Comparing Consumer Preferences for Locally Grown and Certified Organic Produce in the Mid-Atlantic Region of the United States

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SUMMARY. Two separate surveys were administered (17–19 Nov. 2008 and 7–10 Apr. 2009) to consumers residing in five metropolitan areas in the mid-Atlantic region of the United States (1710 for Survey 1 and 1518 for Survey 2) to investigate and compare consumer stated preferences toward locally grown and certified organic produce. In Survey 1, participants were asked to indicate whether they agreed that purchasing locally grown produce was more important than purchasing organically grown produce. In addition, they were asked to report whether locally grown and certified organic were factors in their produce purchasing decision. Compared with their counterparts (each demographic examined independently), White/Anglos, Asian Americans, and those aged 25 years and older agreed that purchasing locally grown produce was more important than purchasing organically grown produce. A greater percentage of participants aged 37 years and older (average of 65%) and 66% of White/Anglo participants selected “produce was grown in my local area.” In addition, a greater percentage of participants aged between 21 and 64 years (average of 32%) and 48% of Asian Americans selected “produce was grown using ‘certified’ organic methods,” compared with their counterparts. In Survey 2, participants were presented with six pairwise comparisons and asked to indicate their stated preference between each of the two options, which included combinations of “locally grown,” “not locally grown,” “certified organic,” and “not certified organic.” Stated preference for locally grown produce was highest among the following participant groups (each group examined independently): those aged 37 years and older, White/Anglo participants, those without children living in their household, females, and participants with income levels \$25,000 and greater. In addition, stated preference for certified organic was highest among the following groups (again, each group examined independently): those aged between 21 and 36 years; Black/African Americans, Asian Americans, and Hispanic Americans; those with children living in their household; females; and participants with income levels of \$25,000 and greater. Produce industry members in the U.S. mid-Atlantic region (e.g., farmers, distributors, retail store owners, restaurateurs, agricultural extension personnel) can incorporate this research into marketing plans, purchasing decisions, or educational or applied research programs as appropriate.

Consumer interest in purchasing locally grown and certified organic produce has remained strong. Market data support this, with sales for local food predicted to rise from \$4 billion in 2002 to \$7 billion by 2011 [U.S. Department of Agriculture (USDA), 2009a], whereas sales of organic produce reached \$9.5 billion in 2009 (Supermarket News, 2010). This suggests that current demand for local and organic food still comprises less than 2% of total U.S. food sales, with estimates based on total food expenditures in the United States in 2009 approaching \$1.2 trillion (USDA, 2010). Consumers have

also expressed a willingness to pay a premium for locally grown (Bond et al., 2006; Darby et al., 2006) and certified organic products (Bean, 2008; Bernard and Bernard, 2010; ScienceDaily, 2009; USDA, 2009b). Consumers have shown a willingness to pay a premium for locally grown produce because they desired to improve their health and that of their families, the environment, and their local economies (The Hartman Group, 2007; USDA, 2009b). In addition, common reasons for purchasing and/or paying a premium for certified organic foods included animal welfare concerns (USDA, 2009b) as well as

food safety, taste, and interest in new foods (Dettmann and Dimitri, 2010). Finally, those seeking produce that is locally grown, certified organic, or both did so to gain an authentic, high-quality, and unique food experience (The Hartman Group, 2008).

To improve marketing strategies of locally grown and/or certified organic produce, and to promote local farmers and food businesses, researchers and those in the produce industry have expressed interest in quantifying consumer purchasing behavior and attitudes toward locally grown and certified organic food products (Berlin et al., 2009; Rutberg, 2008; ScienceDaily, 2009). There have been several studies conducted that show consumers prefer locally produced foods over those that are certified organic. In one study, 48% of consumers gave a favorable response to locally grown, whereas 26% gave the same response to certified organic (Supermarket News, 2008). This relative stated preference for locally grown over certified organic was also found in research conducted in New England (Berlin et al., 2009), Colorado (Loureiro and Hine, 2002), and Minnesota (ScienceDaily, 2009).

Other studies indicated that consumers equally preferred local and organic. In the Minnesota study described earlier, although consumers exhibited a stated preference for locally grown over certified organic products, their willingness to pay for organic produce was about the same as for locally grown produce. In addition, a national survey indicated that 44% of consumers reported being equally attracted to locally grown and organic products (Rutberg, 2008). Another national survey indicated that those consumers who had a stated preference were equally split between locally grown and certified organic (Progressive Grocer, 2007). A regional survey also showed that Ohio and Kentucky consumers' likelihood of purchasing a value-added processed product, if it was certified organic, was relatively equal to that of purchasing the same product if it was produced within the state (Batte et al., 2010).

Research also indicates that these stated preferences may vary between demographic groups. Studies examining these stated preferences

separately found that older consumers were most likely to prefer and/or purchase locally grown products (Bean, 2008), as well as females and individuals with higher household income levels (Jekanowski et al., 2000). In addition, consumers with families (Organic Trade Association, 2009); Black/African American, Asian and Hispanic Americans (Dettmann and Dimitri, 2010; The Hartman Group, 2006); consumers with higher income levels (Dimitri and Oberholtzer, 2009; House et al., 2010); and younger consumers (Dimitri and Oberholtzer, 2009) were most likely to select and/or purchase organic products. However, the study by Bean (2008) showed that older consumers, not younger, were the most supportive of certified organic food, and also that female consumers were not the most supportive. In another study conducted on consumers from four states in the U.S. mid-Atlantic region, a higher mean age, lower education, higher income, presence of children in the household, and being male had a positive effect on willingness to pay for products with organic attributes (Bernard and Bernard, 2010). In addition, other research shows that race, presence of children in the household, and income level do not have a consistent effect on the likelihood of buying organic food products (Dimitri and Oberholtzer, 2009).

The current literature reveals comparisons of locally grown produce or products, or both, to those that are certified organic, but none compare consumer stated preferences for produce that are certified organic, locally grown, or both, or have neither of these attributes. This creates

four groups of produce types to compare: both locally grown and certified organic, neither locally grown nor certified organic, locally grown only, and certified organic only. Information detailing relative stated preferences for locally grown and certified organic produce among consumers in the U.S. mid-Atlantic region would benefit produce industry members in this region who grow, source, or sell locally grown produce, certified organic produce, or both. Determining if consumers differ on stated preferences based on demographic groups would also be helpful in developing strategies for marketing these types of produce to specific segments.

The objective of this study was to determine if locally grown and certified organic are decision factors for purchasing produce and to compare stated preferences for produce that is either 1) locally grown or 2) certified organic, 3) both locally grown and certified organic, or 4) neither locally grown nor certified organic. The study also seeks to determine if consumer demographics are a factor in explaining these stated preferences.

Materials and methods

Data were collected through questions pertaining to attitudes and stated preferences toward locally grown and certified organic food products in two separate 15-min Internet surveys (17–19 Nov. 2008 and 7–10 Apr. 2009) developed using SurveyMonkey (Palo Alto, CA). The surveys were created to examine primary household food shopper attitudes toward a variety of specialty crops and food products. Questions in each survey addressed several topics within specialty crop and food product marketing. These topics were split into multiple surveys to limit survey length to 15 min and to get a sense of specific trends in attitudes over time. Trends in the results of preceding surveys were also used to develop questions for following surveys to further examine exhibited trends.

For each survey, participants were randomly selected from a specified panel of participants residing in targeted metropolitan areas managed by Survey Sampling International (Shelton, CT). Survey Sampling International is a worldwide leader provider of sampling, data collection, and

data analytic solutions for survey research, with a combined 50 years of sampling expertise that includes over a decade of experience creating and managing online sampling panels across 28 countries. Each survey was administered to consumers (1710 for Survey 1 and 1518 for Survey 2) residing in five metropolitan areas in the U.S. mid-Atlantic region (Richmond, VA; Baltimore, MD; Washington, DC; New York, NY; and Philadelphia, PA). Metropolitan areas were defined using the Metropolitan Statistical Areas (MSAs) geographic entities for use by Federal statistical agencies (U.S. Census Bureau, n.d.). Panelists were determined to be included in a particular metropolitan area according to the MSAs in which they resided. Surveys were pre-tested on a subset ($N = 100$) of the target consumer population before full deployment.

Panelists received an electronic consent statement along with a link to the survey, approved by the Office of Research Protections at The Pennsylvania State University (University Park). Panelists were screened for being at least 21 years of age (as questions about alcohol products and consumption were asked) and also if they were the primary shopper for their household. Questions focused on determining if locally grown or certified organic were important factors in purchasing produce, whether consumers placed more importance on one factor over another, and if consumers exhibited relative preferences for different combinations of these factors.

STATISTICAL ANALYSIS. Survey data were analyzed with SPSS (versions 17, 18, and 19; IBM Corp., Armonk, NY). To assess differences between responses across demographic groups (Table 1), Pearson's χ^2 test and Phi and Cramer's V test were used to analyze responses for categorical questions, multiple-choice questions, or both, and Kruskal–Wallis and Mann–Whitney U tests for Likert scale questions.

Results

Summary statistics from our data from the two surveys are summarized in Table 1, which displays the number and percentage of responses within the five demographic categories (age, gender, presence of children in the

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household, income, and ethnicity) and all related subgroupings.

IMPORTANCE OF PURCHASING LOCALLY GROWN OR CERTIFIED ORGANIC PRODUCE. In Survey 1, participants were asked to indicate, on a Likert scale from 1 (strongly disagree) to 7 (strongly agree), their level of agreement with the following statement: “Purchasing locally grown fruit and/or vegetables is more important than purchasing certified organic fruit and/or vegetables.” In Surveys 1 and 2, respondents were instructed that local was according to their own definition (it was relative) when answering these questions. Locally grown, in itself, is relative, so for our purposes it was important to study consumer stated preferences for what they perceived locally grown to be. Average response for participants, overall, was a mean rating of 5.2, falling between “somewhat agree,” 5.0, and “agree” 6.0. Analyses of responses segmented by demographic groups (e.g., age group, metropolitan area of residence, and gender) indicated significant differences within age and ethnic groups.

COMPARISONS ACROSS DEMOGRAPHIC GROUPS. Concerning participant age, mean response for those aged between 21 and 24 years to the question “purchasing locally grown produce is more important than purchasing certified organic” was significantly lower than responses of all other age groups (Table 2). In addition, participants describing themselves as White/Anglo and Asian American exhibited significantly higher mean responses than those describing themselves as Black/African American and Hispanic American (Table 3).

LOCALLY GROWN AND CERTIFIED ORGANIC AS FACTORS FOR PURCHASING PRODUCE. In Survey 1, participants were provided a list of factors and from this list were asked to indicate what influenced them when choosing and purchasing produce for the household (they were able to select as many as were applicable). Sixty-three percent of participants selected “produce was grown in my local area,” whereas only 28% selected “produce was grown using ‘certified’ organic methods.” Again, statistically significant differences were observed between age (Table 2) and ethnic groups (Table 3).

COMPARISONS ACROSS DEMOGRAPHIC GROUPS. A greater percentage of participants aged 37 years and older selected “produce was grown in my local area” compared with participants aged between 21

and 24 years. A smaller percentage of those aged 65 years and older selected “produce was grown using ‘certified’ organic methods” compared with participants aged between 21 and 64 years (across subcategories,

Table 1. Description of participant characteristics according to age group, gender, presence of children in household, annual income level, and ethnic group of Survey 1 (17–19 Nov. 2008) and Survey 2 (7–10 Apr. 2009) administered to consumers residing in metropolitan areas of the U.S. mid-Atlantic region (e.g., Philadelphia, PA; New York, NY).

	Survey	
	Survey 1 [no. (%)]	Survey 2 [no. (%)]
Age group (years)		
21–24	98 (6)	95 (6)
25–36	281 (18)	237 (14)
37–48	422 (27)	404 (24)
49–64	619 (40)	800 (46)
≥65	142 (9)	169 (10)
Total	1562 (100)	1705 (100)
Gender		
Male	312 (20)	326 (19)
Female	1241 (80)	1370 (81)
Total	1553 (100)	1696 (100)
Presence of children in household		
Without children	994 (64)	1140 (67)
With children	558 (36)	555 (33)
Total	1552 (100)	1695 (100)
Annual income level		
<\$25,000	207 (13)	246 (15)
\$25,000–\$49,999	421 (27)	490 (29)
\$50,000–\$74,999	332 (22)	411 (25)
\$75,000–\$99,999	261 (17)	226 (14)
≥\$100,000	323 (21)	298 (17)
Total	1544 (100)	1671 (100)
Ethnic group		
White/Anglo	1265 (81)	1349 (82)
Black/African American	170 (11)	210 (13)
Asian American	41 (4)	40 (2)
Hispanic American	50 (4)	42 (3)
Total	1526 (100)	1641 (100)

Table 2. Mean Survey 1 participant response, segmented by age group, to the statement “purchasing locally grown produce is more important than purchasing certified organic produce,” and percentage of Survey 1 participants who selected locally grown and certified organic as factors when choosing and purchasing produce for themselves and their households.

	Age group (years)				
	21–24	25–36	37–48	49–64	≥65
Purchasing locally grown produce is more important than purchasing certified organic produce	4.8 b ^y	5.2 a	5.3 a	5.2 a	5.3 a
Factors considered when purchasing produce	Valid percentages				
Locally grown	47 c ^x	57 bc	63 ab	67 a	64 ab
Certified organic	38 a	39 a	25 b	26 b	14 c

^x1 = strongly disagree and 7 = strongly agree.

^yWithin each age group (row), a different letter indicates a significant difference via Mann–Whitney *U* test at $P \leq 0.05$.

^xWithin each age group (row), a different letter indicates a significant difference via Pearson’s χ^2 test at $P \leq 0.05$.

Table 2). When responses were segmented by ethnic group (Table 3), a greater percentage of White/Anglo participants selected “produce was grown in my local area” compared with participants from all other ethnic groups. Conversely, a greater percentage of Asian American participants selected “produce was grown using

‘certified’ organic methods” compared to White/Anglo participants.

**C O M P A R I N G S T A T E D
P R E F E R E N C E S F O R “ L O C A L L Y G R O W N
O N L Y . ” T O “ C E R T I F I E D O R G A N I C
O N L Y . ”** When participants were asked if they would prefer locally grown produce or certified organic produce in Survey 2 (Table 4, Comparison 5),

the majority of participants selected the option “locally grown” (71%). When stated preferences were examined between demographic groups, statistically significant differences were found across age groups and ethnic groups, and between individuals with and without children living in the household.

**C O M P A R I S O N S A C R O S S
D E M O G R A P H I C G R O U P S .** Groups that were more likely to select the “locally grown only” option were those aged 37 years and older compared with those aged 21 to 36 years (across subcategories) (Table 5), White/Anglo participants compared with those from all other ethnic groups (Table 6), and those without children in the household compared with those with children in the household (Table 7).

**S T A T E D R E L A T I V E P R E F E R E N C E S
F O R C H A R A C T E R I S T I C S O F L O C A L L Y
G R O W N A N D C E R T I F I E D O R G A N I C .** In Survey 2, participants were asked to select an option (Option A vs. Option B) from each of the six pairwise comparisons regarding their stated preference for locally grown and organically grown fruits, vegetables, or both (Table 4). Each option contained a pairing of two of four possible factors—“locally grown,” “certified organic,” “not locally grown,” and “not certified organic.” For example, in Comparison 1, both options were locally grown but only Option A was also certified organic (In Option A, “locally grown” was paired with “certified organic” while in Option B “locally grown” was paired with “not certified organic.”). In Comparison 2, both options were certified organic,

Table 3. Mean Survey 1 participant response, segmented by ethnic group, to the statement “purchasing locally grown produce is more important than purchasing certified organic produce,” and percentage of Survey 1 participants who selected locally grown and certified organic as factors when choosing and purchasing produce for themselves and their households.

	Ethnic group ^z			
	White	Black/African	Asian	Hispanic
Purchasing locally grown is more important than purchasing certified organic produce	5.3 a ^x	Likert scores (1–7 scale) ^y		
		4.9 b	5.5 a	4.8 b
Factors considered when purchasing produce	Valid percentages			
Locally grown	66 a ^w	48 b	43 b	41 b
Certified organic	26 b	31 ab	48 a	39 ab

^zEthnic groups are abbreviated in this table as follows: White = White/Anglo, Black/African = Black/African American, Asian = Asian American, Hispanic = Hispanic American.

^y1 = strongly disagree and 7 = strongly agree.

^xWithin each ethnic group (row), a different letter indicates a significant difference via Mann–Whitney *U* test at *P* ≤ 0.05.

^wWithin each ethnic group (row), a different letter indicates a significant difference via Pearson’s χ^2 test at *P* ≤ 0.05.

Table 4. The six pairwise comparisons presented to Survey 2 participants to indicate their preferences for pairings containing locally grown, certified organic, not locally grown, or not certified organic produce.

Comparisons	Option A		Option B	
	Locally grown	Certified organic	Locally grown	Certified organic
1	Yes	Yes	Yes	No
2	Yes	Yes	No	Yes
3	Yes	Yes	No	No
4	Yes	No	No	No
5	No	Yes	Yes	No
6	No	Yes	No	No

Table 5. Stated preferences for pairings containing locally grown, certified organic, not locally grown, or not certified organic produce of Survey 2 participants, segmented by age group.

Comparisons	Age group (years)				
	21–24	25–36	37–48	49–64	≥65
1. Selected certified organic (Option A) over conventional (Option B) given that both options included locally grown	85 a ^z	75 b	64 c	57 d	49 e
2. Selected locally grown (Option A) over not locally grown (Option B) given that both options included certified organic	86 ab	82 b	87 ab	89 a	82 b
3. Selected locally grown and certified organic (Option A) over not locally grown and conventional (Option B)	87 a	83 a	82 a	85 a	74 b
4. Selected locally grown (Option A) over not locally grown and conventional (Option B)	85 a	85 a	89 a	90 a	87 a
5. Selected locally grown (Option B) over certified organic (Option A)	54 c	61 c	70 b	75 ab	79 a
6. Selected certified organic (Option A) over not locally grown and conventional (Option B)	83 a	76 a	65 bc	68 b	60 c

^zWithin each age group (row), a different letter indicates a significant difference via Pearson’s χ^2 test at *P* ≤ 0.05.

Table 6. Stated preferences for pairings containing locally grown, certified organic, not locally grown, or not certified organic produce of Survey 2 participants, segmented by ethnic group.

Comparisons	Ethnic group ^a			
	White	Black/African	Asian	Hispanic
1. Selected certified organic (Option A) over conventional (Option B) given that both options included locally grown	59 b ^y	76 a	75 ab	82 a
2. Selected locally grown (Option A) over not locally grown (Option B) given that both options included certified organic	88 a	84 a	69 a	74 a
3. Selected locally grown and certified organic (Option A) over not locally grown and conventional (Option B)	84 a	84 a	78 a	72 a
4. Selected locally grown (Option A) over not locally grown and conventional (Option B)	90 a	87 ab	68 c	77 bc
5. Selected locally grown (Option B) over certified organic (Option A)	74 a	61 b	53 b	44 b
6. Selected certified organic (Option A) over not locally grown and conventional (Option B)	62 a	73 a	56 a	70 a

^aEthnic groups are abbreviated in this table as follows: White = White/Anglo, Black/African = Black/African American, Asian = Asian American, Hispanic = Hispanic American.

^yWithin each ethnic group (row), a different letter indicates a significant difference via Pearson's χ^2 test at $P \leq 0.05$.

but only Option A was locally grown. In Comparison 3, Option A included both locally grown and certified organic, and was compared with not locally grown and conventional (Option B). Comparisons 4 and 6 compared locally grown (Option A, Comparison 4) and certified organic (Option A, Comparison 6) to not locally grown and conventional (Option B). In Comparison 5, locally grown (A) was directly compared with Option B, certified organic (discussed in the Results section). Results from these six comparisons were used to assess consumers' relative stated preferences for 1) locally grown, whether certified organic or not, 2) certified organic, whether locally grown or not, and 3) certified organic and locally grown relative to options that have only one of these characteristics.

CONSUMERS' RELATIVE STATED PREFERENCES FOR LOCALLY GROWN PRODUCE, WHETHER CERTIFIED ORGANIC OR NOT (COMPARISONS 2 AND 4). For Comparison 2, both options included certified organic, while Option A was also locally grown and B was not. Overall, the majority of participants selected the option containing locally grown (Option A, 87%). Statistically different responses were found between age groups (Table 5), presence of children in the household (Table 7), gender (Table 8), and income levels (Table 9). Compared with participants aged between 25 and 36 years and aged 65 years and older, a greater percentage of those aged between 49 and 64 years selected Option A. In addition, a greater

Table 7. Stated preferences for pairings containing locally grown, certified organic, not locally grown, or not certified organic produce of Survey 2 participants, segmented by presence of children in household.

Comparisons	Presence of children in household	
	Without children	With children
1. Selected certified organic (Option A) over conventional (Option B) given that both options included locally grown	60 b ^z	66 a
2. Selected locally grown (Option A) over not locally grown (Option B) given that both options included certified organic	89 a	83 b
3. Selected locally grown and certified organic (Option A) over not locally grown and conventional (Option B)	83 a	82 a
4. Selected locally grown (Option A) over not locally grown and conventional (Option B)	90 a	85 b
5. Selected locally grown (Option B) over certified organic (Option A)	74 a	64 b
6. Selected certified organic (Option A) over not locally grown and conventional (Option B)	69 a	68 a

^zBetween participants with children present in the household and participants without children present in the household (row), a different letter indicates a significant difference via Pearson's χ^2 test at $P \leq 0.05$.

Table 8. Stated preferences for pairings containing locally grown, certified organic, not locally grown, or not certified organic produce of Survey 2 participants, segmented by gender.

Comparisons	Gender	
	Male	Female
1. Selected certified organic (Option A) over conventional (Option B) given that both options included locally grown	58 a ^z	63 a
2. Selected locally grown (Option A) over not locally grown (Option B) given that both options included certified organic	83 b	88 a
3. Selected locally grown and certified organic (Option A) over not locally grown and conventional (Option B)	73 b	85 a
4. Selected locally grown (Option A) over not locally grown and conventional (Option B)	84 b	90 a
5. Selected locally grown (Option B) over certified organic (Option A)	69 a	71 a
6. Selected certified organic (Option A) over not locally grown and conventional (Option B)	61 b	71 a

^zBetween genders (row), a different letter indicates a significant difference via Pearson's χ^2 test at $P \leq 0.05$.

Table 9. Stated preferences for pairings containing locally grown, certified organic, not locally grown, or not certified organic produce of Survey 2 participants, segmented by annual income level.

Comparisons	Annual income level				
	<\$25,000	\$25,000–\$49,999	\$50,000–\$74,999	\$75,000–\$99,999	≥\$100,000
1. Selected certified organic (Option A) over conventional (Option B) given that both options included locally grown	61 a ^c	60 a	65 a	58 a	67 a
2. Selected locally grown (Option A) over not locally grown (Option B) given that both options included certified organic	80 b	89 a	87 a	85 ab	90 a
3. Selected locally grown and certified organic (Option A) over not locally grown and conventional (Option B)	75 b	84 a	86 a	81 ab	85 a
4. Selected locally grown (Option A) over not locally grown and conventional (Option B)	83 b	87 b	89 b	94 a	90 ab
5. Selected locally grown (Option B) over certified organic (Option A)	63 a	74 a	73 a	72 a	69 a
6. Selected certified organic (Option A) over not locally grown and conventional (Option B)	62 b	66 ab	72 a	71 a	72 a

^cWithin each income level (row), a different letter indicates a significant difference via Pearson's χ^2 test at $P \leq 0.05$.

percentage of female participants selected Option A compared with male participants. This was also true when responses of those without children in the household were compared with those with children in the household. Finally, a greater percentage of participants with annual income levels of \$25,000 to \$74,999 (across subcategories) and \$100,000 and greater selected Option A (locally grown) compared with participants with an income level of less than \$25,000.

However, in Comparison 4, where participants had to choose either locally grown or not locally grown, given that both were conventional, participants selected locally grown (Option A, 89%). A statistically greater percentage of those describing themselves as White/Anglo selected this option, compared with Asian Americans and Hispanic Americans (Table 6). A statistically greater percentage of participants without children also selected locally grown (Option A) compared with those with children in the household (Table 7). Furthermore, a statistically greater percentage of participants with income levels of \$75,000 to \$99,999 selected locally grown (Option A) compared with those with annual income levels of \$74,999 or less (across subcategories) (Table 9). Lastly, a statistically greater percentage of females, compared with that of males, selected this option (Table 8).

CONSUMERS' RELATIVE STATED PREFERENCES FOR CERTIFIED ORGANIC PRODUCE, WHETHER LOCALLY GROWN OR NOT (COMPARISONS 1 AND 6). In Comparison 1, both options included locally grown, while Option A was also certified organic and B was conventional. Overall, the majority of participants selected Option A, certified organic (62%). Several statistical differences were detected across ethnic groups, age groups, and presence of children in the household. Specifically, Black/African American participants were more likely to select Option A compared with White/Anglo participants (Table 6). In addition, each age group's responses were significantly different from the other, with younger groups more likely to select Option A compared with older groups (Table 5). Those with children in the household were also more likely to select this option vs. participants without children in the household (Table 7).

Overall, in Comparison 6, in which certified organic was compared with conventional and where both were not locally grown, more participants selected certified organic, Option A (69%). Specifically, a significantly higher percentage of participants aged between 21 and 24 years, and 25 and 36 years, selected this option compared with participants aged 37 years and older (across subcategories, Table 5). In addition, a significantly higher percentage of participants

with income levels of \$50,000 or greater (across subcategories) selected Option A vs. participants with income levels of \$25,000 or less (Table 9). Finally, a statistically greater percentage of females selected Option A, certified organic, compared with males (Table 8).

CONSUMERS' RELATIVE STATED PREFERENCES FOR LOCALLY GROWN AND CERTIFIED ORGANIC PRODUCE, VS. ALL OTHER PAIRINGS (COMPARISONS 1, 2, AND 3). As explained in the results for Comparisons 1 and 2, where Option A included locally grown and certified organic were also paired together for Option A, this pairing was also preferred over locally grown alone, selected by 62% of participants, and over certified organic alone (87%). In Comparison 3, locally grown and certified organic were paired together and compared with not locally grown and conventional. Overall, the majority of participants preferred the option locally grown and certified organic (Option A, 83%).

For Comparison 3, a statistically greater percentage of participants with income levels of \$25,000 to \$74,999 (across subcategories) and \$100,000 or greater selected Option A, locally grown and certified organic, compared with participants with annual income levels of less than \$25,000 (Table 9). In addition, a statistically greater percentage of female participants also selected this

option compared with that of males (Table 8).

Discussion

Results suggest that consumers prefer produce to be both locally grown and certified organic when compared with options where the produce is neither locally grown nor certified organic. However, the stated preference for locally grown is stronger than the stated preference for certified organic. This is particularly encouraging to industry members, as the majority of surveyed consumers still sought out these items even though these purchases were made during the recessionary period, the same time consumers were surveyed (2008–10).

When segmented by demographic group (e.g., age range, ethnicity, education level), a clearer picture emerges with respect to the specific type of consumer with a stronger relative stated preference for local produce. Participants aged 37 years and older, those describing themselves as White/Anglo, those without children living in the household, females, and participants with income levels \$25,000 and greater exhibited a stronger stated preference for these options (each group examined independently). Those who exhibited a stronger relative stated preference for certified organic (each group examined independently) compared with their counterparts, included participants aged under 37 years, Black/African Americans, Asian Americans, and Hispanic Americans, participants with children living in the household, females, and participants with income levels \$25,000 and greater. Produce industry members in the U.S. mid-Atlantic region growing or selling locally grown produce, certified organic produce, or both, can take these stated preferences for locally grown and organic into account, as well as likely purchasers of these products, when deciding what consumer demographics to target when devising marketing strategies.

Although data from current national and regional literature is inconsistent in showing consumers' stated preferences for locally grown and/or certified organic produce or food products, studies indicate that consumers have an obvious stated preference for both types of

products and most indicate that consumers prefer locally grown products to certified organic (Loureiro and Hine, 2002; Rutberg, 2008; Science Daily, 2009; Supermarket News, 2008). Results from this study support these general findings. Other literature complement our findings that Black/African American, Asian, and Hispanic Americans were found to use more organic products (Dettmann and Dimitri, 2010; The Hartman Group, 2006) and that Caucasians were less likely to select an organic product compared to a conventional product (House et al., 2010). Consumers with children in the household and those with higher income levels were also found to express a higher willingness to pay for a product with organic attributes (Bernard and Bernard, 2010), whereas those with lower income levels were not as likely to select an organic product (House et al., 2010). Other literature showed that characteristics of "locally grown" buyers included consumers aged 37 years and older (Bean, 2008), as well as female consumers and those with higher household income levels (Jekanowski et al., 2000).

However, our research contradicts other findings, such as a 2009 marketing study conducted by the USDA which revealed that "race, presence of children in the household, and income, do not have a consistent effect on the likelihood of buying organic products" (Dimitri and Oberholtzer, 2009). A 2010 study also showed that males, older consumers, and those who were less educated were among those who expressed a higher willingness to pay for products with organic attributes (Bernard and Bernard, 2010). In addition, unlike our findings, Hispanic Americans and those under the age of 30 years were less likely to prefer an organic product over a conventional product (House et al., 2010). However, these studies analyzed willingness to pay and actual purchases of organic products while our research focused on examining consumer stated preferences. Bean (2008) also found that older consumers were supportive of certified organic food while female consumers were not. A possible explanation for the differences between results is the population that was surveyed, which may have included surveying participants from other regions of the

country or those living outside of metropolitan areas, participants with more rural backgrounds, or both. Individuals living in more rural areas may have better access to locally produced foods and/or are more likely to have farming backgrounds, thereby exhibiting potential differences in stated preferences for locally produced foods, certified organic foods, or both. The focus of future research should expand beyond major metropolitan areas in the U.S. mid-Atlantic region and include consumers from more rural areas to better understand stated preferences for locally grown and certified organic produce from a broader range of consumers.

The data presented here may serve as a guide for produce industry members within the U.S. mid-Atlantic region growing and/or selling produce. Producers, retail outlets, or both may choose to select produce that is locally grown and certified organic to offer to consumers, as the present data show that the majority prefer this produce over those that are not grown locally or are not certified organic. Producers and retail outlets could also use the data in developing marketing strategies to attract certain consumer segments which the data show most prefer locally grown produce, certified organic produce, or both. In addition, if industry members must choose to grow or stock one type of produce over the other, our data show that consumers prefer locally grown to certified organic.

Industry members (e.g., growers, retailers, extension personnel, government agencies, and associations) looking to incorporate new marketing strategies or educational programs based on the data presented here should note that only consumers who had access to a computer and the Internet were included in the surveys. However, as of 2009, individuals with this access include 77% of the U.S. population (U.S. Census Bureau, 2009). Still, because of some of the population without Internet access, online panels may over- or under-represent some demographics of actual populations. In addition, further investigation within these trends in stated preferences for locally grown and certified organic factors in produce is warranted to determine the existence of cross effects between demographic groups. Specifically, as this

was a preliminary investigation into consumer stated preferences for these factors, future studies can examine these factors based on willingness to pay for specific products that have locally grown, certified organic, or both as characteristics, as well as using statistical designs and tests that are not as limited as the ones used in this study (e.g., logit and probit models).

Industry members should also take into account that stated preferences for locally grown and certified organic produce may vary within different markets in the U.S. mid-Atlantic region, and although results from this study can be used as a guide for constructing new marketing strategies, these should nonetheless be tailored to consumers residing in targeted local areas.

Literature cited

- Batte, M.T., H. Wuyang, T. Woods, and S. Ernst. 2010. Do local production, organic certification, nutritional claims, and product branding pay in consumer food choices? *Proc. Annu. Mtg. Agr. Appl. Econ. Assn.* p. 1–21.
- Bean, M. 2008. Consumer support for local and organic foods in Ohio. Ohio State Univ., Columbus, PhD Diss.
- Berlin, L., W. Lockeretz, and R. Bell. 2009. Purchasing foods produced on organic, small and local farms: A mixed method analysis of New England consumers. *Renewable Agr. Food Systems* 24:267–275.
- Bernard, J.C. and D.J. Bernard. 2010. Comparing parts with the whole: Willingness to pay for pesticide-free, non-GM, and organic potatoes and sweet corn. *J. Agr. Resource Econ.* 35:457–475.
- Bond, J.K., D. Thilmany, and C.A. Bond. 2006. Direct marketing of fresh produce: Understanding consumer purchasing decisions. *Choices Mag.* 21:229–236.
- Darby, K., M.T. Batte, S. Ernst, and B. Roe. 2006. Willingness to pay for locally produced foods: A customer intercept study of direct market and grocery store shoppers. *Proc. Annu. Mtg. Agr. Appl. Econ. Assn.* p. 1–31.
- Dettmann, R. and C. Dimitri. 2010. Who's buying organic vegetables? Demographic characteristics of U.S. consumers. *J. Prod. Mktg.* 16:79–91.
- Dimitri, C. and L. Oberholtzer. 2009. Marketing U.S. organic foods: Recent trends from farms to consumers. U.S. Dept. Agr., Econ. Res. Serv., Econ. Info. Bul. 58.
- House, L., Z. Gao, and D.T. Hausmann. 2010. Willingness to pay for organic versus conventional orange juice. *Proc. Annu. Mtg. Agr. Appl. Econ. Assn.* (abstr.).
- Jekanowski, M., D. Williams, and W. Schiek. 2000. Consumers' willingness to purchase locally produced agricultural products: An analysis of an Indiana survey. *Agr. Resource Econ. Rev.* 29:43–53.
- Loureiro, M. and S. Hine. 2002. Discovering niche markets: A comparison of consumer willingness to pay for local (Colorado-Grown), organic, and GMO-free products. *J. Agr. Appl. Econ.* 34:477–487.
- Organic Trade Association. 2009. 2009 U.S. families' organic attitudes & beliefs study. 12 Sept. 2010. <http://www.ota.com/organic/www.ota.com/pics/documents/01b_Final-OTAKiwiExecutiveSummary.pdf>.
- Progressive Grocer. 2007. Buy local vs. organic food a tough decision for consumers: Survey. 14 Sept. 2010. <http://www.progressivegrocer.com/print-topstory-buy_local_vs._organic_food_a_tough_decision_for_consumers_survey-23399.html>.
- Rutberg, S. 2008. Local or organic? Shoppers say 'both, please.' *Natural Foods Merchandiser* 29:30.
- ScienceDaily. 2009. Organic or local fruit and vegetables? 12 Sept. 2010. <<http://www.sciencedaily.com/releases/2009/09/090903163951.htm>>.
- Supermarket News. 2008. Report: Consumers prefer local over organic. 12 Sept. 2010. <http://supermarketnews.com/news/local_organic_0617/>.
- Supermarket News. 2010. Survey: U.S. organic product sales reach \$26.6B in 2009. 10 Sept. 2010. <http://supermarketnews.com/news/organic_sales_0422/>.
- The Hartman Group. 2006. Who's buying organic? Demographics 2006. 12 Sept. 2010. <<http://www.hartman-group.com/hartbeat/who-buying-organic-demographics-2006>>.
- The Hartman Group. 2007. What makes local special? 9 July 2010. <<http://www.hartman-group.com/hartbeat/2007-01-24>>.
- The Hartman Group. 2008. Consumer understanding of buying local. 9 July 2010. <<http://www.hartman-group.com/hartbeat/2008-02-27>>.
- U.S. Census Bureau. 2009. Internet use in the United States: Oct. 2009. 1 Apr. 2012. <<http://www.census.gov/hhes/computer/publications/2009.html>>.
- U.S. Census Bureau. n.d. Metropolitan and micropolitan statistical areas. 1 Apr. 2012. <<http://www.census.gov/population/metro/>>.
- U.S. Department of Agriculture. 2009a. Emerging market opportunities for small-scale producers: Proceedings of a special session at the 2008 USDA partners meeting. 4 May 2011. <<http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELPRDC5076556&acct=wdmgeninfo>>.
- U.S. Department of Agriculture. 2009b. Organic agriculture: Organic market overview. 4 May 2011. <<http://www.ers.usda.gov/briefing/organic/demand.htm>>.
- U.S. Department of Agriculture. 2010. Food expenditures. 8 Sept. 2012. <<http://www.ers.usda.gov/data-products/food-expenditures.aspx>>.