Evaluation of Consumer Attitudes Towards Organic Produce in Delaware and the Delmarva Region

by

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Introduction

In a nationwide study, 50 percent of consumers perceived chemicals to be one of the greatest threats to the safety of the food they purchase.[1] Additionally, food processing and handling (29%), additives (28%), miscellaneous threats such as fat/salt/sugar content (14%), and quality of food (13%) were other serious threats. Only 3 percent of the respondents indicated spoilage or improper storage as a significant hazard.

A second nationwide study by the Food Marketing Institute (FMI) found that 77 percent of respondents perceived pesticide residues in food as a serious health hazard. Additionally, 32 percent indicated food additives and preservatives, and 26 percent specified coloring agents as serious health hazards.[2] Consumers will avoid purchases of products that they deem risky, which includes products perceived to have pesticide residues. This demand for pesticide residue-free food products has resulted in the billion dollar organic industry.[3] The FMI study also shows 22 percent of consumers avoid products based on sugar content and 17 percent avoid products based on salt content, indicating the healthfulness of the food item is an important safety issue to the consumer. However, consumers are still price-conscious and may sacrifice food safety wants for lower prices. Bulk-purchase consumers forego certain protection and label information to attain lower prices.[4]

Pesticide residues, a major discriminating characteristic between organic and conventionally grown fresh produce, were a major food safety concern in all reviewed studies. Yet organic produce is still only a minor offering in the Delmarva area (Hunter).[5]

A study by Ireland and Falk stated that "a majority of groceries do not carry organic foods because of low availability and perceived consumer demand." The study found that 59 percent of New Mexico retailers, who do not handle organics, stated that availability was a serious problem. Food retailers, who do handle organics, were almost unanimous in stating that availability was not a problem. Many retailers indicated that consumer demand for organics was minimal, even though they never actually marketed organics in their stores. Thus, the lack of consumer demand assumption on their part seems perceived, as opposed to being learned.

In "Less Is More In Organics," retailers reported successful organic marketing was achieved through streamlining offerings to dependable movers, ones with comparable quality and price to conventional, and timing their merchandising to seasonality.[6]

Objectives

The overall objective of this study is to determine Delmarva consumer attitudes toward food safety, with an emphasis on organically grown fresh produce. Specific objectives are:

1. Determine consumer perceptions regarding food policy, food safety, and the purchase importance of food components.

2. Determine the characteristics of consumers who are buying, have bought, and have never bought organic produce.

3. Determine consumer perceptions regarding price, quality, availability, and characteristic relationships for organic and conventional produce.

4. Formulate recommendations, based on the analysis, to federal and state agencies, growers, retailers, and consumers.

Data

A consumer mail survey was conducted to determine attitudes toward food safety and organic produce, containing over 150 potential responses. A random sample of 9,010 Delmarva telephone subscribers, based on zip code population, was purchased from a marketing research firm (Donnelly Marketing). The sample population consisted of residential telephone subscribers, including unlisted households. A total of 1,065 households returned the questionnaire for a response rate of 11.82 percent, not including refused, unusable, and deceased returns. Based on an average household size for the survey of 2.74, the response rate represents 0.30 percent of the total Delmarva population, according to U.S. census data.

Based on the sample size relative to the total population and the use of random sampling procedures, there is a 95 percent confidence in the accuracy of the results to within three percentage points.[7] More importantly, the various subgroups of respondents were well represented. The sampling area was broken down into five areas:

1. Wilmington - residents within the city limits of Wilmington, DE.

2. New Castle County - residents of New Castle County, DE, excluding residents of Wilmington.

3. Kent County - residents of Kent County, DE.

4. Sussex County - residents of Sussex County, DE.

5. Eastern Shore - residents of Maryland and Virginia residing in Wicomico, Worcester, Somerset, Dorchester, Talbot, Caroline, Queen Annes, Kent, Accomack, and Northampton counties.

Response rates for these areas are given in Table 1.

Table 1

Survey Response of Delmarva Consumers, by Area, Delmarva 1990

Area	POP (000's)	Surveys Mailed	Surveys Returned	Percent Returned
Wilmington	70.3	636	57	8.96
New Castle	365.0	3,389	492	14.52
Kent	108.6	1,010	99	9.80
Sussex	116.2	1,075	105	9.77
Eastern Shore	312.5	2,900	312	10.76
TOTAL	972.6	9,010	1,065	11.82

Source: Consumer mail survey and calculations

Consumers also received a cover letter, which presented a general working definition of organic produce. The demographic makeup of the respondents is summarized in Table 2. Again, the most important element of a survey sample is sufficient numbers of respondents in sub-classifications (i.e., sex, education, geographic area, education, and income) to warrant statistical analysis.[8] The database, depicted in Table 2, reflects these sufficient numbers. Dillman states that 1,060 to 1,070 randomly sampled respondents are sufficient to estimate the total population preferences within three percentage points.[9]

Procedures

Survey

Questions in the survey dealt with consumer self-ratings of attitudes, perceptions, and beliefs on various food safety topics. Response types were: a) contingent valuation on a scale of 1 to 7; b) yes, no, or do not know responses; c) free choice selection; and d) written comments. Contingent valuations were assigned the same value indicated by the respondent. Direct replies of yes, no, or do not know were assigned values of 1, 0, and 9 respectively. Free choice selection was assigned a value of 1 if chosen, else a value of 0. Written comments were directly transcribed into the database.

Table 2

Demographic Characteristics of Respondents, Delaware 1990

Characteristic	N	Percent
AGE		
18-34 years of age	220	21.3
35-49	377	36.4
50-64	259	25.0
65 or older	179	17.3
Missing	30	NA
TOTAL	1,065	100.0
SEX		
Male	532	51.5
Female	501	48.5
Missing	32	NA
TOTAL	1,065	100.0
EDUCATION		
Less than high school	55	5.3
High school graduate	287	27.9
Some college	225	21.8
Bachelor degree	251	24.4
Some graduate work or degree	212	20.6
Missing	35	NA
TOTAL	1,065	100.0
ANNUAL HOUSEHOLD INCOME		
<$10,000	23	2.4
$10,000-19,999	72	7.4
$20,000-29,999	135	13.8
$30,000-39,999	142	14.5
$40,000-49,999	188	19.2
$50,000-59,999	129	13.2
$60,000-69,999	84	8.6
$70,000 or higher	204	20.9
Missing	88	NA
TOTAL	1,065	100.0

Source: Consumer mail survey and calculations

For summarizing survey data, frequencies were calculated for all responses, except those

questions which were in table format. Means and standard deviations were calculated for all the tabled responses.

Demographic information was also obtained for the study. Respondents provided their age in years, which was then entered into four designated categories (18 to 34, 35 to 49, 50 to 64, and 65 or older). Sex was entered as 1 for male and 0 for female. Education was divided into five categories: less than high school graduate, high school graduate, some college, bachelor degree, and some graduate work or degree. Consumers were asked to select the category that represented their total annual household income. The eight categories were:

1. Less than $10,000
2. $10,000 to $19,999
3. $20,000 to $29,999
4. $30,000 to $39,999
5. $40,000 to $49,999
6. $50,000 to $59,999
7. $60,000 to $69,999
8. $70,000 or more

Results

Over eighty percent of the respondents indicated positive interest in food-related issues, while only 6.7 percent expressed a negative interest (Table 3). Since food consumption is universal, high ratings for food-related issues were to be expected.

Concern was also very high for government policies and regulations with regard to food. Eighty-three percent of consumers showed positive concern for government involvement and only 6.2 percent displayed a lack of concern (Table 4). Responses to this question represent the consumer watchfulness of government policies and regulations, but it is not an indicator of consumers desiring more or less control.

Table 3

Consumer Interest in Food-Related Issues, Delmarva, 1990

Levels of Interest	N	Percent
1 (very interested)	445	42.4
2	231	21.8
3	177	16.8
4	130	12.3
5	48	4.6
6	14	1.3
7 (not interested)	8	.8
Missing	12	
TOTAL	1,065	100.0

MEAN = 2.220

Source: Consumer mail survey and calculations

Table 4

Consumer Concern about Government Policy And Regulations Concerning Food, Delmarva 1990

Levels of Concern	N	Percent
1 (very concerned)	466	44.3
2	224	21.3
3	183	17.4
4	114	10.8
5	46	4.4
6	8	0.8
7 (not concerned)	10	1.0
Missing	14	
TOTAL	1,065	100.0

MEAN = 2.157

Source: Consumer mail survey and calculations

Respondents' self-rating of their knowledge of the contents of food they eat was only slightly better than fair--the mid-point between excellent and poor. The majority, 63.2 percent, rated their understanding from somewhat less than fair to somewhat more than fair; only 8.2 percent rated their understanding as excellent (Table 5). Thus, strong interest in food-related issues and concern for government involvement has not resulted in a strong understanding of food contents.

Table 5

Consumers' Understanding
Of What is Contained in the Food They Eat,
Delmarva 1990

Levels of understanding	N	Percent
1 (excellent)	86	8.2
2	183	17.4
3	275	26.2
4	270	25.7
5	119	11.3
6	61	5.8
7 (poor)	56	5.3
Missing	15	
TOTAL	1,065	100.0

MEAN = 3.533

Source: Consumer mail survey and calculations

Some 60.7 percent of the respondents agreed that, unless the quality of the food product is improved, the overall health of society would be significantly jeopardized in the next twenty years (Table 6). However, the mean of 3.032 indicates only some agreement overall, suggesting tentativeness in response for food in general.

Overall, consumers were indifferent as to whether the risks associated with food have been exaggerated. Thirty-eight percent indicated positive agreement, while 39.6 percent disagreed (Table 7). The widely distributed responses suggest uncertainty and inconsistency.

Table 6

Consumer Agreement that Unless the Quality
Of Food is Improved, The Overall Health
Of Society Will be Significantly Jeopardized
In the Next 29 Years, Delmarva 1990

Levels of Agreement	N	Percent
1 (strongly agree)	289	27.4
2	170	16.1
3	182	17.2
4	130	12.3
5	102	9.7
6	74	7.0
7 (strongly disagree)	56	5.3
Do not know	53	5.0
MISSING	9	
TOTAL	1,065	100.0

MEAN = 3.032

Source: Consumer mail survey and calculations

Table 7

Consumer Agreement that
The Risks Associated with Food
Have been Exaggerated, Delmarva 1990

Levels of Agreement	N	Percent
1 (strongly agree)	100	9.5
2	130	12.3
3	171	16.2
4	150	14.2
5	115	10.9
6	131	12.4
7 (strongly disagree)	172	16.3
Do not know	85	8.3
Missing	11	
TOTAL	1,065	100.0

MEAN = 4.167

Source: Consumer mail survey and calculations

Freshness was ranked the most important factor in food purchasing decisions (Table 8). Flavor, nutrition, and healthfulness were ranked higher than safety, but safety was ranked higher than appearance and price. Since some retailers characterize organics as higher priced and a lower appearance level than conventional, the higher consumer importance ranking of safety suggests that consumers may sacrifice some appearance and pay a higher price to acquire safety. Overall, brand name and where the food is grown were measured as slightly unimportant.

Table 8

Consumer Rating of Factor Importance
In Food Purchasing Decisions, Delmarva 1990

Factors	Mean[a]	Std Deviation
Freshness	1.393	0.80
Flavor	1.711	0.97
Nutrition	1.747	1.05
Healthfulness	1.783	1.07
Safety	1.815	1.29
Appearance	2.095	1.30
Price	2.359	1.51
Environmental effect	2.703	1.63
Where grown	4.052	2.01
Brand name	4.297	1.80

a/ 1=very important and 7=very unimportant

Source: Consumer mail survey and calculations

Table 9 ranks food components by consumer concern. These components were made up of food safety and nutritional characteristics. Pesticide and herbicide residues were rated the top concerns at 1.904 and 1.956 respectively, reflecting only minor differences between these two agricultural chemical types. Fat and cholesterol were rated the major nutritional concerns. Overall, consumers expressed the least concern for growth regulators and artificial coloring.

Table 9

Consumer Rating of Component Concern,
Delmarva 1990

Factors	Mean[a]	Std Deviation
Pesticide residue	1.904	1.37
Herbicide residue	1.956	1.41
Fat	2.126	1.39
Cholesterol	2.193	1.42
Radiation by-products	2.223	1.77
Fertilizer residue	2.254	1.56
Salt	2.415	1.52
Fiber	2.570	1.53
Sugar	2.602	1.54
Preservatives	2.608	1.66
Calories	2.673	1.66
Growth regulators	2.880	1.83
Artificial coloring	2.899	1.78

a/ 1=very concerned and 7=very unconcerned

Source: Consumer mail survey and calculations

Respondents expressed little difference in ratings of fresh produce flavor today versus five years ago (Table 10). The mean of 3.760 reflects this indifference, as well as suggesting an overall feeling that the flavor of today's fresh produce is slightly better than five years ago.

The indifference found in flavor of produce today versus five years ago was not as evident for healthfulness. Table 11 shows that 43.3 percent feel healthfulness has improved, 35.1 percent think it is the same, and only 21.6 percent express a decline in healthfulness of fresh produce.

Table 10

Consumer Flavor Rating
of Fresh Produce Today
Versus Five Years Ago, Delmarva 1990

Level of quality	N	Percent
1 (higher)	85	8.2
2	106	10.3
3	212	20.5
4	384	37.2
5	121	11.7
6	65	6.3
7 (lower)	60	5.8
Missing	32	
TOTAL	1,065	100.0

MEAN = 3.760

Source: Consumer mail survey and calculations

Table 11

Consumer Rating of Healthfulness of Fresh
Produce Today vs 5 Years Ago, Delmarva 1990

Level of healthfulness	N	Percent
1 (higher)	90	8.8
2	117	11.4
3	237	23.1
4	359	35.1
5	96	9.4
6	71	6.9
7 (lower)	54	5.3
Missing	41	
TOTAL	1,065	100.0

MEAN = 3.667

Source: Consumer mail survey and calculations

The survey cover letter gave consumers a working definition of organic produce that included the characteristics listed in Table 12. Most respondents agreed that pesticides, herbicides, artificial fertilizer, and growth regulators should be prohibited in organic production. A slight majority expressed that field organic for three years and non-irradiation were unnecessary restrictions; 15.0 percent said they did not know how organic growing practices should be defined.

Table 12

Consumer Selected Characteristics
Of Organically Grown Produce, Delmarva 1990

Characteristics	N	Percent
No pesticides	882	84.2
No herbicides	846	80.8
No artificial fertilizer	804	76.8
No growth regulators	712	68.0
Field organic for three years	481	46.0
Non-irradiated	452	43.3
Do not know	157	15.0
Other	15	1.4

Source: Consumer mail survey and calculations

Since organic produce currently is a niche, it was interesting that 55.2 percent of consumers indicated positive levels of agreement that organic proponents reflect the public sentiment (Table 13). Less than 17 percent reported negative agreement.

Table 13

Consumer Agreement as to Whether People
In Favor of Organic Produce Reflect
Growing Public Feeling, Delmarva 1990

Levels of Agreement	N	Percent
1 (Strongly agree)	199	19.1
2	141	13.5
3	236	22.6
4	180	17.2
5	98	9.4
6	47	4.5
7 (Strongly disagree)	28	2.7
Do not know	115	11.0
Missing	21	
TOTAL	1,065	100.0

MEAN = 3.097

Source: Consumer mail survey and calculations

Forty-nine percent of the respondents agree that organic proponents are reasonable in their criticism of conventional produce; 23.2 percent indicate some disagreement (Table 14). Overall, consumers tended to agree somewhat that the criticism was reasonable--with a mean of 3.412.

Table 14

Consumer Agreement that Organic Proponents are Reasonable in their Criticism Of Conventional Produce, Delmarva 1990

Levels of Agreement	N	Percent
1 (strongly agree)	156	14.9
2	159	15.2
3	198	18.9
4	172	16.4
5	107	10.2
6	80	7.6
7 (strongly disagree)	57	5.4
Do not know	119	11.4
Missing	17	
TOTAL	1,065	100.0

MEAN = 3.412

Source: Consumer mail survey and calculations

A small percentage (8.6%) of consumers rated organically grown produce worse overall than conventionally grown produce. However, 21.2 percent indicated that they did not know which was better. The overall mean of 2.876 exhibits that consumers rate organics to be somewhat better than conventional produce.

Consumer rankings for factor importance in organic produce purchasing decisions shown in Table 16 were very similar to those for food in general (Table 8). However, the importance rankings of healthfulness and safety did increase for the organic purchase decision case, but not for the environmental effects factor. Organic certification was added for Table 16, but consumers ranked certification to be higher than just where grown and brand name.

Table 15

Consumer Overall Rating Of Organically Grown Produce Compared to Conventionally Grown Produce, Delmarva 1990

Levels of comparison	N	Percent
1 (much better)	203	19.3
2	151	14.4
3	166	15.8
4	217	20.6
5	52	4.9
6	23	2.2
7 (much worse)	16	1.5
Do not know	223	21.2
Missing	14	
TOTAL	1,065	100.0

MEAN = 2.876

Source: Consumer mail survey and calculations

Table 16

Consumer Rating of Factor Importance If They Were to Buy Organic Produce, Delmarva 1990

Factors	Mean[a]	Std Deviation
Freshness	1.421	0.77
Healthfulness	1.599	0.99
Flavor	1.644	0.95
Safety	1.676	1.14
Nutrition	1.677	1.05
Appearance	2.145	1.36
Price	2.267	1.51
Environmental effect	2.402	1.63
Certification	2.570	1.82
Where grown	3.757	2.10
Brand name	4.403	1.94

a/ 1=very important and 7=very unimportant

Source: Consumer mail survey and calculations

Twenty percent of the respondents indicated that they do not know whether they regularly purchase organic produce; 12.3 percent classified themselves as regular consumers (Table 17).

Table 17

Consumers Who Regularly Buy Organically Grown Produce, Delmarva 1990

Answer	N	Percent
Yes	128	12.3
No	703	67.7
Don't know	208	20.0
Missing	26	
TOTAL	1,065	100.0

Source: Consumer mail survey and calculations

Of consumers who do not plan to buy organic produce, 54.4 percent said they have never bought or do not know if they have ever bought organic produce.

The dominant reason consumers stopped buying organic produce was availability, with a frequency of 78.0 percent (Table 19). Time required to find organics and higher price were also significant reasons at 44.5 and 42.8 percent respectively. Appearance, quality, freshness, and flavor were only occasionally given as reasons.

Table 18

Organic Purchase Experience of Consumers Who Do Not Plan to Buy Organics, Delmarva 1990

Answer	N	Percent
Yes	408	45.6
No	204	22.8
Don't know	283	31.6
Missing	42	
TOTAL	1,065	100.0

Source: Consumer mail survey and calculations

Table 19

Why Consumers Stopped Purchasing Organically Grown Produce, Delmarva 1990

Reason	N	Percent
Availability	312	78.0
Time required for search	178	44.5
Price	171	42.8
Appearance	48	12.0
Quality	47	11.8
Freshness	46	11.5
Flavor	35	8.8

Source: Consumer mail survey and calculations

Availability was selected by 75.8 percent of respondents, who have never bought organics, as a reason for not purchasing organic produce (Table 20). Price was chosen by 31.8 percent, and 24.2 percent said that organic produce was not any better than conventional produce. Consumers, who do not know for sure if they have ever purchased organics ranked their reasons similarly to those who have never bought organics (Table 21).

Table 20

Consumer Reasons for Never Purchasing Organically Grown Produce, Delmarva 1990

Reason	N	Percent
Availability	150	75.8
Price	63	31.8
Not any better	48	24.2
Time	17	8.6
Freshness	14	7.1
Quality standards	13	6.6
Appearance	12	6.1

Source: Consumer mail survey and calculations

Table 21

Consumer Reasons for Not Purchasing Organically Grown if They Do Not Know Whether They Have Purchased, Delmarva 1990

Reason	N	Percent
Availability	138	71.1
Price	43	22.2
Not any better	23	11.9
Time	15	7.7
Appearance	15	7.7
Freshness	12	6.2
Quality standards	11	5.7

Source: Consumer mail survey and calculations

Sixty-nine percent of the respondents felt that organic produce would cost more than conventional produce, while only 14.3 percent felt it would cost less (Table 22). The mean of 5.096 reflects the overall feeling that organics would cost somewhat higher than conventional produce, which is consistent with earlier findings.

Table 22

Consumer Comparison of Organic Produce Cost Versus Conventional Produce, Delmarva 1990

Cost comparison	N	Percent
1 (much lower)	38	3.7
2	36	3.5
3	72	7.1
4	169	16.6
5	244	24.0
6	243	23.9
7 (much higher)	214	21.1
Missing	49	
TOTAL	1,065	100.0

MEAN = 5.096

Source: Consumer mail survey and calculations

Consumers were divided relatively even on their likelihood to purchase higher-priced organic produce (Table 23). Those who do not buy organics but have, were also evenly divided (Table 23a), while only 30.4 percent of consumers who do not know if they have bought organics expressed a positive likelihood to buy the higher-priced organics (Table 23b). Expectedly, 76.6 percent of regular organic produce consumers exhibited a positive likelihood to buy higher-priced organics (Table 23c). However, 25.5 percent of consumers who have never bought organics recorded a positive purchase likelihood (Table 23d).

Table 23

Overall Consumer Likelihood to Buy Higher Priced Organic Produce, Delmarva 1990

Shopping likelihood	N	Percent
1 (very likely)	113	10.9
2	122	11.8
3	178	17.2
4	213	20.6
5	152	14.7
6	116	11.2
7 (very unlikely)	138	13.4
Missing	33	
TOTAL	1,065	100.0

MEAN = 4.036

Source: Consumer mail survey and calculations

Table 23a

Consumers Who Have But Do Not Plan To Buy Organic Produce-- Likelihood to Buy Higher Priced Organic Produce, Delmarva 1990

Shopping likelihood	N	Percent
1 (very likely)	41	10.0
2	56	13.7
3	75	18.4
4	82	20.1
5	64	15.7
6	41	10.0
7 (very unlikely)	49	12.0
Missing	0	
TOTAL	408	100.0

MEAN = 3.958

Source: Consumer mail survey and calculations

Table 23b

Consumers Who Do Not Know If They Have Bought Organic Produce-- Likelihood to Buy Higher Priced Organic Produce, Delmarva 1990

Shopping likelihood	N	Percent
1 (very likely)	16	5.8
2	24	8.7
3	44	15.9
4	70	25.3
5	55	19.9
6	34	12.3
7 (very unlikely)	34	12.3
Missing	6	
TOTAL	283	100.0

MEAN = 4.306

Source: Consumer mail survey and calculations

Table 23c

Consumers Who Regularly Purchase Organic Produce-- Likelihood to Buy Higher Priced Organic Produce, Delmarva 1990

Shopping likelihood	N	Percent
1 (very likely)	36	28.1
2	29	22.7
3	33	25.8
4	21	16.4
5	3	2.3
6	5	3.9
7 (very unlikely)	1	0.8
Missing	0	
TOTAL	128	100.0

MEAN = 2.570

Source: Consumer mail survey and calculations

Table 23d

Consumers Who Have Never Bought Organic Produce--Likelihood to Buy Higher Priced Organic Produce, Delmarva 1990

Shopping likelihood	N	Percent
1 (very likely)	19	9.5
2	12	6.0
3	20	10.0
4	38	18.9
5	28	13.9
6	33	16.4
7 (very unlikely)	51	25.4
Missing	3	
TOTAL	204	100.0

MEAN = 4.726

Source: Consumer mail survey and calculations

Supermarkets were the preferred place to buy organics, with 84.7 percent of the respondents indicating they would shop regularly and only 3.8 percent would never purchase there (Table 24). The majority of consumers would also buy regu-

larly at a roadside stand or grow their own. Frequencies of respondents who would never buy organics at a cooperative food store, an organic food store, or a health food store were 57.8, 62.6, and 61.6 percent respectively.

Table 24

Where Consumers Would Shop For Organic Produce if Available, Delmarva 1990

Outlet	Regularly	Occasionally	Never	Total
		Percent		
Supermarket	84.7	11.6	3.8	100.0
Roadside stand	67.8	20.4	11.8	100.0
Own garden	50.3	8.8	41.0	100.0
Farmers market	49.5	25.8	24.7	100.0
Pick-your-own	32.4	22.1	45.6	100.0
Cooperative food	19.4	22.8	57.8	100.0
Organic food	15.6	21.8	62.6	100.0
Health food	12.9	25.5	61.6	100.0

Source: Consumer mail survey and calculations

To be sure that produce is organically grown, 50.4 percent would look at the label; 26.9 percent would not check at all (Table 25). The store owner's word would suffice for 21.4 percent and an Organic Farmers Association (OFA) label would be enough assurance for 40.8 percent.

Table 25

Consumer Assurance Methods That Produce is Organically Grown, Delmarva 1990

Method	N	Percent
Look at label	507	50.4
Look for OFA label[a]	410	40.8
Take store owner's word	215	21.4
Would not check at all	270	26.9
Other	63	6.3

a/ Organic Farmers Association

Source: Consumer mail survey and calculations

Approximately seventy percent of the surveyed households indicated that nobody consumes organic produce and 17.1 percent indicated that the entire household regularly does (Table 26). There were no major differences between household percentages of yourself, children where present, and spouses where present.

Table 26

Household Members Who Regularly Consume Organic Produce, Delmarva 1990

Members	N	Percent
Nobody	765	74.3
Yourself	210	20.4
Children	75	20.3
Spouse	150	19.0
Entire household	176	17.1
Other	26	2.5

Source: Consumer mail survey and calculations

There was no real change in organic purchases from 1989-1990, according to Table 27. While 11.8 percent indicated a decrease in organic purchases, 13.7 percent reported an increase.

Table 27

Consumer Changes in Organic Purchases For the Past Year, Delmarva 1990

Levels of change	N	Percent
1 (strongly increased)	30	3.1
2	27	2.7
3	78	7.9
4	251	25.5
5	56	5.7
6	26	2.6
7 (strongly decreased)	34	3.5
Did not buy	481	48.9
Missing	82	
TOTAL	1,065	100.0

MEAN = 3.978

Source: Consumer mail survey and calculations

Table 28

Consumer Ratings for Different Types of Organic Produce, Delmarva 1990

Organic Type	Quality	Appearance	Flavor	Fresh-Ness	Avail-ability	Price
			Mean			
Fresh vegetables	2.08	2.39	2.13	2.14	4.46	4.07
Fresh fruit	2.19	2.48	2.15	2.24	4.42	4.09
Processed vegetables	2.75	2.81	2.89	3.02	3.75	4.16
Processed fruit	2.78	2.78	2.81	3.03	4.17	3.76

* 1 = Very satisfied 7 = Very dissatisfied

Source: Consumer mail survey and calculations

Table 29

Consumer Belief Likelihood for Produce Risk Statements by Groups, Delmarva 1990

	Definitely believe						Definitely not believe
Group	1	2	3	4	5	6	7
				Percent			
University scientists (Mean = 2.63)	20.6	33.2	23.6	14.0	4.3	2.5	1.8
Public health officials (Mean = 3.21)	13.6	22.7	24.3	21.0	9.1	5.2	4.1
Environmental groups (Mean = 3.45)	14.6	18.9	22.5	17.2	11.4	8.8	6.6
Federal agencies (Mean = 3.69)	9.3	17.4	21.8	23.5	11.7	7.6	8.7
Public interest groups (Mean = 3.74)	11.9	16.1	18.9	21.6	13.3	7.8	10.5
News media (Mean = 4.56)	3.4	7.0	14.9	27.6	15.1	16.5	15.5
Health food store owners (Mean = 4.58)	3.1	8.9	14.2	24.4	16.5	16.5	16.5

Source: Consumer mail survey and calculations

Consumers displayed that they were somewhat satisfied to satisfied with quality, appearance, flavor, and freshness of fresh and processed organic produce (Table 28). They were indifferent to somewhat dissatisfied with the availability and price of organics. Thus, consumer reluctance to buy organic produce might be a function of price and availability, as opposed to the quality of the organic produce.

Consumers rated university scientists overall as the group they would most likely believe in reference to statements of produce safety risk, with a mean of 2.63 (Table 29). The news media and health food store owners were the only groups rated that consumers may tend not to believe in general.

A respondent percentage of 63.6 percent registered a positive likelihood to shop at a store which offers guaranteed pesticide residue-free (PRF) even if the produce prices were higher (Table 30). The mean of 3.194 reflects that consumers overall are somewhat likely to shop at these types of stores.

Table 30

Consumer Likelihood to Shop
At Supermarkets Where Produce is Guaranteed
To be Pesticide Residue-Free
Even if Produce Prices are Higher,
Delmarva 1990

Shopping likelihood	N	Percent
1 (very likely)	200	19.7
2	198	19.5
3	247	24.4
4	163	16.1
5	65	6.4
6	58	5.7
7 (very unlikely)	82	8.1
Missing	52	
TOTAL	1,065	100.0

MEAN = 3.194

Source: Consumer mail survey and calculations

Ninety-five percent of the surveyed consumers want society to have at least as much control over how food is made, with 34.5 percent indicating control should be strongly increased (Table 31). Only 5 percent expressed that society control should be reduced. This is a strong indication that the public feels the government should play a more active role in regulating the food industry.

Table 31

Consumer Perception for the Change
In the Degree of Control
Society Should Have Over Food Production
And Processing, Delmarva 1990

Control change	N	Percent
1 (increased)	348	34.5
2	218	21.6
3	219	21.7
4	174	17.2
5	29	2.9
6	9	0.9
7 (decreased)	12	1.2
Missing	56	
TOTAL	1,065	100.0

MEAN = 2.398

Source: Consumer mail survey and calculations

Conclusions and Recommendations

Consumers are both interested in food-related issues and concerned about government policy and regulations concerning food, feeling that society should have more control over production and processing. Pesticide residues are the highest rated concern for food safety, with a majority of consumers believing that food quality and safety must be improved to avoid jeopardizing the future health of society. Freshness, flavor, and nutrition are the three key factors that influence consumer purchasing decisions, while safety and healthfulness are considered to be more important than price. For the most part, consumers feel flavor and healthfulness have not declined for fresh produce over the past five years. Tradi-

tionally, successes in fresh produce marketing rely on freshness and flavor as well as increasing nutritional awareness. The study suggests that the importance of these factors continues. Thus, using safety as a marketing strategy will only be successful if the consumer is content with the freshness, flavor, and nutritional aspects of the product.

Females are clearly more likely to be current organic produce purchasers than their male counterparts, while education has a negative effect on regular organic purchases. Currently, approximately one out of eight people regularly purchase organic produce, while consumers are not sure if their produce purchases are organic, or not, *with advancing age and increasing education reducing this uncertainty. Higher education levels increase the probability that consumers have purchased organics in the past but do not plan to do so in the future.* Availability is the major reason consumers have either stopped buying or have never bought organic produce. Price, time required to search out organics, and not realizing any benefits from organics were other important reasons for not currently buying.

Importance of price in purchasing decisions for organic produce was not ranked any differently than from food in general. Consumers do tend to feel that organic produce would cost somewhat more than conventionally grown produce and demonstrate an overall dissatisfaction with organic price and availability. As a whole, respondents exhibited satisfaction with the quality, appearance, flavor, and freshness of fresh organic fruits and vegetables. Quality aspects were infrequently cited as a reason for not currently purchasing organics. Thus, availability and price appear to be the only significant deterrents to organic sales. Further, the majority of consumers desire to purchase organics at mainstream supermarkets or familiar roadside stands.

Pesticide residues were the highest rated concern compared to other risk characteristics, *but the concern levels decline from the effects of males, consumers with at least a bachelor's degree, and higher income households.* Assessments of produce risks made by the academic community resulted in the highest levels of consumer confidence.

Food safety is a valid food marketing strategy. With today's food distribution system, flavor and freshness of food products are readily available to retailers. Naturally, price can often be an effective marketing strategy, but the margins for supermarkets are traditionally considered narrow. Hence, supermarkets must seek out other strategies to differentiate their stores from the competition. In the recent past, stores have successfully used nutrition as a method of differentiation, but most supermarket chains already offer a larger produce section and nutritional information. Based on this study, food safety would appear to be the next logical step. Some consumers have expressed a willingness to pay more for what they perceive to be safer produce and to shop at stores offering this commodity. However, supermarkets are their strong location preference, suggesting that sales growth of organic produce would be possible. Pesticide residues are of high consumer concern, but they are evidently not high enough to motivate most consumers to search out organic produce.

Recommendations

Government Agencies

Significant portions of the study sample exhibited uncertainty as to whether they purchase organically or not, indicating a lack of knowledge of what is contained in the produce they eat. This uncertainty is often associated with lower education levels. Since higher education levels seem more knowledgeable and less concerned, a possible assumption could be that current dissemination of information and risks may be too technical for lower educated individuals. Government agencies should strive to inform this public sector more effectively. University scientists could play a helpful role by distributing their research findings to the general public in an understandable format. Often, university scientists seem content in just sharing their findings with each other.

Growers

With increasing land pressures driving up land values, Delmarva growers should be interested in increasing their returns per acre. Produce traditionally is a higher return crop than small grains; whereas, organic produce should offer even higher possible returns. However, many organic farms are only 10 to 20 acres. If this should also be the scenario for Delmarva, then growers should consider forming some type of marketing cooperative, since most supermarkets will not buy from small individual producers. Further, government agencies are already tightening regulations on pesticide use and give no appearance of slowing this process down. As fewer pesticides are available for grower use, some organic practices will surely reenter the agricultural production system. Familiarity and experience with these practices can only better prepare the grower for the future.

Retailers

Supermarkets need to consider organic produce in the same manner that they would consider most new product introductions. Organic produce is not a whole new product line, but rather a new product that needs to be positioned side by side with its competition. Supermarkets need to involve the services of a reputable supplier that can assist the store in determining which available types of organic produce will meet the consumer's price and quality requirements. Handling organic produce should be evaluated as a consumer service and on its incremental contribution to the whole store, not as a stand-alone profit center.

Consumers

This sector holds the ultimate power in the market system. If the store fails to meet a consumer's realistic needs, then the consumer can take their spending dollar elsewhere. Consumers indicated that organic produce was hard to find in the supermarket. Thus, the availability of at least of the popular organic produce item could satisfy consumer needs.

Endnotes

[1]NFO Research, Inc., Results of pesticide attitude study conducted for the National Agricultural Chemicals Association, Toledo, Ohio, June (1989).

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[6]Mejia, John, "Less Is More In Organics." *Supermarket News*. July 23 (1990), pp. 36-37.

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