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Producer 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 producer 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, 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

New Jersey agricultural growers were surveyed to understand their willingness to patronize the Jersey Fresh promotional and quality grading program. Growers' perceptions of the premium logo and their opinions of the quality grading aspect of the Jersey Fresh Program were collected. Possible causes for the fluctuating participation of farmers in the quality-grading program were also explored. The results of this study should provide valuable information that can be applied not only to expand the Jersey Fresh Program, but also in other states which have similar promotional programs.

Specific objectives of this analysis were to examine the general attitudes of participating farmers towards the effectiveness of the Jersey Fresh Logos and to identify the characteristics of farmers participating or interested in participating in the Jersey Fresh Promotional and Quality Grading Programs.

Of the farmers who responded, 93.1% indicated that they were aware of the Jersey Fresh Program and 51.4% indicated that they did use the Jersey Fresh Logos. Over three-quarters of the farmers (76.4%) were of the opinion that the logos had a medium to high awareness among consumers. The majority of farmers indicated that the most important reason for using the Jersey Fresh Logos was to add locally grown value (46.9%) and freshness value to their produce (26.6%).

Farmers who believed that consumer awareness of the Jersey Fresh Logos was high and who used logos other than Jersey Fresh were found to be more likely to have used the Jersey Fresh Logos and also more likely to use them in the future.

Farmers with high gross sales of produce and with higher levels of education were found more likely to have used the Jersey Fresh Logos and also more likely to use the logos in the future. The number of acres being farmed and the age of the farmers, however, were found to have a negative effect on both the current usage and willingness to use the logos in the future.

Growers with farms located in the southern New Jersey were found more likely to be Jersey Fresh participants and also more willing to use Jersey Fresh Logos in the future, compared to farmers in the central or northern regions of the state.

Farmers who believed that consumers were highly aware of the program and those who used other logos to identify their quality fresh produce were more likely to be registered in the Jersey Fresh Quality Grading Program. Growers with farms in southern New Jersey and who had more than a four year college education were also found to be more likely to be registered in the Quality Grading Program. Among the most cited reasons for not participating in the program were not wanting their produce to be inspected, not knowing about the program, and not finding the grading logo to be effective in obtaining a premium price.

Introduction

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 New Jersey Department of Agriculture (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 the New Jersey produce to give them 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 and the *Premium Jersey Fresh Logo* from the regulatory component of the campaign started in 1988. All these campaigns helped the program to establish and enhance consumer awareness through the years (Gallup, 1988).

The Jersey Fresh Quality Grading Program was established in 1985 to assist retailers and wholesalers in marketing their higher quality produce. This program, offered by the Division Of Regulatory Services, not only ensures a steady supply of high quality fruits, vegetables, eggs, poultry products, fish and fisheries products, but also assures that inputs such as animal feed, fertilizers, and liming materials are of good quality and are properly packed. Farmers could improve the sales of their quality produce by packaging commodities that meet the standards of this program with the Quality Grading logo - "Premium Jersey Fresh" (see Appendix). Since these labels are associated with commodities of exceptional quality, uniform sizing and efficient packaging, they are in high demand with the retail chain store produce buyers. The addition of this Premium logo gives an extra marketing advantage to the growers and packers whose produce exceeded the requirements of U.S standard grades. The program aims to help farmers gain an edge over produce arriving from other states by labeling their produce as Premium Jersey Fresh.

This study empirically evaluates the effectiveness of the Jersey Fresh in terms of the impact the promotional and premium programs have on farmers and their willingness to patronize the program. In addition, this study aims at understanding the farmers' perceptions of the premium logo and their opinions of the quality grading aspect of the Jersey Fresh Program. The reasons behind the fluctuating participation of farmers in the quality-grading program are also examined. The results of this study 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.

Objectives of this study include:

1. To examine the general attitudes of participating farmers towards the effectiveness of the Jersey Fresh Logos.
2. To identify the characteristics of farmers participating or interested in participating in the Jersey Fresh promotional and Quality Grading Programs.
3. To identify the important reasons for not participating in the program which could help program personnel in understanding the opinions of the non-participants.
4. To make policy recommendations based on the acquired data that would help in developing strategies that will aid in the expansion of the Jersey Fresh Program.

Methodology and Estimation Technique

The study of farmers' attitudes and perceptions about the Jersey Fresh Program was conducted in two phases. The first phase involved conducting a focus group meeting with farmers and direct marketers to discuss the key factors which could improve the effectiveness of the logos in increasing consumer awareness. The second phase involved a survey of farmers in the state of New Jersey. The results of the focus group meeting were published in the NJAES Bulletin P-02137-3-96. The key issues and factors that evolved out of the focus group session were addressed in detail in the mail surveys. Growers were asked about the types and quantities of fruits and vegetables sold through the Jersey Fresh Program in addition to questions related to their attitudes about the program and their general socio-demographic characteristics. They were also asked questions concerning the factors affecting their participation in the quality-grading program of the Jersey Fresh campaign. The questionnaire was pre-tested prior to the survey administration to allow for necessary changes. The data was entered using the SAS statistical software package and data analysis was conducted using a logistic approach. The models were regressed 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 farmer using the Jersey Fresh Logos was chosen as a function of a set of predetermined variables or factors. The model assumes that the probability, P_i , of a farmer being a patron of Jersey Fresh Logos depends on a vector of independent variables (X_i 's) associated with the farmer i , and a vector of unknown parameters β . A dichotomous random variable y_i is defined as $y_i = 1$ if the farmer uses the logos, and $y_i = 0$ otherwise. For the logit model, the probability was determined by:

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

Where:

$F(Z_i)$ = represents the value of the standard normal density function associated with each possible value of the underlying index Z_i .

P_i = the probability of observing a specific outcome of the dependant variable (i.e. the grower participates in the Jersey Fresh Program) given the independent variables X_i 's

e = the base of natural logarithms approximately equal to 2.7182

Z_i = the underlying index number or βX_i

α = the intercept

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

$$Z_i = \log [P_i / (1 - P_i)] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + \varepsilon \quad (\text{Eqn. 2})$$

Where:

i = 1, 2, . . . , n are observations

X_n = the n^{th} explanatory variable for the i^{th} 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 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:

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

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 and 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:

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

Different logit models were developed for predicting the likelihood of farmers using Jersey Fresh Logos in the past and in the future, and the probability of them being enrolled in the Jersey Fresh Quality Grading Program. For example, the model for estimating the preferences of farmers toward the Jersey Fresh promotional labels, in terms of the farmer's characteristics was given by:

$$Z_i = \beta_0 + \beta_1 \text{Consum} + \beta_2 \text{Other} + \beta_3 \text{Acres} + \beta_4 \text{South} + \beta_5 \text{Sales} + \beta_6 \text{Whi75} + \beta_7 \text{Ret75} + \beta_8 \text{Age} + \beta_9 \text{Num} + \beta_{10} \text{Educ} + \beta_{11} \text{Agzone} + \beta_{12} \text{Rzone} + \beta_{13} \text{Fainc} \quad (\text{Eqn. 5})$$

The description of the variables used in the model 5 and other models, are presented in detail in Table 7. Similar models were developed for farmers in terms of their interest in participating in the Jersey Fresh Quality Grading Program and promotional program in the future. These models focused on examining the effectiveness of the Jersey Fresh

Program in encouraging and increasing the produce sales of farmers in and around New Jersey.

The responses of the surveys regarding the use of Jersey Fresh Logos and other promotional logos to identify fresh produce were compared with the answers to other related questions using paired responses within a contingency table framework. This approach tests the assumption that the participants' responses to one question were independent of those to other questions. Results of the contingency analysis helped in making inferences about the various attitudes of the surveyed group that were relevant for developing marketing strategies.

Target Sample and Survey Administration

The target sample was a representative sample of New Jersey farmers. The sample size was 300 based on the simultaneous goals of minimizing costs and maintaining a representative sample size. The sources of the addresses were the latest New Jersey Direct Marketers Directory (1995) and the Directory of New Jersey Produce Growers (1995). Survey packets sent to farmers included a cover letter, a reply paid envelope and an incentive for participation.

The information sought was farmers' awareness of the Jersey Fresh Logo and its perceived effectiveness in increasing sales of New Jersey farmers' produce. The questionnaire identified farmers who recognized and used the logos of Jersey Fresh promotional program from those who did not. It probed those who used the logos about where they used them and for what purpose. The question about the most common advertising items where they used the logo provided an idea of which outlets they felt were most likely to catch consumers' attention to Jersey Fresh.

Data was gathered from participating farmers regarding whether they were enrolled in the program, how they thought the program was affecting their produce sales, and if they wanted the promotional logo and the quality grading logo to be the same. The survey questionnaire also inquired about farmers' reasons for not participating in the

Quality Grading Program. Preferences regarding the Jersey Fresh promotional program and the Quality Grading Program were sampled and respondents were asked if they were able to receive a premium price for the Jersey Fresh products. This information provides insight into how big the target population is, how willing they are to participate in the Jersey Fresh Program, and how much they are benefiting by the program.

General information was also collected regarding the size of the farming operation, location, annual gross sales income, whether they retailed or wholesaled their produce, and the various types of advertising they used. The survey included questions to collect demographic information such as age, income, education, location of farm operation, off-farm income and farm income.

The survey was pre-tested by several farmers. Three hundred survey questionnaires were sent out throughout New Jersey in November, 1996. One hundred and forty three responses were received by the end of the first due date in December 1996. A reminder was sent to all the non-responders. Eleven additional surveys were received by the second due date. Four surveys were returned unanswered and were discarded. The final number of usable responses received by the end of December 1996, was one hundred and fifty for a response rate of 55 percent.

Farmer Survey Results

Descriptive Results of the Farmers' Survey

The respondents were first asked whether they considered themselves as a farmer, wholesaler or retailer (see Appendix for a copy of the survey instrument). Further analysis was performed only for those who indicated that they were farmers. Of the 145 respondents to this question, 98 percent were farmers. The second question was a key question which asked about their awareness of the Jersey Fresh Program and if they used the Jersey Fresh Logos. Of 142 farmers who responded, 93 percent indicated that they were aware of the Jersey Fresh Program and 51 percent indicated that they

did use the Jersey Fresh Logos. This implied that only half of those who were aware were actually using the logos.

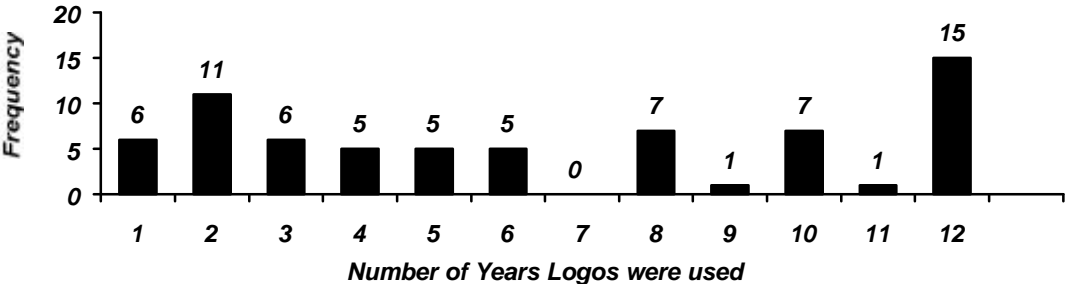
Of the three Jersey Fresh stickers that were presented in the questionnaire (shown in the Appendix), the promotional logo (A) was reported to be used by 70 percent of the farmers who responded, the quality grading logo (B) and the premium logo (C) were reported to be used by 13 and 12 percent respectively. This finding suggests that farmers prefer to use the common Jersey Fresh Logo in favor of separate promotional and premium logos.

Farmers were asked about their involvement in the program since the program was initiated. Of the 69 farmers who responded, 16 percent had used the logos for 2 years, while 14 percent had used the Jersey Fresh Logo for the last 12 years. The rest of the frequencies were as shown in Figure 1, which indicate that the number of farmers involved in the program through the last 12 years seemed to be fluctuating.

Regarding the reasons for using the Jersey Fresh Logos, of the 74 farmers who responded, 91 percent said they used logos to add locally grown value to the produce, and 76 percent said they used the logos to add freshness value to the produce. While 51 percent indicated that they used the logos as they obtained them free of cost, 46 percent said they used the logos for adding aesthetic appeal to promotions. A small percentage (24 percent) provided other reasons for using the Jersey Fresh Logos.

Regarding which type of the advertising material they used the logos on, the majority of farmers (75 percent) reported to have used the logos on produce price cards and (734 percent) on posters and banners. Table 1 lists the frequency and percentage of farmers who used the Jersey Fresh Logo on different kinds of advertisement material.

Figure 1: Frequency of Responses for Number of Years Jersey Fresh Logos Were Used



When asked how using the Jersey Fresh Logo in sales promotions had changed their average gross sales, 37 percent of the 74 responding farmers reported that it had increased their gross sales. While 16 percent indicated no change, 43 percent indicated that they did not know and one respondent (1 percent) indicated a decrease in average gross sales. Of the farmers who said that using Jersey Fresh Logos had

Table 1: Advertisement Material on Which Jersey Fresh Logo Was Used*

Items where Jersey Fresh Logo was used	Frequency	Percentage
Price cards on Produce	52	75.4
Posters & Banners	51	73.9
Stickers	45	64.3
Produce Demos or Displays	16	23.5
Media Advertisements	11	16.2
Bill Boards	9	12.8
Recipe Cards	22	32.4
Salesperson caps, aprons etc,	23	34.3

Note: Respondents could choose more than one of the above options.

increased their gross sales income, 45 percent indicated that it had increased their annual gross sales in the range of 1 to 10 percent followed by 19 percent who indicated an 11 to 20 percent increase. Approximately 19 percent indicated a greater than 20

percent increase in gross income. Only one respondent indicated a decrease in annual gross income in the range of 1 to 10 percent.

The average amount the respondents spent purchasing Jersey Fresh Logos was \$973, ranging from \$0 to \$36,000. Expenditures on Jersey Fresh materials by the 54 respondents are shown in Table 2. The results indicate that half the respondents spent \$50 or less in purchasing various advertising material.

Farmers were asked to rank order the effectiveness of different Jersey Fresh promotions in increasing produce sales (see Table 3). The various promotional material like labels and posters were ranked as most effective by 47 percent farmers, and promotional advertisements through media were ranked most effective by 45 percent of the respondents. The rest of the promotions in descending order of effectiveness were promotional events, matching funds to direct marketers, and other miscellaneous promotions.

Table 2: Amount Spent in Purchasing Jersey Fresh Promotional Material

Range of Dollars	Frequency	Percentage	Cum. Percentage*
\$ 0	16	29.6	29.6
\$1- \$50	11	20.4	50.0
\$51-\$100	14	25.9	75.9
\$101-\$200	6	11.1	87.0
\$201-\$500	2	3.7	90.7
\$501-\$1500	1	1.9	92.6
\$1501-\$2500	1	1.9	94.5
\$2500-\$5000	2	3.7	98.2
\$36000	1	1.9	99.9

Note: Numbers do not add up to one hundred percent due to rounding.

All farmers, whether they used Jersey Fresh Logos or not, were asked if they would be interested in using Jersey Fresh Logos in the future. The majority (74 percent) of the

135 who responded indicated that they would be interested in using the logos in the future. On the other hand, 26 percent of farmers indicated that they were not interested. This indicates that the number of farmers interested in using the Jersey Fresh Logos was almost three times those who were not.

Table 3: Ranking of Different Jersey Fresh Promotions

Jersey Fresh Promotion	Mean	Std. Dev.
Promotional Material	1.65	0.77
Media Advertising	1.93	1.01
Miscellaneous	2.96	2.27
Promotional Events	2.98	0.96
Matching Funds	3.02	1.34

Note: Rank 1 = Most effective...5 = Least effective.

Regarding farmers' opinion about consumer awareness of the Jersey Fresh Program, the majority of the 140 farmers who responded (52 percent) believed that consumers had a moderate level of awareness while 24 percent of the farmers believed consumer awareness was high. Overall, 7 percent of the farmers perceived consumer awareness to be low, and 14 percent of the respondents did not know. Over three-quarters of the farmers (76 percent) were of the opinion that the logos had a medium to high awareness among consumers.

Farmers were asked whether they used other logos to identify their fresh produce and how those logos affected their fresh produce sales. Out of the 136 farmers who responded, the majority (63 percent) indicated that they did not use any other logos to identify their fresh produce, while 37 percent farmers indicated that they did use other logos to identify their own produce (see Table 4).

The results of the cross tabulation indicate that 50 percent of the farmers who used the Jersey Fresh Logo also used some other logo to identify their fresh produce and nearly 20 percent of those who did not use the Jersey Fresh Logo did use other logos. The

chi-square results imply that there was a tendency for those who used other logos to show greater preference for Jersey Fresh Logos compared to those who did not use other logos.

Table 4: Users of Jersey Fresh Cross-Tabulated with Users of Other Logos

	Use Jersey Fresh Logo	Do not use Jersey Fresh
Use other logos	36 (49.9)	14 (19.4)
Do not use other logos	36 (50.0)	50 (80.6)

Note: Computed Chi-Square = 16.514, significant at 0.10 level; Number in parenthesis indicates the percentage.

Farmers' Opinions on the Jersey Fresh Quality Grading Program

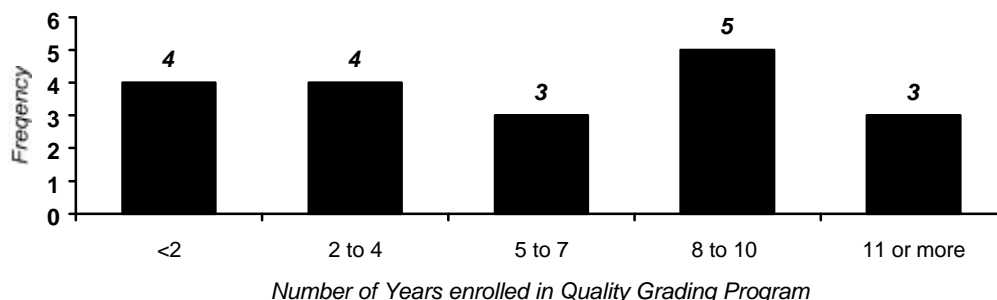
Of the 138 farmers who responded, the majority (62 percent) was aware of the Jersey Fresh Quality Grading Program, while 24 percent said they were not aware, and 11 percent were not sure. In terms of being a registered member of the program, only 21 percent of the 133 farmers who responded said they were registered members whereas 79 percent of the respondents said they were not members of the program. This implies that even though a majority of farmers were aware of the Quality Grading Program, only a small percentage were participating as registered members.

The total number of years of participation of farmers who were registered in the program ranged from one to twelve years. The average number of years of participation was 4.14 years (Std. Dev. = 4.27). Figure 2 shows the frequency distribution of farmer participation in the Jersey Fresh Quality Grading Program. The number of years of participation seemed to be relatively consistent throughout the past 12 years. Although the program was reintroduced with a separate logo in 1991, the findings indicate no dramatic change in the number of participating farmers.

Regarding which Jersey Fresh Logo farmers used the most to identify their quality inspected produce, the promotional logo (A) was indicated as the most commonly used logo by a majority of farmers (78 percent) among the three shown in the questionnaire (see Appendix). While 39 percent of the respondents indicated using the quality

grading logo (B), only 30 percent of the responding farmers reported to have used the Premium Jersey Fresh Logo (C). Hence, the majority of the members seem to be using the common Jersey Fresh Logo as the quality grading logo.

Figure 2: Number of Years of Participation in the Jersey Fresh Quality Grading Program by Farmers



Nearly 30 percent of the participants in the quality-grading program indicated that their participation in Jersey Fresh increased their fresh produce sales, 33 percent said there was no change in their sales, and 30 percent indicated that they did not know. This indicates that while none of the participants thought that the grading program was adversely affecting their produce sales, less than a third of the participants indicated that the program had a positive impact on their sales.

Farmers supported the premise of having one logo to represent both the current promotional and quality grading programs. When asked how they would prefer the Jersey Fresh promotional and premium logos to be identified, 71 percent indicated that they preferred them to be the same logo, while only 2 respondents (7 percent) said they preferred different logos, and 18 percent said they had no particular preference.

When farmers were asked if they used other produce grading procedures (excluding Jersey Fresh quality grading), of the 126 farmers who responded, the majority (75 percent) did not. One fourth of the respondents (25 percent) indicated they did use other different quality grading procedures, (e.g., their own standards, and United States Department of Agriculture Standards).

Farmers were asked the reason for non-participation in the quality-grading program (for those who indicated that they did not enroll in the program). Out of the 111 farmers who responded to this question, the greatest number (26 percent) indicated that they were not interested in having their produce evaluated. A sizable number of farmers (23 percent) indicated that they did not know about the program while some farmers (20 percent) indicated they did not enroll because they believed the logo was not effective in obtaining a premium price. Some farmers (23 percent) gave other reasons for not participating in the program. Examples of these reasons included activity in a co-operative, small-scale production, and some growers had their own standards for grading. Overall, the reasons for non-participation were relatively evenly distributed among the given options, except for the option of registration fee being high, which was given by very few respondents.

Descriptive Statistics for General Questions

The distribution of farm sizes among the survey participants was consistent with that of New Jersey's farming population. Of the 142 respondents, the average number of acres farmed was 196.0 acres, with a range of 2 to 2000 acres. The average number of acres owned by the sample population is 130.5 acres and the average number of acres rented by the sample is 92.1 acres (see Table 5).

Of the 136 farmers who responded, 43 percent had their major farming operation located in the southern counties of New Jersey, while 33 percent were in the central counties, and 23 percent in the northern counties of New Jersey. The fact that a greater number of farmers had their major farming operation in southern New Jersey was consistent with higher density of farms in the south compared to the other regions of New Jersey (Agricultural Census, 1992).

The average value of the annual gross farm sales of the 119 farmers who responded was \$443,765. The gross farm income ranged from a minimum of \$50 to a maximum of \$8,500,000. Of the 105 farmers who responded, 77 percent reported operating roadside stands for retailing their produce. Of the 102 farmers who responded, 31

percent reported that they retailed their produce at farmers' markets, 33 percent reported that they retailed produce through pick-your-own operations, and 17 percent reported that they retailed their produce at various other places like produce auctions, co-ops, etc.

Table 5: Range of the Farm Sizes of the Survey Respondents

	Mean	Minimum	Maximum
Acres Owned	130.4	1.0	1300
Acres Rented	92.1	5.0	1600
Acres Farmed	196.0	0.2	2000

Demographic Information of the Farmer Survey Respondents

The survey included a section which inquired about the various socio-demographic characteristics of the respondents. These included questions regarding age, education, number of years of experience in farming, gross off-farm family income, and their gross annual farm income.

Farmers who answered the survey averaged 52 years of age. The youngest respondent was 29 years old and the oldest respondent was 89 years old. Of the 125 farmers who responded, 50 percent had at least a high school education, 35 percent had a college education, and 14 percent had more than a four-year college education. In terms of the number of years in farming, the average farming experience of the 134 survey respondents was 32.4 years. The response ranged from a minimum of 2 years to a maximum of 71 years experience in farming. Table 6 shows the frequencies for different income categories and the corresponding percentages.

The average annual gross off-farm family income ranged between \$20,000 to \$49,999. While 50 percent had an off-farm income of less than \$20,000 per year, 23 percent had an off-farm income between \$20,000-\$49,999, and 13 percent had an income between \$50,000-\$79,999. Only 6 percent had off-farm income between \$80,000-\$109,999 and only 5 percent had an off-farm income of more than \$140,000. Finally, the annual gross

family income of the 125 respondents was on average in the range \$100,000 to \$249,999.

Table 6: Annual Gross Farm Income Distribution of Farmers Surveyed

Income Category	Frequency	Percentage
Less than \$25,000	23	19.0%
\$25,000 - \$49,999	13	10.7%
\$50,000 - \$99,999	9	7.4%
\$100,000- \$249,999	25	20.7%
\$250,000 - \$499,999	21	17.4%
\$500,000 - \$999,999	12	9.9%
\$1,000,000 - \$1,599,999	9	7.4%
\$1,600,000 or more	8	6.6%

Logit Analysis of Farmer Data

Three logit models were constructed using the survey data. The first was a model which identified characteristics of farmers who have used the various Jersey Fresh promotions in the past. The second was a model to identify characteristics of farmers who were interested in using the Jersey Fresh Logo in the future. The third model identified the characteristics of farmers who would most likely be enrolled in the Jersey Fresh Quality Grading Program.

The models included both dummy variables and continuous variables. Dummy variables were chosen if the nature of response to the survey question was categorical or qualitative (Pindyck and Rubinfeld, 1991). Since the data was cross-sectional data, the R² for the models were not particularly high (Kmenta, 1971). Models were selected based on their overall predictive power and the number of significant explanatory variables. The p-values of the farmers' models were a low 0.0001, indicating that the explanatory variables as a group were highly significant. The descriptions of the explanatory variables obtained from the survey are listed in Table 7, followed by a

series of tables giving the maximum likelihood results for each model including their corresponding prediction success table.

Model One: Users of Jersey Fresh Logos

This model looked at various characteristics of individual farmers who have used the various Jersey Fresh promotions in the past. The dependent variable (USE) was based on a survey question that asked farmers whether they used Jersey Fresh Logos or not. The dependent variable was coded as one for those who said that they had and zero for those who said they had never used the logos. Of the 142 who responded, 73 (51 percent) reported they had used the Jersey Fresh Logo. The logit model was estimated using maximum likelihood estimation. The explanatory variables included the socio-demographic characteristics of farmers.

The logit analysis results for this model are given in Tables 8 and 9. The goodness of fit for the model is shown by the McFadden's R^2 of 0.39. The predictive accuracy is shown in Table 9. Approximately 71 percent of the survey participants were correctly classified as either users of Jersey Fresh or non-users of Jersey Fresh using the logit specification. Changes in probabilities of the variables are given in Table 8.

The dummy variable for farmers who were of the opinion that awareness of Jersey Fresh Logos was high among consumers (CONSU) was positive and significant at the 0.05 level. This would imply that farmers who thought that consumer's awareness of Jersey Fresh was high were 42 percent more likely to be using the Jersey Fresh Logos currently. Given that the logos were meant for increasing the popularity for New Jersey produce among consumers, this attitude among the users could be expected.

The dummy variable (OTHER) which denoted farmers who used other logos to identify their fresh produce, was found to be positive and significant at the 0.05 level. This implies that farmers who used other logos for product promotion were 37 percent more likely to be using Jersey Fresh Logos as well. This indicates that farmers value the Jersey Fresh Logos to be effective in increasing their produce sales.

The variable ACRES was estimated with a negative coefficient sign and was significant at the 0.05 level. Generally, as the number of acres being farmed increased, the probability of the farmer having used Jersey Fresh Logos decreased. A possible explanation is that as the size the operation increases, farmers tend to be more involved in wholesaling and in their own promotion compared to small scale farming operations.

Farmers with more than 75 percent of their production being sold in the wholesale market were categorized as primarily wholesalers. The dummy variable for primarily wholesaling farmers (WHL75) was estimated with the hypothesized negative coefficient and was significant at the 0.01 level. The change in the predictability value indicated that primarily wholesaling farmers were 71 percent less likely to have used the Jersey Fresh Logos compared to farmers who were not primarily wholesaling their produce. Since the promotional aspect of the program was more for increasing sales of retailers, the probability of logo usage could be lower for farmers who mostly wholesale their produce.

The dummy variable for farmers with farm business located in the areas with agricultural zoning (AGZONE) was estimated with the hypothesized positive coefficient, significant at the 0.10 level. This implies that farmers with retail operations in the areas of agricultural zoning were 9 percent more likely to have used the Jersey Fresh Logos compared to farmers in the non-agricultural zones. The continuous variable for the number of years the farmers had been engaged in farming (NUM) was significant and estimated with the hypothesized positive coefficient. This implies that farmers with more experience in produce marketing were more likely to have used the logos.

Model Two: Future Users of Jersey Fresh Logos

The second model estimates the farmers' willingness to use Jersey Fresh Logos in future. The dependent variable (FUT) was based on the question in the survey that asked respondents if they would be interested in using the Jersey Fresh Logos in future. The dependent variable was coded as one for those who indicated they would use the

logos and zero for those who reported they would not use the logos. Since all farmers, whether they used the Jersey Fresh Logos or not, answered the question, the results of this model could help in understanding the characteristics of farmers who would most likely be using the logos in future. The logit analysis results for the model are given in Tables 10 and 11. The model was estimated with a McFadden's R^2 statistic of 0.44. Of the 110 respondents to the question, 73 percent indicated that they would be interested in using the logos in future while 27 percent indicated that they would not be interested. The change in the probability percentages for each significant variable is given in Table 10.

Farmers who agreed that consumers' awareness of Jersey Fresh Logos was high were found 21 percent more likely to be willing to use the logos than farmers who thought that consumer awareness was either medium or poor. The dummy variable for farmers who used other promotional logos (OTHER) was estimated to be positive and significant at the 0.10 level. Farmers who used other kinds of promotional logos to increase their fresh produce sales were 10 percent more likely to use the Jersey Fresh Logos in future than those who did not use any other logos.

The continuous variable for number of acres (ACRES) being farmed was estimated with a negative sign and was significant at the 0.05 level. A possible explanation is that as the size of their farms increased, farmers would more likely sell their produce to wholesalers, and hence, the likelihood of their using the Jersey Fresh Logos would decrease.

The dummy variable for primary wholesalers (WHL75) was estimated with a negative coefficient and was significant at the 0.01 level. Primarily wholesaling farmers were 30 percent less willing to use Jersey Fresh Logos in future compared to farmers who were not primarily wholesaling their produce.

The variable NEW was defined as one if the retailers had between 25 and 75 percent of production in retailing. The dropped categories included retailers with either less than

25 percent or more than 75 percent in retailing (low end or high end retailers). The variable was estimated with a positive sign and was significant at the 0.01 level implying that farmers who were in the midrange were 27 percent more likely to be willing to use the Jersey Fresh Logos in future than those who retailed less than 25 or more than 75 percent of their produce.

The continuous variable AGE was significant at the 0.05 level and had a negative coefficient implying that as the age of the farmers increased their willingness to use the Jersey Fresh promotion decreased. Hence, young farmers were found to be more willing to utilize the logos than older farmers were.

The variable for education (EDUC) which was one for farmers with more than a college education was estimated to be positive and significant at the 0.01 level. Farmers with more than a college education were 24 percent more willing to use Jersey Fresh Logos than farmers with less than a college education. The result was consistent with that of the current users of Jersey Fresh Logos and also seems consistent with the age variable.

The dummy variable for farmers with farm businesses located in the areas with agricultural zoning (AGZONE) was estimated with the hypothesized positive coefficient, significant at the 0.05 level. Farmers with operations in the areas of agricultural zoning were 12 percent more willing to use the Jersey Fresh Logos compared to farmers in the non-agricultural zones. The income variable and the continuous variable for number of years in the farming business were insignificant in the model.

Model Three: Farmer Participation in the Quality Grading Program

This model identified the characteristics of individual farmers who were registered in the Quality Grading Program. The dependent variable (QGP) was based on the survey question that asked if the farmer was registered in the program or not. The dependent variable was coded as one for those who did register and zero for those who did not. Of the 113 farmers who were aware of the Quality Grading Program, 61 percent indicated

that they were registered in the Quality Grading Program, while 39 percent reported that they were not.

The logit analysis results for this model are shown in Tables 12 and 13. The goodness of fit is shown by the McFadden's R^2 of 0.31. The extent of prediction is shown in Table 13. Approximately 68 percent of the survey participants were correctly classified as either users of the Quality Grading Program or not using the logit specification. The change in the probability percentages discussed for each significant variable in this model are indicated in Table 12.

The dummy variable for farmers who were of the opinion that awareness of Jersey Fresh Logos was high among consumers (CONSU) was positive and significant at the 0.01 level. This implies that farmers who thought that Jersey Fresh promotions were popular among consumers were 34 percent more likely to be registered in the Quality Grading Program. Given that the logos could be used on the boxes of produce only when they met the standards of the Quality Grading Program, farmers who would like to use the logos were more likely to register in the program.

The dummy variable (OTHER) which was coded as one for farmers who used other logos to identify their fresh produce was found to be positive and significant at the 0.10 level. This implies that the farmers who used other logos to identify their produce were 23 percent more likely to register in the Quality Grading Program. Although it was an unexpected result, this result suggests that those who used other quality grading procedures were more likely to use the quality grading procedures when compared to those who did not use any other quality grading procedures.

The dummy variable for farmers with farms in the southern counties (SOUTH) was estimated with the hypothesized positive coefficient and was significant at 0.05 level. Farmers in the south were 34 percent more likely to be registered in the Quality Grading Program compared to those in central or northern New Jersey. The variable for education (EDUC) which was one for farmers with more than a four year college

education was estimated positive and significant at the 0.01 level. Farmers with more than a college degree were 45 percent more likely to be enrolled in the Jersey Fresh Quality Grading Program than farmers without a college degree. This result was found to be consistent with the first two farmers' models.

Common Observations Among the Logit Models

The first two models were similar in the type of explanatory variables. Hence a comparison of the results obtained from the two models would bring out the differences among the characteristics of farmers who were using and who would most likely use Jersey Fresh promotions in future. The dummy variable for farmers who believed that awareness of Jersey Fresh Logos was high among consumers (CONSU) was positive and significant in all the models. Hence, farmers would more likely use the Jersey Fresh Logos currently and in the future, and also be enrolled in the Quality Grading Program, if they believed that Jersey Fresh was popular among consumers.

Farmers' usage of different promotional logos to identify their fresh produce (OTHER) was found to be significant in all the three models implying that farmers who used other logos were more likely to have used Jersey Fresh promotions, more likely to be willing to use Jersey Fresh promotions in future and more likely to be registered in the Quality Grading Program. These results indicate that farmers with a positive inclination to sell their produce through some kind of product differentiation program would more likely be involved in all aspects of the Jersey Fresh promotional and Quality Grading Programs.

The number of acres being farmed was estimated significant with a negative coefficient in the first and second models. As the number of acres being farmed increased, the farmer was found less likely to be using Jersey Fresh promotions. This could be because, as the size of the operation increases, farmers tend to be more involved in wholesaling which requires more promotional backing compared to small scale retailing. The variable was also estimated with a negative coefficient in the quality grading model though it was not significant.

Table 7: Description of Model Variables

Variable	Frequency	Mean	Std. Dev
Dependent Variables:			
Use Jersey Fresh Promotions (USE)			
Yes	73	0.5141	0.5015
No*	69	0.4859	0.5015
Willing to Use Jersey Fresh in the Future (FUT)			
Yes	99	0.6971	0.4611
No*	43	0.3029	0.4611
Registered in Quality Grading Program (QGP)			
Yes	84	0.5915	0.4933
No*	58	0.4085	0.4933
Explanatory Variables:			
What is your opinion about awareness of Jersey Fresh among consumers? (CONSUM)			
High	34	0.2394	0.4383
Medium*	73	0.5140	0.5015
Low*	29	0.2042	0.4046
Do you use any logos to identify your fresh produce (other than Jersey Fresh)? (OTHER)			
Yes	50	0.3521	0.4793
No*	92	0.6479	0.4793
How many acres do you farm? (ACRES)			
	142	197.99	317.81
Sales Per Acre in dollars/acre (SALES)			
	109	2874.50	4471.10
Region in New Jersey where the farm is located			
South (SOUTH)	59	0.4155	0.4946
Central*	45	0.3169	0.4669
North*	31	0.2183	0.4145
More than 75 percent of production is wholesaled? (WHL75)			
Yes	55	0.3873	0.4888
No*	87	0.6127	0.4853
More than 75 percent of the production is retailed? (RET75)			
Yes	53	0.3732	0.4853
No*	89	0.6268	0.4853

Variable	Frequency	Mean	Std. Dev
Retail between 25 – 75 percent of annual trade? (NEW)			
Yes	70	0.4930	0.5017
No*	72	0.5070	0.5017
Age of the active producer (AGE)			
	142	52.163	13.109
Education of the active producer (EDUC)			
Less than college*	124	0.8733	0.3338
More than college	18	0.1267	0.3338
Number of years in farming (NUM)			
	142	32.404	15.667
Zoning of the land occupied by your farm-market			
Agricultural (AGZONE)	55	0.3873	0.4888
Commercial/Residential* (RZONE)	87	0.6127	0.4722
Annual Off-farm Income (OFINC)			
\$79,999 or less	118	0.8309	0.3760
More than \$80,000*	24	0.1691	0.3760
Annual Gross Farm Income (FAINC)			
Less than \$100,000*	67	0.5281	0.5009
\$100,000 or more	75	0.4719	0.5009

Note: 1. * Refers to the category that was generally omitted in the logit analysis. 2. All three farmers' models have the same specification for the explanatory variables used. 3. The variable name used in the model specification is given in the parenthesis.

Table 8: Socio-Economic Characteristics of Jersey Fresh Participants Among Farmers Model

<i>Variable</i>	<i>Estimate</i>	<i>Standard Error</i>	<i>Change in Probability</i>
INTERCEPT	-1.5766	1.7716	-0.3717
CONSUM**	1.7804	0.7319	0.4198
OTHER**	1.5829	0.6981	0.3732
ACRES**	-0.0034	0.0017	-0.0008
SOUTH	1.1432	0.7476	0.2695
SALES	1.3E-4	1.4E-4	2.9E-4
WHL75***	-3.0235	0.9038	-0.7129
RET75	-0.3874	0.7360	-0.0913
AGE	-0.0313	0.0325	-0.0074
NUM*	0.0413	0.0255	0.0973
EDUC	-1.2655	0.8904	-0.2984
AGZONE*	1.4687	0.8417	0.0913
RZONE	1.4019	0.8905	0.3306
FAINC	1.1913	0.7502	0.2809

McFadden's R² is: 0.3941

Ratio of non-zero observations to the total number of observations: 0.5480

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

Table 9: Predictive Accuracy of Model One

		<i>Predicted</i>	
		0	1
<i>Actual</i>	0	33	16
	1	14	41

Number of correct predictions: 74

Percentage of correct predictions: 71.2

Table 10: Characteristics of Potential Future Jersey Fresh Participants Among Farmers Model

<i>Variable</i>	<i>Estimate</i>	<i>Standard Error</i>	<i>Change in Probability</i>
INTERCEPT	-0.7380	1.8861	-0.0525
CONSUM***	2.9632	1.1380	0.2106
OTHER*	1.3554	0.7915	0.0963
ACRES**	-0.0045	0.0019	-0.0003
SOUTH	0.2051	0.6876	0.0146
SALES	4.2E-4	1.5E-4	3.0E-4
NEW***	3.8843	1.3956	0.2761
WHL75***	-4.2234	1.2628	0.3002
AGE**	-0.0587	0.0276	-0.0042
EDUC***	3.4273	1.0530	0.2436
AGZONE**	1.6453	0.8302	0.1169
RZONE	0.3152	0.8805	0.0224
OFINC	0.4166	0.8034	0.0296

McFadden's R² is: 0.4361

Ratio of non-zero observations to the total number of observations: 0.7273

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

Table 11: Predictive Accuracy of Model Two

		<i>Predicted</i>	
		0	1
<i>Actual</i>	0	16	11
	1	14	69

Number of correct predictions: 85

Percentage of correct predictions: 77.3

Table 12: Characteristics of Grower Participants Enrolled in the Jersey Fresh Quality Grading Program

<i>Variable</i>	<i>Estimate</i>	<i>Standard Error</i>	<i>Change in Probability</i>
INTERCEPT	-2.4602	1.2759	-0.5288
USE	0.6920	0.6621	-0.3862
CONSUM***	1.6027	0.6013	0.3445
OTHER*	1.0640	0.6482	0.2287
ACRES	-0.0010	0.0011	-0.0002
SOUTH**	1.5801	0.6270	0.3396
WHL75	1.2842	0.8211	0.2760
RET75	-0.3183	0.6616	-0.0684
EDUC***	2.0836	0.8003	0.4478
AGE	0.0201	0.0165	0.0043
OFINC	-1.0920	1.0429	-0.2347
FAINC	0.2426	0.5921	0.0521

McFadden's R² is: 0.3120

Ratio of non-zero observations to the total number of observations: 0.6106

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

Table 13: Predictive Accuracy of Model Three

		<i>Predicted</i>	
		0	1
<i>Actual</i>	0	24	16
	1	20	53

Number of correct predictions: 77

Percentage of correct predictions: 68.1

Farmers with more than 75 percent of their production channeled for the wholesale market (WHL75) were found less likely to use Jersey Fresh promotions. They were also significantly less likely to be willing to participate in the program in future. The variable was not significant in the third model, though it was estimated with a positive sign. These results seem to indicate that farmers who were primarily wholesalers were not interested in the Jersey Fresh promotional program. Since the major promotions consisting of promotional materials and mass advertisements were primarily targeted at promoting retailers, the wholesale segment, which generally tends to conduct more of its own promotion, seems less motivated towards participating in the Jersey Fresh Program.

The dummy variable for farmers with farm businesses located in the areas with agricultural zoning (AGZONE) was significant in the first two models. Farmers with farm businesses in the agricultural zoning area were more likely to be use the logos compared to farmers who were active in areas with non-agricultural zoning. The results seem reasonable, as agricultural areas have a lower density of consumer population compared to residential or commercial areas (Census, 92).

Summary and Conclusions

Summary of the Results

1. Farmers who believed that consumer awareness of the Jersey Fresh Logos was high and who used logos other than Jersey Fresh were found more likely to have used the Jersey Fresh Logos and also more likely to use them in future.
2. Farmers with high gross sales of produce and with more than a college education were found more likely to have used the Jersey Fresh Logos and also more likely to use the logos in future. The number of acres being farmed and the age of the farmers, however, were found to have a negative effect on both the current usage and willingness to use the logos in the future.
3. Growers with farms located in the southern counties of New Jersey were found more likely to be Jersey Fresh Program participants and also more willing to use Jersey Fresh Logos in the future, compared to farmers in the central or northern regions of the state. Growers with farms located in areas identified as agricultural zones were

found more likely to use the Jersey Fresh Logos and also more likely to use them in the future.

4. Farmers who were more likely to be registered in the Jersey Fresh Quality Grading Program were those who believed that consumers were highly aware of the program and those who used other logos to identify their quality fresh produce. Growers with farms in southern New Jersey and who had more than a four year college education were also found to be more likely to be registered in the Quality Grading Program.
5. Most farmers were not interested in participating in the quality-grading program, even when they were aware of the program. Among the most cited reasons for not participating in the program were not wanting their produce to be inspected, not knowing about the program, and not finding the grading logo to be effective in obtaining a premium price.

The results from the logit models help determine which grower characteristics influence participation in the Jersey Fresh Program. The summary of the important findings are shown in the Table 14 which shows the common significant coefficients (with the asterisks indicating the level of significance) and their respective coefficient sign (+ or -).

Conclusions and Recommendations

The purpose of the Jersey Fresh Program is to promote the sales of produce grown in New Jersey by emphasizing the freshness, quality, and, above all, the locally grown aspect of the produce. The study indicated that the promotional aspect of the program was more popular among the farmers than the quality control aspect. The focus group meetings of farmers and the mail survey, indicated that a greater number of participants were aware of and were using the promotional logo than the quality grading logo. Only a fifth of the farmers who were aware of the Quality Grading Program were enrolled in it. Survey results indicated that growers with large farmlands, and those who were primarily retailers or wholesalers (i.e. more than 75 percent of produce is retailed or wholesaled respectively) were less likely to be enrolled in the program. The results also indicated that participants who thought that consumer awareness of the program was high were more likely to be enrolled. A greater number of farmers might be motivated to participate in the program if they were informed of the high awareness of the program among the consumers, as evident from the consumer analysis phase of this study.

Table 14: Summary of the Farmer Logit Models

Logit Models of Farmers			
Variable	Use logo	Will Use in Future	Enrolled in QGP
CONSUM	+**	+***	+***
OTHER	+**	+*	+*
ACRES	-**	-*	-
SOUTH	+	+	+**
WHL75	-**	+***	+
RET75	-	+	-
AGE	-	+**	+
EDUC	-	+**	+***
AGZONE	+*	-**	
INCOME	+		-

Note: 1. The positive and negative signs indicate the sign of the variable coefficient in the models. 2. * Refers to significance of the variable in that model at 0.10 percent level, ** refers to significance of the variable at 0.05 percent level, *** refers to significance of the variable in the model at 0.01 percent level.

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 of consumer attitudes toward Jersey Fresh showed that the majority of consumers were willing to pay a small percentage premium for Jersey Fresh labeled produce over the market prices of other fresh produce. Consumer sensitivity to price changes might 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 that have highlighted cooking suggestions. Such advertisements might motivate consumers to purchase 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.

The results of this study indicate that farmers were less inclined to participate in the Jersey Fresh Quality Grading Program as they feel that there is little incentive to have

their produce inspected. The study found that many farmers who were also direct marketers were using promotional logos for advertising but were not registered in the program. A primary reason for fluctuating participation rates in the Quality Grading Program appears to be that large farmers with high gross production were using either their own grading standards or those of the federal government. The study found that most farmers follow other quality standards for grading their produce. Small farmers with a lower gross production or those operating for less than six months during a year were less likely to enroll in the Quality Grading Program as they were not interested in having their produce inspected. These farms often cater to the needs of some small local areas.

It would appear that if the quality-grading program could be differentiated between participants and non-participants and the benefits they receive, farmers would be more motivated to participate in the program when the incentive for participation becomes more apparent.

The advertisements of the Jersey Fresh Program feature popular crops grown in New Jersey, the program benefits both retailers and wholesalers either directly or indirectly. The participation in the program may be further improved by farmers, wholesalers, and retailers working together promote the Jersey Fresh name. The results of this study clearly show that increased patronage of Jersey Fresh labeled products by consumers would be followed by increased farmer and wholesaler participation.

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.
- Directory of New Jersey Produce Growers*. New Jersey Farm Bureau, 1995.
- 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, October 1997.
- Intriligator, Michael, *Econometric Models, Techniques, and Applications*. 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.

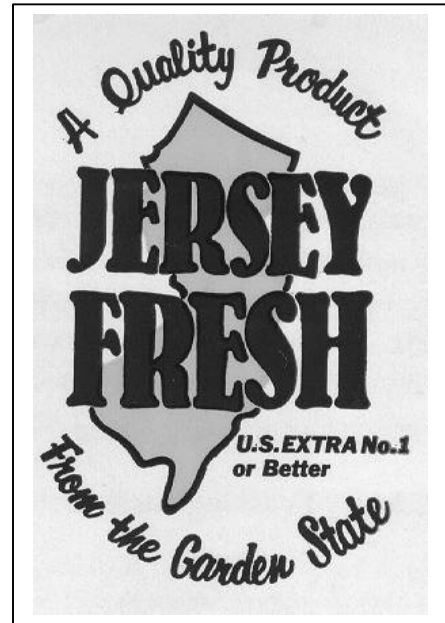
Appendix

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.



Survey of Producers of Fresh Vegetables

1. Are you a: (check all that are applicable)

- Farmer Wholesaler
 Retailer

2. Are you aware of the Jersey Fresh Program sponsored by the New Jersey Department of Agriculture (NJDA)?

- Yes No

3. Have you used any of the Jersey Fresh Logos (shown below) in your retail outlets?

- Yes If yes, please indicate which one of the above: A B. C.
 No If no, please skip to Question No. 13

4. For how many years (since 1984) have you used the Jersey Fresh Logo: ____ yrs; Please circle the year/s you remember NOT using the Jersey Fresh Logo from 1990:

1990 91 92 93 94 95 1996

5. For how many months during a year do you display produce with the Jersey Fresh Logo, please indicate the approximate number of months: ____ months/year

6. Which of the following best describes the reason why you use the Jersey Fresh Logo: Please check all that are applicable:

- Add 'beauty' to promotions (a)
 Add 'locally grown' value (b)
 Add 'freshness value' to produce (c)
 Logos were obtained free of cost (d)
 Other reasons like _____ (e)

Which of the above is the most important reason? ____ (please indicate a, b, c, d, or e)

7. Please list in order of importance (as measured in dollar value of sales) the 6 principal farm products you market with Jersey Fresh Logos (e.g., tomatoes, apples, Xmas trees)

- a. _____ b. _____
 c. _____ d. _____
 e. _____ f. _____

8. Among these various items, check all that were used in your sales advertising with Jersey Fresh Logo in them?

- Billboards Media Advertisements
 Posters, Banners Produce demos/displays
 Price cards of produce Recipe cards
 Stickers Salesperson caps, aprons, etc.

9. How has using the Jersey Fresh Logo in the sales promotions changed your average gross sales?
- | | |
|------------------------------------|-------------------------------------|
| <input type="checkbox"/> Increased | <input type="checkbox"/> Decreased |
| <input type="checkbox"/> No change | <input type="checkbox"/> Don't Know |
10. If your answer to question - 9 is 'Increased' or 'Decreased', please indicate approximately by how much annually?
- | | |
|-------------------------------------|--------------------------------------|
| <input type="checkbox"/> 1 to 10% | <input type="checkbox"/> 31 to 40% |
| <input type="checkbox"/> 11 to 20 % | <input type="checkbox"/> 41 to 50% |
| <input type="checkbox"/> 21 to 30% | <input type="checkbox"/> 51% or more |
11. What is the total amount in dollars you spent in purchasing various Jersey Fresh promotional material (approximately): \$ _____
12. Please rank order the following Jersey Fresh promotions in terms of their effectiveness as 1,2,3,4 and 5, where 1 = most effective ... 5 = least effective
- | | |
|-------|---|
| _____ | Various promotional material (labels, posters...) |
| _____ | Media advertising (T.V, Radio) |
| _____ | Matching funds to direct marketers |
| _____ | Promotional events (e.g. exhibitions, demos) |
| _____ | Any other _____ |
13. Would you be interested in using Jersey Fresh Logos in future.
- | | |
|------------------------------|-----------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|------------------------------|-----------------------------|
- If no, please explain why : _____
14. What is your opinion about the awareness of Jersey Fresh among consumers?
- | | |
|-------------------------------|-------------------------------------|
| <input type="checkbox"/> High | <input type="checkbox"/> Medium |
| <input type="checkbox"/> Low | <input type="checkbox"/> Don't Know |
15. Do you use any logos to identify your fresh produce (excluding Jersey Fresh Logo)?
- | | |
|------------------------------|-----------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
|------------------------------|-----------------------------|
- If yes, how do they effect your fresh produce sales?
- | | |
|-----------------------------------|-------------------------------------|
| <input type="checkbox"/> Increase | <input type="checkbox"/> No Change |
| <input type="checkbox"/> Decrease | <input type="checkbox"/> Don't know |

The Jersey Fresh Quality Grading Program is a commodity inspection program for growers which permits them to use the Jersey Fresh Logo on produce boxes. The logo implies that the produce has been inspected for quality and grade by the program inspectors. This program adds a quality assurance note to the Jersey Fresh marketing program.

16. Are you aware of the Jersey Fresh Quality Grading Program sponsored by the New Jersey Department of Agriculture?
- | | |
|-----------------------------------|-----------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| <input type="checkbox"/> Not sure | |

17. Are you registered with the Quality Grading Program? (Registration is done at an annual \$30 fee to become a Jersey Fresh licensee)

Yes --> * Total number of years of participation: _____ years.

Please circle the years you did NOT participate from 1990:

1990 91 92 93 94 95 1996

No --> Please Skip to Question No.21.

18. Which of the logos shown on page 1 do you use to identify quality inspected produce-boxes (check all those used): A B. C.

19. How has participation in Quality Grading Program changed the sales of your fresh produce:

Increased No change
 Decreased Don't know

20. In using the Jersey Fresh promotional quality grading logos, would you prefer them to be:

The same logo
 Different logos
 No preference

21. Do you employ other fresh produce quality & grading procedures (excluding Jersey Fresh Quality Grading procedures) Yes No
 If yes, please specify _____

22. If you do not participate in the Jersey Fresh Quality Grading Program, which of the following best explains the reason for your non-participation: (Check all that are applicable)

Did not know about the program
 Registration fee of \$30 per year is high
 Logo not effective in fetching premium price
 Not interested in having produce inspected
 Any other reason: _____

Your answers to the following questions will be kept strictly confidential and only the summary results will be reported.

1. How many acres do you farm? _____ acres
2. Of these how many do you
 - a) Own: _____ acres
 - b) Rent: _____ acres
 County in New Jersey where your major farming operation located: _____
 County in New Jersey where your major retail sales operation located: _____
3. Value of your annual gross farm sales in dollars: \$ _____
5. What is your average annual advertising & promotional expenditure \$ _____
5. What percentage of your annual production do you wholesale? _____ %
 What percentage do you Retail directly to consumers? _____ %
6. What percentage of your annual production do you sell in New Jersey markets (Direct Consumer Retail Sales only). Please circle the appropriate percentage from below:

0% 10 20 30 40 50 60 70 80 90 100%

7. What is the trend in your annual gross retail sales in the last five years:

- Increasing
- Decreasing
- No change
- No clear trend

8. Please indicate all method(s) of advertising you use (Circle applicable number(s))

- newspaper
- direct mail
- radio
- signs
- television
- word of month
- brochures
- other (specify) _____

9. Please indicate the number of signs used for advertising (approximately)

_____ on-site _____ off-site

Total market display and sales area (approximately): _____ sq. ft.

10. Check all places you retail:

- Roadside stands
- Farmers Market
- Pick Your Own
- Any other _____

Demographic Information: Your answers to the following questions will be kept strictly confidential and only the summary results will be reported.

Age of the active producer: _____ years

Education of the active producer: _____

No. of years in farming: _____ years

No. of years in retailing business: _____ years

Which of the following do you think best describes the area in which your market is located?

- rural
- suburban
- urban

What is the zoning on the land occupied by your farm-market? (Circle one)

- agricultural
- residential
- commercial
- industrial
- don't know
- other (specify) _____

Total number of months your market is open during a year _____ months/year

Annual Family Income after taxes:

- less than \$20,000
- \$80,000 - \$109,999
- \$20,000 - \$49,999
- \$110,000 - \$139,000
- \$50,000 - \$79,999
- \$140,000 or more

Annual Gross Farm Income after taxes:

- less than \$25,000
- \$250,000 - \$500,000
- \$25,000 - \$49,999
- \$500,000 - \$999,999
- \$50,000 - \$99,999
- \$1,000,000 - \$1,599,999
- \$100,000 - \$249,999
- \$1,600,000 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 Monday, December 2, 1996.



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