females who were aware of Jersey Fresh.

Dummy variable for region of residence, (SOUTH) was significant in the awareness model, indicating consumers from the southern part of New Jersey were more likely to have been aware of Jersey Fresh than those in the central and northern regions. Consumers living in the suburban areas showed the hypothesized positive sign in all the three models. Although the variable (SUBURB) was not significant in most of the models, it contributed well to the overall model fit. The dummy variable for consumers

with vegetable gardens (GAR) was found as hypothesized to be positive and significant in the awareness model. This implies that consumers who had home gardens were more likely to be aware of Jersey Fresh that those who did not. The household size dummy variable (HOUSE which was one if the household had two or more persons), was included to see if it had any impact on consumers shopping for Jersey Fresh. The results indicated that the variable had the hypothesized sign in all the models, and was significant in the second model, implying consumers with more than two persons in their homes are more likely to have bought Jersey Fresh compared to the single person households.

Other explanatory variables were included in the three models to understand consumer behavior in produce shopping and their produce purchasing decisions. These include those who had more than two children in their home (CHILD), those who were employed by others as opposed to retired or self-employed (JOB1) and those with an annual family income of more than $80,000 (INCOME3).

Summary and Conclusions

Summary of the Results

1. In general, awareness of Jersey Fresh was found to be high among consumers. Consumers who frequently shop at direct marketing facilities such as farmers' markets and roadside stands were found more likely to be aware of Jersey Fresh, more likely to have bought Jersey Fresh labeled produce, and more willing to buy Jersey Fresh produce in the future.

2. Quality of fresh produce was considered the most important factor both by consumers who have bought Jersey Fresh produce and by those who were willing to buy Jersey Fresh produce.

3. Consumers who read food advertisements in papers or brochures and who shop at more than one place in order to buy advertised specials, were found more likely to be aware of Jersey Fresh than consumers who do not.

4. The prominent demographic characteristics of consumers who were more likely to be aware of Jersey Fresh were as follows -- those who lived in New Jersey for more than 5 years, lived in southern Jersey, had a home garden, and were employed by others (as opposed to unemployed, retired or self-employed).

5. The prominent demographic characteristics of consumers who were more likely to have bought Jersey Fresh produce and who were more likely to be willing to buy Jersey Fresh were as follows -- those who were female, who were more than 35 years of age, and had a high school or higher education.

Table 21: Summary of Consumer Logit Models

Variable Name	*Awareness*	*Bought JF*	*Willing to Buy*
LOGOUSE	+	+	+***
OFTEN	+	+	+
FMKT	+ **	+ *	-
CARE	-	+	+**
REACT	+**	+ **	+
READ	+**	+	+
CHANGE	+**	+	+
PIMP	-	+*	+
QIMP	+	+*	+*
SELECT	-	-	+***
SOUTH	+**	+	+
SUBURB	+	+	+**
FEMALE	+	+*	+***
YEARS	+**	-*	-
GARDEN	+**	+	+
HOUSE	+	+***	+
AGE	-*	+**	+**
EDUCATION	-***	+***	+*
JOB	+*	+	-**
INCOME	+	+	+

Note: 1. Positive sign indicates that the variable was estimated with a positive coefficient and Negative sign indicates that the variable was estimated with a negative coefficient. 2. The * indicates significance of the variable at 0.10 percent level, ** indicates significance of the variable at 0.05 percent level, *** indicates significance of the variable at 0.01 percent level.

Conclusions and Recommendations

The results of the consumer survey illustrated consumer beliefs and preferences regarding the fresh produce they purchase in general and Jersey Fresh produce more specifically. The study found that consumer awareness of the logos was high and that they would be willing to purchase Jersey Fresh produce if available. Produce displays in stores and television advertisements seem to be successful as they were most often cited to be the places in which the logos were seen. Even though convenience was not given importance on a ranked scale, when asked if they would change stores to be able to buy Jersey Fresh, only a quarter of the consumers surveyed said "yes." Hence, increasing the availability of Jersey Fresh produce during the production seasons would ensure continued consumer patronage.

Consumers who mostly shop at farm markets were found to be more aware of Jersey Fresh than those shopping at supermarkets. However, the survey showed that 80% of consumers shop regularly at supermarkets, and felt that there was a need for a greater selection of New Jersey grown produce in their local grocery stores. Thus, increasing promotions of Jersey Fresh produce in supermarkets may further increase the popularity of Jersey Fresh produce.

The goal of advertising is to increase sales at any price and to reduce consumers' sensitivity to price changes (Blisard, and Blaylock, 1989). The study showed that a majority of consumers were willing to pay only a small percentage premium for Jersey Fresh produce over the market prices for other fresh produce. Consumer sensitivity to price changes could be reduced through incorporation of value information such as nutrition facts, and useful cooking tips in the advertisements. An example of this would be the TV advertisements of Jersey Fresh sweet corn with some cooking hints. Such advertisements would motivate the consumers to buy Jersey Fresh produce even at a premium price for the locally grown value and the additional information value that they provide. This approach may be more effective in obtaining premium prices for Jersey Fresh produce than using the logos alone.

Participants exhibited a clear preference for Jersey Fresh produce as it is grown in their local area farms and believed it to be better than other produce in terms of quality and freshness. The study indicates that the logo is perceived with a positive attitude among consumers. Ensuring the quality of the Jersey Fresh labeled produce is more important as consumers give more importance to it than freshness or price on a ranked scale.

This research may lead to better understanding of New Jersey consumers' shopping behavior, their preferences towards local produce and their demographic composition. These findings may be especially encouraging to those developing marketing strategies for Jersey Fresh produce or for other similar consumer products in the state.

References

Adelaja, A. O., R. M. Nayga, Jr., and B. Schilling, "*Returns to the Jersey Fresh Promotional Program -- An Econometric Analysis of the Effects of Promotion Expenditures on Agricultural Cash Receipts in New Jersey*," Report submitted to the Division of Markets, New Jersey Department of Agriculture, April 1994.

Blisard, W.N., Blaylock J.R., "*Generic Promotions of Agricultural Products- Balancing Producer's and Consumers' Needs*", Economic Research Service, USDA, Agricultural Information Bulletin 565, 1989.

Brooker, J.R., C. L. Stout, D.B. Eastwood, R. H. Orr*, "Consumers' Perception of Locally Grown Produce at Retail Outlets*," Journal of Food Distribution Research, Feb. 1987, pp. 99-107.

Brooker, J.R., C. L. Stout, D.B. Eastwood, R. H. Orr*, "Analysis of In-store Experiments Regarding Sales of Locally Grown Tomatoes*," Tennessee Agricultural Experiment Station, Bulletin 654, 1987.

Census of Agriculture, 1992. *U.S. Summary and County Level Data*. U.S. Bureau of the Census, Washington D.C.

Cochran, William E. *Sampling Techniques*. 3ed edition. Wiley, New York, 1960.

Eastwood, D.B., J.R. Brooker, and R.H. Orr, "*Consumer Preferences for Selected Fresh Produce - A Case Study*," Tennessee Agricultural Experiment Station, Bulletin 650, 1987.

Gallup Organization, Inc., "*Awareness of and Attitude Toward Jersey Fresh Program*," Princeton, New Jersey, 1986.

Gallup Organization, Inc., "*Awareness of and Attitude Toward Jersey Fresh Program*," Princeton, New Jersey, 1987.

Gallup Organization, Inc., "*Awareness of and Attitude Toward Jersey Fresh Program*," Princeton, New Jersey, 1988.

Govindasamy, R., and R.M. Nayga, Jr., "*Visitations to Farmer-to-Consumer Direct Marketing Operations in New Jersey: A Logit Analysis*," New Jersey Agricultural Experiment Station, P-02137-1-95, September 1995.

Gujarati, Damodar. *Essentials of Econometrics*. McGraw Hill, New York, 1992.

Halloran, J.M. and M.V. Martin, "*Should States be in the Agricultural Promotion Business?*" Journal of AgriBusiness, 5(1989):65-75.

Henneberry, S.R. and C.V. Willoughby, "*Marketing Inefficiencies in Oklahoma's Produce Industry: Grower and Buyer Perceptions*," Journal of Food Distribution Research, September 89, pp. 97-109.

Italia, John. "*Consumer Preference for Integrated Pest Management Produce,*" Masters Thesis Rutgers University, New Jersey , 1997.

Intriligator, Michael, *Econometric Models, Techniques, and Application*s. Prentice Hall, Inc. Englewood Cliffs, New Jersey, 1978.

Kmenta, Jan. *Elements of Econometrics*. McMillan Pub. Co., New York, 1971.

Kennedy, P. "*A Guide to Econometrics,"* 4th edition. Cambridge, Massachusetts. The MT Press, 1994.

Lininger, Kimberley, "*Estimating Demand Functions for Products that are Differentiated on the Basis of Quality Characteristics of Tomatoes*," Southern Journal of Agricultural Economics, Dec. 1985, pp. 139-146.

Lopez, Rigoberto A., Emilio Pagoulatos, and Leo C. Polopolus. "*Constraints and Opportunities in Vegetable Trade*." Journal of Food Distribution Research, September 1989: pp 63-74.

Moor, Dianne. " *Tapping Into State Loyalty*," Produce Business. September 1989: pp 26-30

Michigan Department of Agriculture, "*1989 Benchmark Attitude and Awareness Study*," 1989.

New Jersey Farms Commission, *"Ensuring a Fertile Future for New Jersey Agriculture*", 1994.

New Jersey Department of Agriculture, "*Annual Report on Agricultural Statistics*, Circular #536, 1994.

New Jersey Department of Agriculture, "*Annual Report on Agricultural Statistics*," 1993.

New Jersey Department of Agriculture, "*Annual Report on Agricultural Statistics*," 1992.

New Jersey Department of Agriculture, "*Annual Report on Agricultural Statistics*," 1991.

New Jersey Department of Agriculture, "*Annual Report on Agricultural Statistics*," 1990.

New Jersey Department of Agriculture, "*Annual Report on Agricultural Statistics*," 1989.

New Jersey Department of Agriculture, "*Annual Report on Agricultural Statistics*," 1986.

New Jersey Department of Agriculture, "*Annual Report on Agricultural Statistics*," 1985.

New Jersey Department of Agriculture, "*Annual Report on Agricultural Statistics*," 1984.

New Jersey Department of Agriculture, "*Annual Report on Agricultural Statistics*," 1983.

New Jersey Department of Agriculture, "*New Jersey Farmers' Survey*," 1992.

Nicholson, Walter, "*Microeconomic Theory: Basic Principles and Extensions*," The Dryden Press, New York, 1991.

Pindyck, R.S., and D.L. Rubinfeld, "*Econometric Models and Economic Forecasts*," Third Edition. McGraw Hill Book Company, New York, 1991.

Weisburg, H. F., and Bruce D.B., "*An Introduction to Survey Research and Data Analysis*," W.H. Freeman, San Francisco, 1977.

Zeldis Research Associates, "*Jersey Fresh Tracking Study*", submitted to Wenzel and Associates on Behalf of the New Jersey Department of Agriculture, November 1993.

Zeldis Research Associates, "*Jersey Fresh Tracking Study*", submitted to Wenzel and Associates on Behalf of the New Jersey Department of Agriculture, December 1995.

Zind, T. "Fresh Trends 1990: A Profile of Fresh Produce Consumers", The Packer Focus 1989-1990. Vance Publishing Co., Overland Park, Kansas, 1990.

Appendix

The following are the three Jersey Fresh Logos used in the surveys. The first is the promotional logo (A), the second is the quality grading logo (B), and the last is the premium logo (C).

A.

B.

C.

THE STATE UNIVERSITY OF NEW JERSEY
RUTGERS

Department of Agricultural Economics and Marketing
Rutgers Cooperative Extension
New Jersey Agricultural Experiment Station

New Brunswick, New Jersey 08903

Survey of Consumers of Fresh Produce

To be answered by the principal grocery shopper of the household.

1. Have you heard of the "Jersey Fresh" name or seen the logo (shown above) in the past?

   ❑ Yes ❑ No

   If *No* please ignore questions 2 through 6 and start with question 7.
   If *Yes*, please continue…

2. Please check all the places you remember seeing or hearing about Jersey Fresh

   ❑ Billboards
   ❑ Retailer Advertisements
   ❑ Produce displays
   ❑ Price cards of produce
   ❑ Posters and Stickers
   ❑ TV Ads
   ❑ Radio Ads
   ❑ Dept. of Agriculture personnel
   ❑ Others, Please specify:_____

3. Have you ever bought fresh produce advertised with the Jersey Fresh Logo?

   ❑ Yes ❑ No

   If *No,* please go to question number 7
   If *Yes,* please continue to question 5

4. While shopping for fresh produce do you look specifically for Jersey Fresh Logo items?

   ❑ Always ❑ Occasionally
   ❑ Never

5. What is your opinion about the New Jersey fresh produce sold with Jersey Fresh Logos on the following aspects:

	very good	***good***	***same as others***	***poor***	***very poor***	***do not know***
Quality	_____	_____	_____	_____	_____	_____
Price	_____	_____	_____	_____	_____	_____
Package	_____	_____	_____	_____	_____	_____
Freshness	_____	_____	_____	_____	_____	_____
Availability	_____	_____	_____	_____	_____	_____

6. How often do you shop for fresh produce during the summer?

- ❑ Daily
- ❑ Twice a week
- ❑ Once a week
- ❑ Once in two weeks
- ❑ Once a month
- ❑ Other please specify _____

7. Where do you buy fresh produce most often during summer? (Check all that apply)

- ❑ Retail Supermarkets
- ❑ Wholesale markets
- ❑ Farmers' Market
- ❑ Roadside Stands
- ❑ Other please specify _____

8. How would you rate the following factors when you intend to go shopping for fresh groceries: Please rank the factors on a scale of 1 to 10, without repeating the same number twice.

_____ Appearance
_____ Availability
_____ Freshness
_____ Quality
_____ Price
_____ Convenience

9. Does the knowledge of origin of the fresh produce affect your purchasing decision for fresh produce?

❑ Yes ❑ No

10. If markets provide you more information about the origin of the fresh produce, how would you feel?

- ❑ I would be interested
- ❑ I would feel indifferent
- ❑ I would not be interested

11. Do you wish to buy produce that is grown in New Jersey farms?

- ❑ Yes
- ❑ No
- ❑ Don’t care

12. Would you like your local grocery store to have a greater selection of New Jerseys’ Produce?

❑ Yes ❑ No
❑ Don’t care

13. Would you find the "Jersey Fresh" logo useful in identifying and selecting New Jersey's Quality produce ?

❑ Yes ❑ No ❑ No opinion

14. Before shopping do you plan what fresh produce you want to buy?

❑ Yes ❑ No

15. Would "Jersey Fresh" displays of fresh New Jersey produce prompt you to buy more than you originally planned?

❑ I would definitely buy more
❑ I would occasionally buy more
❑ I would buy as much as I originally planned
❑ I would buy less than I planned

16. Do you read food advertisements in newspapers / grocery-brochures regularly?

❑ Yes ❑ No

17. Do you regularly shop at more than one food store in order to purchase advertised specials?

❑ Yes ❑ No

18. Would you consider changing your usual shopping market to be able to purchase Jersey Fresh produce ?

❑ Definitely ❑ Occasionally
❑ No

19. How attracted would you be to the following types of advertisements displayed in the various markets or produce stores? Please rank the following according to a scale:
1 = More attractive, 2 = Neutral, 3 = less attractive, 4 = No opinion.

_____ Special demos in store
_____ Special price tags
_____ Colorful stickers
_____ Additional Brochures
_____ Posters & Banners

20. We would like to know approximately what quantities of fresh produce you bought last year. Please circle the most suitable option for each item listed. Please indicate the approximate percentage for each.

❑ Out-of-state produce
❑ New Jersey grown produce

21. How much more over the current price would you be willing to pay for Jersey Fresh produce that is fresh from local farms and quality tested?

- ❑ I will not pay more
- ❑ 1 % to 10 % more
- ❑ 11 % to 20% more
- ❑ More than 20 %

Your answers to the following questions will be kept strictly confidential and be used only to help us interpret the results of this survey.

Background information:
Please name the county in which you currently live _____

Do you consider your neighborhood

❑ Urban ❑ Suburban ❑ Rural

How many years have you been living in New Jersey?_____ Years

Do you have a garden at your home? ❑ Yes ❑ No

Number of persons, including yourself in your household _____

Number of persons below age 17 in your household _____

Please select your gender: ❑ female ❑ male
What is your age? _____ years

Please select the highest level of education you have completed

- ❑ Less than high school
- ❑ High school graduate
- ❑ Some college
- ❑ college graduate
- ❑ Masters or Ph.D

What is your current employment status? (Please circle one)

- ❑ Full time
- ❑ Retired
- ❑ Part-time
- ❑ Unemployed

Annual income category of your household before taxes.

- ❑ Less than $20,000
- ❑ $ 20,000 - $39,000
- ❑ $ 40,000 - $59,000
- ❑ $ 60,000 - $79,000
- ❑ $ 80,000 - $99,000
- ❑ $ 100,000 or more

Thank you very much for participating in this survey. Please mail the survey back in the reply-paid envelope provided to you before Saturday August 10,1996.

THE STATE UNIVERSITY OF NEW JERSEY
RUTGERS

Rutgers Cooperative Extension
N.J. Agricultural Experiment Station
Rutgers, The State University of New Jersey, New Brunswick

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