

**Executive Summary for
LISA Project Grant Titled:**

Marketability of Low-Input Agricultural Produce

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Executive Summary: Marketability of Low-Input Agricultural Produce

Introduction

Many growers of fresh produce appear to be hesitant to adopt LISA methods. In large part, this stems from a concern about the marketability of their products. With lowered inputs, growers expect that product quality will not compare favorably with produce raised by conventional methods. Therefore, these growers question whether consumers will find low-input fresh produce acceptable.

This study is the first part of a planned investigation into how low-input fresh produce might best be marketed. Through focus group interviews and a mail questionnaire we sought to identify fundamental patterns in consumer attitudes and buying behavior which would be the basis for developing a model LISA marketing strategy.

Focus Group Interviews

Focus group interviews were used to identify some of the factors important in determining consumer preferences in the selection and purchase of fruits and vegetables. One outcome of the focus group interviews was the development of a list of choice criteria. One striking finding was the high level of concern among consumers about pesticide residue on produce; this concern was raised by shoppers in response to the general question "What are some of the things you think about when you shop for fruits and vegetables?" Finally, consumers expressed concern over the lack of nutritional information about produce at the point of purchase and contrasted this sharply with the case for packaged foods. These concerns of consumers were then further explored in a county-wide mail survey.

Consumer Survey

A mail questionnaire was used to survey consumers in Somerset County, New Jersey (the location of our farmer-cooperator test markets). Although the mail sample (1200) was randomly selected, it was constrained to include only those who were responsible for the actual purchase of product for themselves (and their families). Prior to mailing, the questionnaire protocol was pretested for question comprehensibility on a small sample of consumers. The questionnaire was designed to measure the following:

- * Importance of choice criteria (derived from focus group interviews) in purchase decisions.
- * Current produce shopping behavior (store usage) and information needs.
- * Perceptions of environmental and health risks of agricultural chemicals.
- * Attitudes toward alternative farming methods, the use of agricultural chemicals, and the organization of US agriculture.
- * Relevant demographic and psychographic characteristics.

Summary of important findings

The survey was designed to identify patterns in consumer attitudes and buying behavior relevant to promoting fresh produce from farms adopting LISA methods. This report summarizes the data concerning those factors most important to consumers when they select product and data concerning the behavior of consumers who altered their shopping behavior as a consequence of the Alar controversy.

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The questionnaire asked respondents to circle the five most important factors (from a list of 20) that determined their choices when shopping for fruits and vegetables. The five top ranked factors were freshness (60.4% of the sample), taste/ flavor (42.2%), absence of pesticides (36.1%), price (31.7%), and cleanliness (30.4%). These findings were consistent with the focus group data and were supported by the scaled ratings of each factor's importance in the purchase decision (scale values: 0 = not at all important to 6 = very important). The means for the top five factors follow: freshness (M = 5.73), taste/ flavor (M = 5.68), cleanliness (M = 5.29), health value (M = 5.13), and absence of pesticides (M = 5.12).

Other important findings emerged from our analyses of the differences between consumers who altered their shopping habits in some way in response to the publicized concerns over the use of Alar and those who did not. For example, those who changed their behavior were more generally interested in information regarding vitamin content, pesticide residue, and ripening techniques; they were also more frequent shoppers in health food stores (a popular location for "organic" product in this market). These consumers also viewed agricultural chemicals as posing greater risks to individual health and the environment.

Clearly, pesticides are considered an important concern in consumers decisions regarding fresh produce. As shown in the example regarding our "Alar" groups the data we have collected will shed light on how different groups of consumers go about making decisions when they shop for fruits and vegetables. Additional analyses are planned which will break down the sample along demographic and psychographic dimensions and will attempt to relate these to differences in attitudes and shopping behaviors.

Where will it lead?

Future work should continue research on the marketability of low-input fresh produce which began under LISA funding. The present findings should be extended through the use of larger regional and national survey panels. The goal should be to evaluate alternative marketing strategies for farmers in order to develop promotional materials and a market segmentation strategy. In addition, educational efforts aimed at consumers should be explored.

How will it be used?

The marketability of LISA products, other than organic produce, has not been addressed by previous research. This is due in part to the limited number of farmers currently using these methods and to the diversity of production techniques encompassed within LISA. Our data will be used to improve the marketing of LISA products in the following ways. Summaries of the survey results will be circulated to area farmers; this should help them understand their customers better and to develop more effective marketing strategies for LISA products. LISA products are at the pioneering stage of product life cycle, and consequently marketing approaches need to include education aimed at the "information needs" of each market segment. The survey results will help farmers segment the LISA market and identify consumer groups most interested in LISA products.

Section 1: Your Shopping Habits

We are interested in how consumers make choices when they purchase fruits and vegetables. We would like you to tell us how important each of the following characteristics is to you when you make decisions about what fruits and vegetables to buy. For example, if a characteristic is not important to you, circle the "0"; if it is moderately important, circle "3"; if it is very important, circle "6." Circle whichever number on the scale best represents how important you feel that characteristic is. Please circle only one number for each item.

	Not at all important		Moderately important		Very important		
	0	1	2	3	4	5	6
Naturally ripened.....	0	1	2	3	4	5	6
Freshness.....	0	1	2	3	4	5	6
In season.....	0	1	2	3	4	5	6
Cleanliness of produce.....	0	1	2	3	4	5	6
Ripeness.....	0	1	2	3	4	5	6
Price.....	0	1	2	3	4	5	6
Country of origin.....	0	1	2	3	4	5	6
Absence of preservatives.....	0	1	2	3	4	5	6
Produce loose in bin.....	0	1	2	3	4	5	6
Color.....	0	1	2	3	4	5	6
Health value.....	0	1	2	3	4	5	6
Visual appearance.....	0	1	2	3	4	5	6
Locally grown.....	0	1	2	3	4	5	6
Absence of pesticides.....	0	1	2	3	4	5	6
Taste/Flavor.....	0	1	2	3	4	5	6
Product labeling.....	0	1	2	3	4	5	6
Misting of produce with water.....	0	1	2	3	4	5	6
Absence of blemishes.....	0	1	2	3	4	5	6
Aroma.....	0	1	2	3	4	5	6

IMPORTANT

Now that you have rated each characteristic, please read through the above list again. Circle the five characteristics that are most important to you in deciding whether or not you will purchase a particular fruit or vegetable.

On the average, how often each week do you shop in each of the following stores?
(circle one response on the scale for each of the stores listed)

	A	B	C	D	E	F
Supermarkets	never	rarely	1/wk	2/wk	3/wk	3+/wk
Produce stores	never	rarely	1/wk	2/wk	3/wk	3+/wk
Seasonal farm stands/stores	never	rarely	1/wk	2/wk	3/wk	3+/wk
Year-round farm stands/stores	never	rarely	1/wk	2/wk	3/wk	3+/wk
Organic produce stores	never	rarely	1/wk	2/wk	3/wk	3+/wk
Health food stores	never	rarely	1/wk	2/wk	3/wk	3+/wk
Convenience stores	never	rarely	1/wk	2/wk	3/wk	3+/wk

If you had the following pieces of information when buying fruits and vegetables, how important would each item be in your decisions? If an item is not important to you, then circle the "0," if it is moderately important then circle "3," and if it is very important, then circle "6." Circle whichever single number on the scale best represents how important you feel that item is.

	Not at all important			Moderately important			Very important
Vitamin content	0	1	2	3	4	5	6
Pesticide residue.....	0	1	2	3	4	5	6
Growing area.....	0	1	2	3	4	5	6
Gas-ripened.....	0	1	2	3	4	5	6
Field-ripened.....	0	1	2	3	4	5	6
Harvest date.....	0	1	2	3	4	5	6

How confident are you that you are choosing the most healthful packaged foods when you shop? (Circle the number that best represents your confidence)

Not at all
confident

Moderately
confident

Very
confident

0

1

2

3

4

5

6

Do you read nutritional information while you are shopping for packaged food? (circle one)

YES

NO

Does nutritional information on food packages help you make better purchase decisions? (circle one)

YES

NO

Do you feel that you know as much as you would like to know about the nutritional value of packaged foods? (circle one)

YES

NO

How confident are you that you are choosing the most healthful fruits and vegetables when you shop?

Not at all
confident

Moderately
confident

Very
confident

0

1

2

3

4

5

6

Does nutritional information about fruits and vegetables help you make better purchase decisions? (circle one)

YES

NO

Do you feel that you know as much as you would like to know about the nutritional value of different fruits and vegetables? (circle one)

YES

NO

Is nutritional information about fruits and vegetables available in the store where you purchase most of your fruits and vegetables? (circle one)

YES

NO

• If your answer to the last question was no:

Would you read this kind of information while shopping for fruits and vegetables if it were available?

YES

NO

• If your answer to the last question was yes:

Do you read this information while shopping for fruits and vegetables?

YES

NO

Section 2: Your Perceptions of Environmental and Health Risks

The following are types of chemicals often used in agricultural production. We would like you to tell us your personal impression of the risks associated with each chemical listed below. **Don't worry about whether or not you know very much about any of these chemicals-- it is your personal opinions and impressions that we are interested in.** Please rate how risky you think each is to individual health and how risky you think each is for the environment. For example, if you think a chemical is not at all risky, then circle the "0." If you think it is moderately risky, then circle "3." If you think it is very risky, then circle "6." Circle whichever single number on the scale best represents how risky you feel that item is.

Pesticides in general

	Not at all risky		Moderately risky			Very risky	
Health Risk.....	0	1	2	3	4	5	6
Environmental Risk.....	0	1	2	3	4	5	6

Herbicides (substances that control weeds)

	Not at all risky		Moderately risky			Very risky	
Health Risk.....	0	1	2	3	4	5	6
Environmental Risk.....	0	1	2	3	4	5	6

Antibiotics (to control bacteria in plants and farm animals)

	Not at all risky		Moderately risky			Very risky	
Health Risk.....	0	1	2	3	4	5	6
Environmental Risk.....	0	1	2	3	4	5	6

Fungicides (substances that control fungus)

	Not at all risky		Moderately risky			Very risky	
Health Risk.....	0	1	2	3	4	5	6
Environmental Risk.....	0	1	2	3	4	5	6

Insecticides (substances that control insects)

	Not at all risky		Moderately risky			Very risky	
Health Risk.....	0	1	2	3	4	5	6
Environmental Risk.....	0	1	2	3	4	5	6

Fertilizers

	Not at all risky		Moderately risky			Very risky	
Health Risk.....	0	1	2	3	4	5	6
Environmental Risk.....	0	1	2	3	4	5	6

The products people buy can have a negative effect on their health; this could be due to the product itself, and/or the way it was grown. The preparation, growth, and/or manufacture of products and their byproducts can also harm the environment. We would like you to tell us your perceptions of the risks associated with each of the following:

Fruits

	Not at all risky		Moderately risky			Very risky	
Health Risk.....	0	1	2	3	4	5	6
Environmental Risk.....	0	1	2	3	4	5	6

Vegetables

	Not at all risky		Moderately risky			Very risky	
Health Risk.....	0	1	2	3	4	5	6
Environmental Risk.....	0	1	2	3	4	5	6

Alcoholic Beverages

	Not at all risky		Moderately risky			Very risky	
Health Risk.....	0	1	2	3	4	5	6
Environmental Risk.....	0	1	2	3	4	5	6

Dairy Products

	Not at all risky		Moderately risky			Very risky	
Health Risk.....	0	1	2	3	4	5	6
Environmental Risk.....	0	1	2	3	4	5	6

Red Meats

	Not at all risky		Moderately risky			Very risky	
Health Risk.....	0	1	2	3	4	5	6
Environmental Risk.....	0	1	2	3	4	5	6

Fish

	Not at all risky		Moderately risky			Very risky	
Health Risk.....	0	1	2	3	4	5	6
Environmental Risk.....	0	1	2	3	4	5	6

Shellfish

	Not at all risky		Moderately risky			Very risky	
Health Risk.....	0	1	2	3	4	5	6
Environmental Risk.....	0	1	2	3	4	5	6

Poultry Products

	Not at all risky		Moderately risky				Very risky
Health Risk.....	0	1	2	3	4	5	6
Environmental Risk.....	0	1	2	3	4	5	6

Oils and Fats Used in Cooking/Baking

	Not at all risky		Moderately risky				Very risky
Health Risk.....	0	1	2	3	4	5	6
Environmental Risk.....	0	1	2	3	4	5	6

Over-the-Counter Medications

	Not at all risky		Moderately risky				Very risky
Health Risk.....	0	1	2	3	4	5	6
Environmental Risk.....	0	1	2	3	4	5	6

**Personal Care Products
(e.g. deodorants, shampoos, soaps)**

	Not at all risky		Moderately risky				Very risky
Health Risk.....	0	1	2	3	4	5	6
Environmental Risk.....	0	1	2	3	4	5	6

Laundry Products

	Not at all risky		Moderately risky				Very risky
Health Risk.....	0	1	2	3	4	5	6
Environmental Risk.....	0	1	2	3	4	5	6

Section 3: Your Opinions

For the following items, please indicate the extent to which you agree or disagree with each statement. Circle the number which best represents your opinion on each issue. For example, if you strongly agree with a statement, circle a "1"; if you strongly disagree with a statement, circle a "7." If you neither agree nor disagree with the statement, you would circle "4." Please do not circle more than one number for each statement. Please answer each question as best you can, even if an issue is relatively unfamiliar to you.

	Agree		Neither agree nor disagree		Disagree
U.S. consumers would be better served by a large-scale, centralized food production system.....	1	2	3	4	5 6 7
The U.S. government should help small local farmers stay in business.....	1	2	3	4	5 6 7
There is basically no difference between organically grown fruits and vegetables and other types of produce.....	1	2	3	4	5 6 7
The health benefits associated with organic produce are great.....	1	2	3	4	5 6 7
Government food safeguards are generally adequate to protect public health.....	1	2	3	4	5 6 7
The use of synthetic chemicals in agriculture has a negative effect on the environment.....	1	2	3	4	5 6 7
U.S. farmers should use production methods that reduce the amount of fertilizers used.....	1	2	3	4	5 6 7
Produce grown in the U.S. is healthier than produce imported from other countries.....	1	2	3	4	5 6 7
I would buy organic produce if it were more readily available.....	1	2	3	4	5 6 7
U.S. farmers should use production methods that reduce the amount of pesticides used.....	1	2	3	4	5 6 7
I am confident that the experts know enough about the long-term health effects of pesticide residues on produce.....	1	2	3	4	5 6 7
The use of synthetic chemicals in agriculture has a negative effect on consumers' health.....	1	2	3	4	5 6 7

	Agree		Neither agree nor disagree		Disagree	
If pesticides were not used to the degree they are now, the produce supply would drop.....	1	2	3	4	5	6 7
If pesticides were not used to the degree they are now, produce prices would <u>increase</u>	1	2	3	4	5	6 7
If pesticides were not used to the degree they are now, produce prices would <u>decrease</u>	1	2	3	4	5	6 7
If pesticides were not used to the degree they are now, produce would be more healthful.....	1	2	3	4	5	6 7
If pesticides were not used to the degree they are now, the visual appearance of our produce would be worse.....	1	2	3	4	5	6 7
If pesticides were not used to the degree they are now, the quality of our produce would be about the same as now.....	1	2	3	4	5	6 7
Farmers are too ready to apply pesticides, often when there is no immediate need.....	1	2	3	4	5	6 7

Consumers reacted in a variety of ways to the recent controversy regarding the use of Alar in apples and apple products. Please place a check mark next to the response that best describes your own response to the Alar situation.

- stopped buying apples/apple juice
- decreased consumption of apples/apple juice
- did not change buying or eating habits

Why do you think some produce growers follow "organic" practices while others rely on conventional methods? (Write in your answer in the space below.)

Section 4: Your Personal Background

Age Sex (circle one) Male Female

Which of the following **best** represents your level of education?
(Please circle **only one** response)

1	2	3	4	5	6	7	8	9
Some Grade School	Grade School Graduate	Some High School	High School Graduate	Some College	College Graduate	Some Graduate School	Masters Degree	Doctoral Degree

Which of the following **best** describes your current occupation?
(Please circle **only one** response)

1	2	3	4	5	6	7	8
Retired	Homemaker	Laborer/ Service Employee	Machine Operator/ Skilled Laborer	Craftsman/ Foreman	Clerical/ Sales	Manager/ Proprietor	Professional/ Technical

Household income (Please circle one)

1	2	3	4	5	6
Less than \$9,999	\$10,000 to \$19,999	\$20,000 to \$29,999	\$30,000 to \$39,999	\$40,000 to \$49,999	More than \$50,000

Which of the following best describes your marital status?
(Please circle one)

1	2	3	4	5	6
Single	Married	Separated	Divorced	Widower(d)	Other _____

Including yourself, how many people do you usually buy groceries for each week? (Please enter the appropriate number in the space provided)

Do you purchase groceries for children in your household? (Please circle one)

YES NO

Which of the following **best** describes the neighborhood in which you live? (Please circle one)

Rural Suburban Urban

How many times in the last month have you done each of the following?
(Please circle **one and only one** number for each of the activities listed)

Rented and viewed a videotape.....	0	1	2	3	4	5 or more
Went to the movies.....	0	1	2	3	4	5 or more
Attended a dance.....	0	1	2	3	4	5 or more
Attended a musical concert.....	0	1	2	3	4	5 or more
Attended the theater to see a play.....	0	1	2	3	4	5 or more
Attended the theater to see a dance performance.....	0	1	2	3	4	5 or more
Attended an opera.....	0	1	2	3	4	5 or more

Please circle all of the following publications that you read and/or buy often or on a regular basis. (Circle as many as applicable)

- | | |
|-------------------------------|-------------------------|
| 1. Time | 9. Newsweek |
| 2. Life | 10. New Jersey Goodlife |
| 3. New Jersey Monthly | 11. New Jersey Outdoors |
| 4. Somerset Messenger Gazette | 12. Hunterdon Democrat |
| 5. Star Ledger | 13. Home News |
| 6. Courier News | 14. New York Times |
| 7. Wall Street Journal | 15. New York Post |
| 8. Daily News | |

Other newspapers _____

Other magazines _____

Which of the following **best** characterizes your personal political orientation? (Please circle one)

Conservative Moderate Liberal

How are you registered as a voter? (Please circle one)

Democrat Republican Independent Not registered

Focus Group Interview Protocol

1. What are some of the things you think about when you shop for fruits and vegetables?

As discussion develops consumers should be asked to prioritize items.

2. What specific features or qualities do you look for when you shop for fruits and vegetables?

Ask consumers to prioritize benefits.

Probe top two items:

Why is <FEATURE> important to you?

3. What specific features or qualities do you try to avoid when you shop for fruits and vegetables?

Ask consumers to prioritize benefits.

Probe top two items:

Why is <RISK> important to you?

4. Do you feel that you know as much as you would like to know about fruits and vegetables?

Probe: What other things would you like to know about?

5. What are some of the good and bad things you associate with different stores where you might buy fruits and vegetables?

Probe to ensure coverage of stores of interest: supermarkets, farm stands, fruit/vegetable stores, health-food stores.

6. How do you feel about the use of pesticides and fertilizers by farmers?

7. Considering the use of pesticides and fertilizers. Do you feel there is any real difference between the fruits and vegetables sold at different stores?

Probe to ensure coverage of stores of interest: supermarkets, farm stands, fruit/vegetable stores, health-food stores.

8. Explain IPM, Organic, and Traditional methods and as consumers about their preferences.

- Traditional methods for growing fruits and vegetables have farmers apply pesticides and fertilizers on a pre-set schedule. One result of these methods is that the same amounts of pesticide are used in years when insect populations are low as in years when the populations are high.

- True organic methods do not involve the use of pesticides and only organic fertilizer, such as manure and compost, are used. One result these methods is that the yield per acre tends to be lower because of the loss due to various pests.

- With low-input (LISA) methods farmers monitor their soils and insect populations and apply fertilizers and pesticides only according to need. One result of these methods is that in years when insect populations are low little, or no, pesticides are applied. Pesticides are used in years when insect populations are high.

As a consumer, which of these methods do you feel is preferable?

9. One consequence of organic methods is that fruits and vegetables typically cost more for consumers mainly because of the lower yield. LISA products should cost about the same, or even a bit more, than fruits and vegetables grown by traditional methods. Given these differences in price, which types of fruits and vegetables would you be most interested in buying.