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Preliminary Results of a Customer Intercept Survey of Ohio Food Consumers: Willingness to Pay for Locally Produced Foods

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Preliminary Results of a Customer Intercept Survey of Ohio Food Consumers: Willingness to Pay for Locally Produced Foods

This paper reports preliminary results of a consumer-intercept survey administered by The Ohio State University.[1] Shoppers at a variety of farm markets[2], farmers' markets and retail grocery stores were identified at random to answer a structured questionnaire with the goal of better understanding consumer preferences for fresh produce, specifically berries. Identifying consumer's attitudes toward, and willingness to pay for, various characteristics of produce provides valuable information on which to base marketing decisions. Explicit labeling of certain characteristics potentially adds value through product differentiation. Price premiums for locally-grown, organic, Ohio-proud, family-farm and pesticide free characteristics will be discussed.

Survey methods

During the period August - November 2005, researchers interviewed shoppers at 16 locations. These included six farm markets, four farmers' markets, and six retail grocery stores. One of the grocery stores was located in a small town, three were in suburban locations in the Columbus area, and two were urban Columbus stores. Two graduate students visited each market/store. They randomly selected consumers, asked for their participation, and verified that each participant was 18 years of age or older. Participants were advised that their participation was voluntary and their responses were anonymous: at no time did researchers ask participants their names or other identifying information. After completing a choice experiment generated on a laptop computer, the customers were given a paper and pencil survey. The response rate varied by store/market and time of day. On average, about 50% of those approached complied.

Reported in Table 1 are descriptive statistics for the sample of 472 consumers. Mean age of consumers interviewed was 49.3 years. Nearly 72 percent were female, and most (87%) identified themselves as the primary food shopper in the household. The average household size was 2.6 people. Just over 32 percent of households had children aged 19 or younger. Our respondents were more highly educated than average Ohioans – 51.1 percent had bachelor's, graduate or professional degrees, and another 30.6 percent had some college or an associate's degree.

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[1] This research is part of a project entitled *An Extended-Season Berry Production and Marketing System to Enhance Viability of Small Appalachian Farms and Rural Communities.* This project, funded by the USDA, CSREES, National Research Competitive Grants Program, studies the potential impacts on small farms and rural communities of widespread adoption of a full-season system of berry production. For more information about the project, visit our web page at: http://aede.osu.edu/programs/VanBuren/SmallFarmsAndCommunities/Index.htm.

[2] Throughout this report, we will refer to farm markets as a market (on farm, roadside, or in a local community) operated by a single owner, and farmers' markets as a collective market (e.g., the Columbus North Market) where many vendors will sell produce and other products.

Table 1. Consumer sample demographics.

Attribute		N or Percent
Number of respondents		472
Mean age of respondent (years)		49.3
Gender - percent female		71.7
Percent who are primary food shopper		86.9
Number in household:		2.6
Percent of households with members by age group:		
	Under 5 years	7.8
	5-9 years	10.9
	10-14 years	12.0
	15-19 years	16.2
	20-34 years	27.7
	35-54 years	49.0
	55-69 years	35.0
	70 years or older	15.1
Percent by education class		
	No high school diploma	2.8
	High school graduate (or equivalency)	15.5
	Some college, no degree	23.4
	Associate degree	7.2
	Bachelor's degree	31.2
	Graduate or Professional degree	19.9

Table 2. Race distribution by percentage.

Race	Survey	Ohio*	U.S.*
White	91.1	86.1	69.7
Black/African Amer.	4.2	11.5	12.3
Asian/Asian Amer.	2.7	1.2	3.9
Native American	0.9	0.2	0.7
Hispanic/Latino	0.7	1.9	13.2
Mixed/Other	0.4	1.4	0.1

*2002 U.S. Census

Table 2 shows the sample to be similar in racial distribution to the general Ohio population. Below-average sampling of Black/African Americans and above average responses from both Asian and Native American populations reflects customer base of the locations in which the consumer intercepts occurred. Table 3 compares the income distribution of the sample to that of Ohio's general population. The low representation of the lower income category and over-representation in the middle categories can either be explained by the clientele the stores attract or the area in which the stores are located. Mean and median household income were 82,082 and 62,500, respectively. Most (67.9%) of those interviewed reported that they lived in a city or suburb (Table 4). Nearly 19 percent reported living in a small town, and the remaining 15.6 percent were rural residents or farmers.

Table 3. Household income distribution by percentage.

Household income range	Survey	Ohio*
Less than $25,000	10.67	26.21
25,000 - 49,999	22.97	19.58
50,000 - 74,999	23.20	11.11
75,000 - 99,999	17.87	8.85
100,000 - 149,999	15.78	12.49
150,000 - 174,999	3.48	
More than 175,000	6.03	3.1
Mean	82,082	
Median	62,500	

Table 4. Respondent by place of residence.

Percent by place of residence	Percent
City	24.7
Suburb	43.2
Small Town	18.7
Countryside	10.6
Farm	5.0

The typical consumer reported spending $102.81 per week on groceries (Table 5), considerably below the average Ohio grocery bill of $144.94 reported by the 2002 Census. Weekly produce purchases ranged from $0 to $185, with a mean of $28.65. Shoppers at farm or farmers' markets reported a statistically significant smaller amount per week for food than did grocery store shoppers ($96 and $111, respectively). However, there was no statistically significant difference in the amount spent weekly for produce ($29).

Table 5. Household monthly expenditures for food and produce

	Mean	Minimum	Maximum
Household weekly expenditure for food	102.81	5	400
Household weekly expenditure for produce	28.65	0	185

Customer preferences

Asked to rate the top three reasons they bought locally grown foods, 87.5 percent of those surveyed cited *freshness*, with 57.5 percent of those calling that attribute the most important reason they buy such products (Table 6). *Support of local businesses* ranked second with more than 70 percent citing this as one of the three most important reasons to purchase locally produced foods. In fact, when combined with a closely related option -- *support of the regional economy* -- these motives were cited by 76.9 percent of consumers as one of the three most important reasons to purchase locally grown foods. The third ranked motive was *taste*, cited by 63 percent of the consumers as one of the three most important reasons to buy locally. *Nutrition, safety*, and *direct connection with food source* were less often mentioned as reasons to buy locally produced foods.

The rightmost two columns of Table 6 report the total response (cited as one of the three most important characteristics) for consumers at farm or farmers' markets (Direct Markets) and shoppers interviewed at grocery stores. For the most part, there were no significant differences in the mean responses for these two groups. However, those interviewed at direct markets were more likely to indicate that product taste was an important attribute, but surprisingly, that support of the regional economy was less often cited as an important motive than by traditional grocery shoppers.

Table 6. Reasons Respondents Buy Locally Grown Food.

	Percent citing as				Totals by Market Type	
	Most Important	2nd Most Important	3rd Most Important	Total	Direct Market	Grocery
Freshness	57.49	24.34	9.31	87.47	86.52	88.73
Taste	17.40	34.29	11.31	62.56	69.23	53.61 ***
Nutrition	3.52	7.08	10.64	21.15	21.54	20.62
Safety	3.30	2.88	4.66	10.79	10.00	11.86
Support local businesses	12.78	22.79	35.25	70.48	70.00	71.13
Support regional economy	1.32	5.75	14.86	21.81	16.54	28.87 ***
Connect w/ food source	4.19	2.88	13.97	20.93	22.69	18.56

* One, two and three asterisks indicate a difference of the means for the two groups that is significantly different from zero at the 0.10, 0.05, or 0.01 probability levels, respectively.

The next question asked about other food characteristics that were important to the consumer. This question was phrased more broadly, intending to capture shopping behavior not just for fruits and vegetables, but for all food products. The text of the question read: *In general, when you purchase food at the grocery store, how would you rate the importance of the following characteristics in your decision?* Rating options ranged from Not Important to Very Important. Results for these questions are reported in Table 7. Not surprisingly, taste and price topped the list of important traits in food selection. Notably, ease of preparation was the third ranked attribute, suggesting that convenience is importance in food selection. Two health-related items ranked highly – low in trans-fats, and low cholesterol. Product Branding was only average in importance. Interestingly, the *Heart-Smart* symbol was not very important to this group of consumers. Also near the bottom of the list by importance were products labeled as organic and low calorie.

Also included in Table 7 is a ranking of responses by various sample subgroups. All groups ranked product taste/quality and price as the most important attributes. Interestingly, those with greater household incomes ranked taste/quality higher (p=0.10) and price lower (p=0.01) than their lower income counterparts, thus suggesting that the higher income consumer is more willing to trade higher price for higher quality. A comparison of consumers in direct markets and grocery stores shows several significant differences in their evaluations: Direct market shoppers are less concerned with ease of preparation and the levels of trans-fats, fats, cholesterol, sodium and calories, but more concerned that the food be organic than are those in the grocery store sample. Higher income shoppers indicated lesser importance for foods labeled as natural or *Heart-Smart* than their lower income counterparts. Comparison of the consumers by age group yield several statistically significant differences. Older consumers were more concerned about the food trans-fats, fats, cholesterol, sodium, and calorie levels, valued more highly foods bearing the *Heart-Smart* label, and placed more importance on product brand, but indicated less value to organic and natural product designations. Those consumers with higher levels of formal education ranked taste/quality significantly higher than did consumers with less education. They also gave less importance to ease of preparation, convenience of packaging, and presence of the *Heart-Smart* label, but placed more value on lower levels of trans-fats.

Table 7. Characteristics rated as important in food purchase decisions

	Total	*Market type*		*Household Income*		*Age*		*Education Level*	
	Mean*	Direct Market	Grocery	< 50,000	≥ 50,000	< 45	> 45	High School	Post-H. S.
Taste/quality (from past experience)	2.57	2.57	2.57	2.51	2.62 *	2.61	2.55	2.45	2.60 **
Price	1.91	1.91	1.90	2.10	1.82 ***	1.99	1.87	2.02	1.89
Ease of preparation	1.62	1.50	1.78 ***	1.66	1.63	1.63	1.63	1.79	1.60 *
Low trans-fats	1.55	1.48	1.64 *	1.46	1.56	1.30	1.66 ***	1.31	1.61 **
Low-cholesterol	1.36	1.27	1.46 **	1.37	1.31	1.03	1.51 ***	1.27	1.37
Low-fat	1.23	1.12	1.37 ***	1.24	1.22	1.00	1.35 ***	1.17	1.24
Low-sodium	1.20	1.11	1.32 **	1.21	1.19	0.85	1.40 ***	1.19	1.22
Labeled as natural	1.17	1.23	1.09	1.28	1.10 *	1.31	1.08 **	1.17	1.17
Brand	1.17	1.14	1.21	1.10	1.15	0.93	1.28 ***	1.29	1.13
Convenience of packaging	1.09	1.04	1.16	1.14	1.06	0.95	1.16 **	1.30	1.05 **
Low calorie	1.07	0.96	1.22 ***	1.05	1.09	0.95	1.15 **	1.04	1.08
Labeled as organic	1.04	1.14	0.90 ***	1.13	0.97	1.16	0.97 *	0.94	1.06
Labeled as Heart-Smart	0.96	0.92	1.01	1.07	0.87 **	0.75	1.05 ***	1.14	0.91 **

a The question read "In general, when you purchase food of any type at the grocery store, how would you rate the importance of the following characteristics in your decision? ".

*Not important=0, Somewhat Important=1, Important=2, very important=3

Table 8 gives average responses to a number of attitudinal questions, both for the full sample and for various subgroups. In general, consumers did not feel that it was more expensive to buy produce from farmers' markets than from grocery stores -- the mean response (-0.44) fell between neutral and disagree on the response scale. High income consumers displayed a stronger disagreement (p=0.01) with this question. For the statement -- *the foods available in my local grocery are* safe -- the average consumer response fell between neutral and agree. On average, grocery store shoppers were more confident in grocery food safety than those frequenting direct markets. When expressed as a statement of food safety relative to the past (*food is not as safe as it was 10 years ago*), the average response was near neutral, but direct market shoppers, lower income shoppers and less educated shoppers were more likely to agree with this statement. There were similar response patterns for two additional questions on food safety -- *foods purchased directly from farmers is safer than from grocery stores* and *pesticides pose a health threat to consumers of fruits and vegetables*. Lastly, one statement addressed potential health benefits of fresh produce -- *eating fresh produce (fruit and vegetables) reduces the risk of cancer and heart disease*. The mean response (1.36) was between agree and strongly agree on the response scale. Those with post high school education levels gave significantly higher agreement scores that those with lesser educations.

Customer Willingness to Pay (WTP)

A payment card method was used to estimate consumers' willingness to pay for several food characteristics including local production. Consumers were presented with the purchase of a hypothetical fresh strawberry product. Specifically, they were asked: *Assuming strawberries are priced at $3.00 per quart carton at your local grocery store, how much more (if any) would you be willing to pay for each of the following characteristics?* The lower value of the price premium range indicated is interpreted as the minimum willingness to pay for that characteristic. Five characteristics were identified, and eight payment levels were offered, including an option to pay zero additional for the characteristic. The largest premium category was an open-ended range - more than $1.50 premium per quart. A complete listing of the food characteristics (in the same sequence as presented in the survey), and price ranges are listed in figure 1.

Assuming strawberries are priced at $3.00 per 1 quart carton at your local grocery store, how much more (if any) would you be willing to pay for each of the following characteristics (Please ***select one*** *amount in each row)?*

	Cents per one-quart carton							
Characteristic	None	1-9	10-24	25-49	50-74	75-99	100-149	more than 150
Pesticide free	☐	☐	☐	☐	☐	☐	☐	☐
Organic	☐	☐	☐	☐	☐	☐	☐	☐
Locally grown	☐	☐	☐	☐	☐	☐	☐	☐
Grown on a family farm	☐	☐	☐	☐	☐	☐	☐	☐
Displays the *Ohio Proud* symbol	☐	☐	☐	☐	☐	☐	☐	☐

Figure 1. Payment Card Question to Assess Consumer Willingness to Pay for Various Food Attributes

Pesticide free strawberries displayed the largest mean willingness to pay (WTP), at $0.32 per quart of berries. *Locally grown,* and *grown on a family farm* had somewhat smaller mean WTPs. The *Ohio Proud* program, intended to signal food grown or processed in Ohio, displayed a mean WTP of only 19 cents per quart.

Again, there were statistically significant differences in how various groups valued these product attributes. For instance, consumers interviewed in a direct market format expressed larger WTPs for pesticide free, organic, locally grown and produce grown on a family farm. There were no observed differences by level of household income, but older consumers were not willing to pay as large a premium as younger consumers for pesticide free and organic produce. Consumers with greater formal education were willing to pay about a dime per quart more for organic produce than those with lesser formal education.

Summary and Conclusions

This study represents our first attempt to quantify Ohio consumer demand for locally produced for food products. It includes data for both *traditional* grocery shoppers (with consumers from city-center, suburban, and rural stores) and shoppers of farm and farmers' markets. These preliminary results show that there are important differences both in consumer attitudes toward how and where food is produced and their willingness to pay for these differences. This information may be useful to target advertising or to design more effective product labels and point-of-sale merchandising materials. It may also assist farmers or merchants to decide if product differentiation will generate sufficient additional return to cover costs.

Research in this area will continue, as will research addressing the impacts on rural communities and small farms of an expanded berry industry. We invite you to periodically check our project web site (http://aede.osu.edu/programs/VanBuren/SmallFarmsAndCommunities/Index.htm) for new materials as they are released.

Table 8. Consumer attitudes to statements regarding food health, safety and cost.[a]

		Market type				*Household Income*				*Age*				*Education*		
	Full Sample	Direct Market	Grocery		< 50,000	≥ 50,000		< 45	> 45			High School or less	Post High School			
Fresh produce at farmer's markets is generally much more expensive than at the grocery store	-0.44	-0.40	-0.50		-0.20	-0.60	***	-0.41	-0.47			-0.30	-0.46			
The foods available at my local grocery are safe	0.36	0.16	0.63	***	0.32	0.42		0.34	0.38			0.35	0.37			
It is important that fruits and vegetables are attractive and free of blemishes	0.75	0.59	0.98	***	0.80	0.71		0.54	0.86	***		0.93	0.71	*		
Food is not as safe as it was 10 years ago	0.09	0.21	-0.07	***	0.35	-0.08	***	0.14	0.06			0.44	0.00	***		
Eating fresh produce (fruit and vegetables) reduces the risk of cancer and heart disease	1.36	1.33	1.39		1.28	1.39		1.34	1.38			1.18	1.40	***		
Food purchased directly from farmers is safer than from grocery stores	0.22	0.43	-0.07	***	0.31	0.14	*	0.37	0.14	***		0.36	0.19	*		
Pesticides pose a health threat to consumers of fruits and vegetables	1.03	1.11	0.92	**	1.14	0.95	**	1.07	1.01			1.06	1.02			

a Responses are scored as Strongly disagree=-2, Disagree=-1 Undecided/Neutral=0, Agree=1, Strongly Agree=2
* One, two and three asterisks indicate statistically significant differences of the means at the 0.10, 0.05, and 0.01 probability levels, respectively

Table 9. Consumer Mean Minimum Willing to Pay for selected food characteristics. (One Quart Strawberry Product)

	Mean WTP								
		Market type		*Household Income*		*Age*		*Education*	
	Total Sample	Direct Market	Grocery	< 50,000	≥ 50,000	< 45	> 45	High School or less	Post High School
Pesticide free	0.32	0.36	0.26 **	0.32	0.34	0.38	0.30 *	0.26	0.34
Organic	0.24	0.28	0.19 ***	0.23	0.26	0.33	0.21 ***	0.17	0.27 **
Locally grown	0.31	0.34	0.27 **	0.28	0.34	0.33	0.31	0.26	0.33
Grown on a family farm	0.30	0.33	0.26 *	0.28	0.32	0.32	0.30	0.28	0.31
Displays the *Ohio Proud* symbol	0.19	0.18	0.19	0.18	0.20	0.18	0.20	0.17	0.19

* One, two and three asterisks indicate a difference of the means for the two groups that is significantly different from zero at the 0.10, 0.05, or 0.01 probability levels, respectively.