Consumers' Shopping Patterns and Expenditures on Ethnic Produce: A Case Study from the Eastern Coastal U.S.A.

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Abstract

This study was undertaken to examine the possible niche markets which East Coast farmers might be able to use to regain their advantage. Their future economic success could hinge on shifting the focus from traditional fruits and vegetables to high-value specialty ethnic produce for which there might be a growing demand. The study results indicate that there is a strong market demand and interest for ethnic produce in the East Coast. Local producers can benefit by concentrating their efforts in producing ethnic vegetables and fresh produce and making these newer products available in the local and regional markets.

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Introduction

Economic opportunities have arisen in the last decade for specialty crop agriculture catering to the ethnically diverse consumers (Govindasamy, et al. 2006; Mendonca, et al., 2006; Sciarappa, 2001-2003; Tubene, 2002). The demographic profiles of Asian (Chinese and Asian Indian) and Hispanic (Mexican and Puerto Rican) subgroups differ markedly from the national averages across many general, social, and economic characteristics. These characteristics may influence their buying and consumption behavior (Census, 2000). United States Census data show overall average population increases of 13 percent from 1990 to 2000 compared to 48 percent for Asians and 58 percent for Hispanic/Latinos (Census 1990, 2000). The rapid expansion of these groups presents significant opportunities for fruit and vegetable producers along the East Coast because of their proximity to densely populated areas of Asian and Hispanic populations (Govindasamy, et al. 2007).

The demand for ethnic produce largely depends on ethnic population size and their food habits. Asian American consumers generally prefer to buy fresh produce over processed or packaged foods, and more frequently shop for groceries (Packaged Facts, 2000). Almost all Asian American diets include rice, noodles, and vegetables. Hispanic consumers also make more visits per month, spend more on groceries, and eat more at home compared to other mainstream populations (Agri-Food Trade Service, 2008).

When farmers of small- and medium-sized farms are not able to compete with larger produce growers in the regular produce market, they might wish to consider focusing on the rapidly growing ethnic produce market. Ethnic specialty vegetables are relatively labor-intensive, but generally grown using similar practices as found in traditional vegetable farming, thereby not requiring significant new investments in production technologies. Hence, growing ethnic produce might be an economically attractive alternative for farmers who are searching to identify those niche products for which they can compete.

The objective of this research was to examine the opportunity for a niche market in ethnic vegetables for small and medium-sized farmers. Identifying the potential demand for ethnic produce by each of these subgroups should assist East coast farmers with first identifying and then developing new markets and help then remain economically viable in the face of new and upcoming challenges posed by larger scale operations. The study was focused on ethnic Asians and Hispanics and their major sub-groups. Asian ethnic group consists of Asian Indian and Chinese sub-groups, and Hispanic group consists of Mexican and Puerto Rican sub-groups. This study was based on primary data obtained from a survey from 16 states (Connecticut, Delaware, Florida, Georgia, Massachusetts, Maryland, Maine, North Carolina, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, South Carolina, Vermont, and Virginia) of the East-coast region of the United States and Washington, D.C. Based on random sampling, 271 from each ethnicity and a total of 1084 samples were interviewed in bilingual through a telephone survey during April and May of 2006. The survey was also included an initial list of 42 ethnic specialty produce items that could grown in the East-coast region. These specialty crops were selected based on a combination of focus group interviews, crop specialists' recommendations, and consulting with four ethnic communities. The total 42 selected ethnic specialty crops represent 10 commonly consumed by each Asian Indians, Mexicans, and Puerto Ricans, and 12 produce item for Chinese. The survey collected three types of ethnic consumer expenditures: total produce expenditure; ethnic produce expenditure; and expenditures for specific ethnic produce items (which varied by ethnic group). All three expenditure types were based on estimates by each respondent's (i.e., principal household grocery shopper's) estimate of average purchases during a specified period of time, over the course of the past twelve months.

In this study, comparisons between average produce expenditures for each ethnic group and national averages for fresh produce expenditures for the corresponding race or origin were examined. Specifically, surveyed ethnic sub-group produce expenditure data was compared to national data by race and ethnic origin, as national ethnic sub-group produce expenditure data does not exist (i.e., surveyed Chinese and Asian Indian produce expenditure data compared to national benchmarks for Asians; surveyed Mexican and Puerto Rican produce expenditure data compared to national benchmarks for consumers of Hispanic/Latino origin). National data does not exist for specific demographic characteristics within a given ethnicity (i.e., cross-tabulated data by ethnic group). Census population data for each ethnic subgroup served as the basis for estimating the approximate East Coast ethnic consumer base (Census 2000; "Total" East Coast population per ethnic group). The estimation process annualizes monthly expenditures per person for each ethnic group sample. The survey revealed important information about the shopping patterns, expenditures, preferences, and specific ethnic crops of these consumers, as reported below. The study was also tried to quantify the reasons for not purchasing ethnic produce items.

Results

The average monthly ethnic produce expenditures per person for each ethnic group sampled were the basis for the ethnic produce market size estimates. The expenditures are the result of the total monthly produce expenditures divided by the number of people per household for each respondent. Finally, survey findings were utilized to estimate the portion of the ethnic populations that typically purchase ethnic produce. Survey results revealed relevant characteristics, shopping patterns, preferences, and opinions of respondents, and created consumer profiles to target specific ethnic markets, as explained below. Analysis of the results highlighted some similarities and distinct differences among all four subgroups.

The frequency of purchase of ethnic products for all respondents was 4.2 times per month but varied by ethnic group. The Chinese group shopped on average 55 percent more frequently than the other three groups (Table 1.) However, on average, they spent less per visit than the other three groups. Specifically, the average monthly ethnic produce expenditures by group were: $98 for Chinese; $91 for Asian Indian; $79 for Mexican; and $77 for Puerto Ricans, with an overall average across all respondents of $86. The principal shoppers from the Asian sub-groups generally spent, on average, between 15 percent and 28 percent more on ethnic produce than the principal shoppers in the Hispanic sub-groups. In general, the average annual fresh fruit and vegetable expenditures by the Asian and Hispanic groups, both national and survey sample data, were higher than the overall national average (i.e., $357 for the entire population, irrespective of ethnicity; BLS, 2005).

Roughly half or more of the respondents from each group buy ethnic produce from ethnic grocery stores in contrast to 85 percent of Asians (from each sub-group). With the exception of Chinese respondents, who did not generally indicate multiple points of purchase, more than half of the respondents from each ethnic group (Asian Indians, Mexicans, and Puerto Ricans) also shop at typical American grocery stores for ethnic produce. Approximately 23 percent of the Hispanic respondents (both Mexican and Puerto Rican) buy ethnic produce at community farmer markets, as compared to 14 percent of Asian Indians, and 2 percent of Chinese. Fewer than 20 percent in each group shop at on-farm markets or roadside stands. Walter (2008) recently found that traditional farmers markets and retail farm market shoppers are relatively unfamiliar with Asian vegetables, but expressed strong interest to learn more about them. This same study indicated that these consumers purchased Asian vegetables most often at supermarkets (29.4%) and restaurants (28.1%), and much less at local direct markets (12.5%).

More than 70 percent of respondents from each group live within ten miles of an ethnic grocery store or ethnic market (Table 2). More than 80 percent from each group live within 20 miles of such an outlet. Few purchasers are willing to travel more than 20 miles to an ethnic store. The non-purchasers cited unavailability of ethnic store as a reason for their decision. This suggests that some ethnic consumers may not find the ethnic store alternatives to satisfy their ethnic shopping needs.

Consumers from all four ethnicities showed basic consistencies in terms of rating the relative importance of specific attributes in terms of their decisions to shop for and purchase ethnic produce (Table 3). Freshness and quality were each deemed "important" by an overwhelming majority (98% or more of respondents) in each of the groups, followed closely by selection (e.g., variety of produce) which was deemed "important" by 93 to 96 percent in each group. There was more variability across groups in terms of the importance of the remaining attributes, but product price and store availability were consistently deemed 'important' by more respondents in each group than either language (spoken/on labels or in ads) or product packaging. Product price and store availability were consistently deemed "important" by 79 to 93 percent of respondents in each group, as compared to language and product packaging which were considered "important" by 49 to 79 percent in each group.
Roughly half or more of the respondents from each group also rated every attribute, with the exceptions of language and packaging, as "very important" factor in their decision making. The consistent priorities among the groups were freshness and quality, both in terms of general importance and very importance. Freshness and quality are the competitive advantages that local farmers can capitalize on with very little investment in equipment and production technologies, but likely would require training and increased familiarity of the correct germplasm and variety of the ethnic product and the manner in which each product is displayed or offered for sale (e.g., packaging and presentation of product). Increasing the variety of produce they grow and can supply to local markets is somewhat more challenging as they need to learn more about producing unfamiliar crops.

These findings, combined with the relative importance of selection and price in consumers' purchasing decisions, suggest that selection and price are important determinants in their decision to shop at ethnic outlets. This finding is even more pronounced in the Chinese

respondents' perceptions of selection which was rated "very important" (by 85%) and perceived (by 72%) to be "better" in ethnic versus conventional establishments. Packaging was the only attribute for which ethnic outlets were rated favorable by less than 30 percent of respondents in all four ethnic groups, indicating it is not a determining factor in most ethnic consumers' decisions to shop ethnic outlets.

A majority of respondents in each ethnic group were willing to pay more for ethnic produce than comparable American or conventional substitutes. Roughly a quarter of respondents from each group were willing to pay a maximum of up to five percent more. About 15 to 21 percent from each group were willing to pay a maximum of 6 to 10 percent more. Less than 15 percent in each group were willing to pay a maximum of 11 to 20 percent more. Only two to thirteen percent in each group were willing to pay a premium of greater than twenty-five percent. Willingness to pay a premium also showed the largest variation across ethnic groups. In general, the diminishing willingness to pay premiums for ethnic produce was consistent along each ethnic group. A maximum 13 percent of Chinese were willing to pay a 20 percent premium compared to 2 to 8 percent from the other groups.

Advertisements did not seem an important factor to influence the decisions for these consumer groups (Table 5). Only the Hispanic group indicated they would be more influenced by such promotions. In contrast, 52 percent of Chinese and 30 percent of Asian Indians respondents suggested that such promotions would not affect their purchasing decisions. The Hispanic sub-group was also more likely to be impacted by multiple advertisement types than the Asian sub-groups. A majority of all Hispanic respondents (55% to 71%) indicated that out-of-store ads (defined as media including radio, TV, newspaper, and on-line) and/or on-site ads (displays, demos, brochures, posters/banners, or announcements), influence their decision to purchase. Slightly fewer (35% to 48%) indicated that billboards, on-farm, or roadside stands promotions and/or point-of-purchase ads (price cards, tags, or produce labels/stickers) could influence their purchases. Out-of-store media and on-site ads are generally the most effective advertisements among all respondents.

Roughly a quarter or less of respondents in each group grow their own ethnic produce for consumption, with slightly more Mexicans (32%) grow their own (Table 6). Half (51%) of the Asian Indian respondents indicated they were vegetarians in contrast with fewer than seven percent of respondents in each of the other three ethnic groups (Table 7). This suggests that produce, in general, is an important staple in the Asian Indian diet and few (non-produce) substitutes may exist for this group relative to other ethnic consumer groups who are not typically vegetarians. As such, Asian Indian vegetarians are a prime target market for ethnic produce, since vegetables are mainstay in their diet.

Willingness to Try/Buy

Both purchasers and non-purchasers were asked questions about their relative willingness to buy ethnic produce based on certain factors and/or product attributes (sold in ethnic outlets, locally grown, organically grown, genetically modified, Country Of Origin Labeling – or COOL – and new to market (Table 8)).

A majority of purchasers in each ethnic group were "more willing" to purchase ethnic produce that were sold in ethnic outlets or grown on local farms. Approximately half (46% to56%) of the purchasers in each group were "more willing" to purchase organically grown ethnic produce. The willingness to purchase ethnic produce based on COOL or newness in the marketplace varied by ethnic group. A slim majority of Chinese and Puerto Ricans were '"more willing" to purchase these products based on each of these characteristics as compared to roughly a third of Asian Indians (offset by a higher percentage of "indifferent" and "less willing"). Just under half of Mexicans (44%) were "more willing" to purchase based on COOL, while slightly more than half (58%) were "more willing" to purchase ethnic produce that is new to market. The propensity to purchase Genetically Modified (GM) ethnic produce was lower than the propensity to purchase based on every other characteristic: 41 to 63 percent from each group were "less willing" to purchase genetically modified products as compared to less than a quarter of respondents in each group that were "less willing" to purchase based on any other characteristic listed. The question of genetic modification also yielded the largest percentage of "unsure" responses from each ethnic group when the interviewer was explained about GM produce.

The relative propensity based on the six attributes mentioned above, were similar across the board among non-purchasers and purchasers. Specifically, a larger percentage of non-purchasers (albeit not quite a majority) were "more willing" to purchase ethnic produce that were sold in ethnic outlets (40%) or grown on local farms (42%) than any other characteristic. These were followed by "organically grown products." About 35 percent of current non-purchasers indicated they would be "more willing" to buy ethnic produce in future. In

terms of COOL and newness to market, the willingness within each category was not as distinct. These results suggest that the current non-purchasers are less likely to be influenced by each of the attributes than purchasers. Therefore, availability of ethnic products and promotion might not have a significant impact on the non-purchasers. Although their propensity to purchase based upon the availability of specific characteristics may not be as strong as that of current purchasers, substantial opportunities do exist to capture upwards of 40 percent of the current ethnic non-purchasers through either increasing availability in ethnic outlets or selling locally grown ethnic produce. Additional opportunities associated with the remaining characteristics do exist for non-purchasers, as with purchasers, but to a lesser degree.

Specific Ethnic Crops

The primary purpose of the average weekly expenditure data for 42 specific ethnic crops was to prioritize subsequent production research. Detailed data including quantity, price, and expenditure for each produce item was collected. Once summarized, this data yielded average expenditures for each crop, by ethnic group, and served as a common denominator to compare and prioritize crops within each group. Additional organization and analysis of the quantity and price data was conducted to assess relevant retail sales data for each produce item (i.e., typical quantities, unit types, and retail prices) based specifically on data provided by only the ethnic respondents that purchase each particular item (i.e., excluding zero purchases by ethnic respondents). This paper presents only the results of respondents' average weekly expenditure and the percentage of survey respondents bought the produce item by ethnic group (Tables 9a and 9b). The combination of produce expenditure data and the number of respondents' support help growers to select the right produce item for fit into the local market. From Tables 9a and 9b, a grower could select ethnic produce items based on local ethnic population and market conditions. The resulting outputs provide the appropriate market demand for a specific produce item, based on a subset of respondents, to facilitate future production and marketing decisions, and strategies when combined with the final production crop research recommendations.

In the context of Chinese household average annual produce expenditure data (Table 9a), Baby Pak Choy yielded the highest expenditures ($151) relative to other respectively purchased Chinese produce items with significant majority of Chinese respondents (188 of 271, or 69%) and followed by Pak Choy, Oriental Eggplant, Oriental Spinach, Snow Peas, Luffa, Napa Cabbage, Edamame, and Oriental Mustard. With the Asian Indian produce items, Bitter Gourd yielded highest average annual expenditures ($211) with 51 percent of respondents' support and followed by Eggplant ($149 with 65%), Fenugreek Leaves ($132 with 52%), cluster Beans ($189 with 32%), Bottle Gourd ($141 with 42%), Mustard Leaves ($226 with 23%); and Ridged Gourd ($162 with 28%).

In contrast, with Mexicans ethnic produce items, Chili Jalapeño captured the highest average annual expenditure ($211) with 59 percent of respondents support and followed by Tomatillo ($206 with 59%), Calabaza (($212 with 38%), Chili Poblano (($231 with 27%), Calabacita ($203 with 29%), Cilantro (($87 with 65%), Chili Serrano ($175 with 25%), and Anaheim Pepper ($178 with 23%). In terms of Puerto Ricans ethnic produce items, Cilantro provided the highest average annual expenditures ($134) with 61 percent of respondents support and followed by Batata ($181 with 44%), Aji Dulce ($236 with 33%), Calabaza ($126 with 36%), Pepinillo ($111 with 31%), Fava Beans ($157 with 20%), and Calabacita ($162 with 13%). Hispanic ethnic sub-group produce items have overlap between Mexican and Puerto Rican groups. In these cases, growers could target both Hispanic ethnic sub-groups and maximize produce profit.

By combining this data with production cost and yield data (estimated quantity), a commercial grower could project the approximate (direct) retail sales dollars and pounds, number of customers, and potential profits associated with harvesting this crop (assumes grower sells direct to market). Similarly, in cases where an extended distribution chain is involved a wholesaler and/or retailer could, in turn, determine their potential (respective) profits based upon the quantity available and their (respective) costs and/or markups along the distribution channel. Such information is essential to successful planning, pricing, and marketing and should be used in conjunction with subsequent crop production recommendations accordingly.

Reasons for Not Purchasing

The "non-purchasers" were urged to provide reasons for not purchasing ethnic produce and were prompted with plausible reasons. These respondents then proceeded to complete an abridged form of the survey. The purpose was to explore the potential to capture some portion of this market with increased ethnic produce availability and/or offerings.

A significant majority of all respondents reported their main reason for not purchasing ethnic produce was the lack of easy availability. One-third of the non-purchasers surveyed indicated they did not purchase ethnic food items because they do not like these products. Another approximate 10 percent of the non-purchasers cited reasons generally related to their personal consumption and/or shopping practices, such as not typically cooking (ethnic or otherwise), age, health, and/or lack of time. Some reported that they grew their own produce. These "non-purchasers" represent a consumer subgroup that likely won't drive market demand for ethnic products unless there would be an aggressive education and marketing campaign as drastic changes in their personal tastes and/or practices would need to accompany any rise in ethnic produce interest.

However, the results do indicate that the supply-side potential does exist for more than half of this current "non-purchaser" segment. Twenty-seven percent cited lack of availability and/or poor selection in American stores as reasons for not purchasing. Fifteen percent cited proximity, or lack thereof, as a reason for non-purchasing at an ethnic store or outlet. Another 15 percent cited no specific reason or that they were simply either unfamiliar with ethnic produce and didn't know how to prepare them. These findings point that an increase in produce availability and selection, the introduction of additional ethnic outlets, and an improvement in marketing of ethnic produce all present opportunities to reach more than half of the current non-purchasing market. Our findings suggest that simply broadening the distribution (i.e., increasing the local supply) of ethnic produce to existing American stores could extend producers' reach to more than 20 percent of ethnic consumers not currently purchasing fresh ethnic produce. In addition, improving the selection and/or varieties offered in the mainstream outlets, and accompanying these selections with appropriate and/or enhanced marketing programs (including educational information that familiarizes consumers with the selections and how to use and prepare each product), has the potential to extend the reach to another 20 percent of the same non-purchasers.

Conclusions

The survey findings indicate that a strong potential for ethnic produce market exists in the East Coast. This study's results show that there are unexploited opportunities for local farmers in certain ethnic markets. The local producers, who are struggling to compete in the national market, can benefit by concentrating their efforts in the production of ethnic vegetables and fresh produce and then selling them in the local and regional markets. Moreover, the food habits of the mainstream population are becoming more diverse in the United States. The ease of availability of the products and the exposure to new items might attract new customers in the market by encouraging them to include them in their dinner menu/home serving of meals. Local/roadside advertising might be a cost effective way to generate interests in such food items. Any successful promotion of ethnic produce items could result in a sustainable increase in demand for ethnic produce.

In addition to local ethnic population and market conditions, a grower could select ethnic produce items based on the specific ethnic crops expenditures and percentage of consumers' support data. The resulting outputs provide the appropriate market demand for a specific produce item, based on a subset of respondents, to facilitate future production and marketing decisions, and strategies when combined with the final production crop research recommendations.

Small- and medium-sized horticultural farmers should consider focusing on these new crops and if they would be able to address the local demand for ethnic produce at a reasonable cost, the resulting economic gain to the local farmers from this shift into ethnic produce markets could be far reaching. As the survey indicated, the local farmers can even benefit from a premium price for catering to the special needs of a sizable and fast growing demand from ethnic produce. Results also found that these four ethnic minority sub-groups share a number of common ethnic specialties which could provide a significant market potential for new investments within the United States. Finally, today's healthy choice for food calls for increased use of vegetables as part of balanced diet. Adding more varieties to the choice of vegetables through the introduction of ethnic produce might encourage even a larger final demand for ethnic produce than already anticipated. All these developments could provide new opportunities for small- and medium-sized East Coast farmers. Further ethnic marketing channel research, market intelligence, and information to link agricultural producers, processors, and manufacturers with buyers in the wholesale, retail, and food service sectors is needed.

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Table 1. Shopping frequency and household spending by ethnic consumer group

Frequency and Spending	Ethnicity				Total Average	N
	Chinese	Asian Indian	Mexican	Puerto Rican		
AVG Number Times per Month	5.8	3.7	4.0	3.6	4.2	246
AVG Expenditure per Visit (reference only)	$21	$28	$21	$23	$23	243
AVG Expenditure per Month On Ethnic Produce ($ per HH)*	$98	$91	$79	$77	$86	224

Table 2. Distance from ethnic consumers' homes to nearest ethnic market

Distance in Miles	Ethnicity			
	Chinese	Asian Indian	Mexican	Puerto Rican
	Frequency (Percent)	Frequency (Percent)	Frequency (Percent)	Frequency (Percent)
Up to 10	196 (72%)	210 (77%)	200 (74%)	215 (79%)
11-20	34 (13%)	31 (11%)	19 (7%)	16 (6%)
21-30	13 (5%)	6 (2%)	2 (1%)	4 (1%)
31-40	4 (1%)	7 (3%)	2 (1%)	
41-50	4 (1%)	3 (1%)	3 (1%)	2 (1%)
51-60	5 (2%)	4 (1%)	2 (1%)	4 (1%)
61+	15 (6%)	10 (4%)	43 (16%)	30 (11%)
ALL	271 (100%)	271 (100%)	271 (100%)	271 (100%)

Table 3. Ethnic consumers' ratings of attribute importance in decisions to shop and purchase ethnic produce

Characteristics	How Important?	Ethnicity			
		Chinese	Asian Indian	Mexican	Puerto Rican
		Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Store Availability	Very	203 (75%)	202 (75%)	184 (68%)	184 (68%)
	Somewhat	32 (12%)	46 (17%)	63 (23%)	57(21%)
	Not	31(11%)	21(8%)	21(8%)	28(10%)
	Unsure	5 (2%)	2(1%)	3 (1%)	2(1%)
Language	Very	120 (44%)	85 (31%)	103 (38%)	114(42%)
	Somewhat	42 (15%)	70 (26%)	52 (19%)	62 (23%)
	Not	102 (38%)	116(43%)	113 (42%)	95(35%)
	Unsure	7 (3%)		3(1%)	
Selection	Very	229 (85%)	197(73%)	197 (73%)	194(72%)
	Somewhat	22 (8%)	57(21%)	63(23%)	61(23%)
	Not	17 (6%)	17 (6%)	9(3%)	16(6%)
	Unsure	3 (1%)		2(1%)	
Freshness	Very	254(94%)	251(93%)	250(92%)	258(95%)
	Somewhat	12 (4%)	16(6%)	19(7%)	8(3%)
	Not	3(1%)	3(1%)	1(0%)	5(2%)
	Unsure	2(1%)	1(0%)	1(0%)	
Quality	Very	249(92%)	260(96%)	248(92%)	254(94%)
	Somewhat	17(6%)	9(3%)	20(7%)	14(5%)
	Not	2(1%)	1(0%)	1(0%)	3(1%)
	Unsure	3(1%)	1(0%)	2(1%)	
Price	Very	164(61%)	134(49%)	163(60%)	171(63%)
	Somewhat	51(19%)	104(38%)	89(33%)	74(27%)
	Not	49(18%)	31(11%)	19(7%)	25(9%)
	Unsure	7(3%)	2(1%)		1(0%)
Packaging	Very	53(20%)	82(30%)	77(28%)	124(46%)
	Somewhat	81(30%)	81(30%)	110(41%)	91(34%)
	Not	97(36%)	99(37%)	82(30%)	54(20%)
	Unsure	40(15%)	9(3%)	2(1%)	2(1%)
N=		271	271	271	271

Table 4. Ethnic consumers' willingness to pay more for ethnic produce

Willing to Pay Premium of…	Ethnicity			
	Chinese	Asian Indian	Mexican	Puerto Rican
	Frequency Percent	Frequency Percent	Frequency Percent	Frequency Percent
None	67 (28%)	118 (49%)	93 (38%)	83 (33%)
Up to 5%	70 (29%)	64 (27%)	59 (24%)	66 (26%)
6-10%	51 (21%)	37 (15%)	45 (19%)	48 (19%)
11-15%	9 (4%)	6 (3%)	17 (7%)	18 (7%)
16-20%	9 (4%)	9 (4%)	11 (5%)	20 (8%)
>20 %	32 (13%)	5 (2%)	17 (7%)	20 (8%)
Total	238 (100%)	239 (100%)	242 (100%)	255 (100%)

Table 5. Influence of advertisement types on ethnic consumers' decision to purchase ethnic produce

Advertisement Type	Ethnicity			
	Chinese	Asian Indian	Mexican	Puerto Rican
	Frequency Percent	Frequency Percent	Frequency Percent	Frequency Percent
Out-of Store Ads	79 (29%)	50 (18%)	149 (55%)	154 (57%)
Visible-from Road Ads	15 (6%)	29 (11%)	112 (41%)	94 (35%)
On-Site or In-Store Ads	56 (21%)	103 (38%)	192 (71%)	155 (57%)
Point-of-Purchase Ads	16 (6%)	65 (24%)	129 (48%)	122 (45%)
None	141 (52%)	82 (30%)	27 (10%)	25 (9%)
Total*	307 (113%)	329 (121%)	609 (225%)	550 (203%)

** Total number of responses by 271 respondents per ethnic group; percent is relative to 271 respondents*

Table 6. Ethnic consumers growing fruits and vegetables for consumption

Grow Fruits and Vegetables?	Ethnicity			
	Chinese	Asian Indian	Mexican	Puerto Rican
	Frequency (Percent)	Frequency (Percent)	Frequency (Percent)	Frequency (Percent)
Yes	55 (20%)	65 (24%)	86 (32%)	68 (25%)
No	216 (80%)	206 (76%)	185 (68%)	203 (75%)
Total	271 (100%)	271 (100%)	271 (100%)	271 (100%)

Table 7. Ethnic consumers self-identified as vegetarians

Food Habit; Vegetarian?	Ethnicity			
	Chinese	Asian Indian	Mexican	Puerto Rican
	Frequency (Percent)	Frequency (Percent)	Frequency (Percent)	Frequency (Percent)
Yes	18 (7%)	138 (51%)	18 (7%)	10 (4%)
No	253 (93%)	133 (49%)	253 (93%)	261 (96%)
Total	271 (100%)	271 (100%)	271 (100%)	271 (100%)

Table 8. Ethnic consumers' willingness to buy ethnic produce based on availability of certain characteristics

Characteristics	Opinion	Purchasers				Non-Purchasers*
		Ethnicity				
		Chinese	Asian Indian	Mexican	Puerto Rican	4 Ethnicities Combined
		Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Sold in Ethnic Outlet	More willing	183(68%)	161(59%)	210(77%)	212(78%)	113(40%)
	Indifferent	45(17%)	71(26%)	36(13%)	33(12%)	65(23%)
	Less willing	21(8%)	22(8%)	19(7%)	15(6%)	54(19%)
	Unsure	22(8%)	17(6%)	6(2%)	11(4%)	50(18%)
Grown on Local Farms	More willing	176(65%)	148(55%)	216(80%)	208(77%)	118(42%)
	Indifferent	42(15%)	84(31%)	36(13%)	34(13%)	66(23%)
	Less willing	24(9%)	25(9%)	12(4%)	24(9%)	48(17%)
	Unsure	29(11%)	14(5%)	7(3%)	5(2%)	50(18%)
Organically Grown	More willing	131(48%)	125(46%)	152(56%)	149(55%)	98(35%)
	Indifferent	74(27%)	75(28%)	72(27%)	62(23%)	74(26%)
	Less willing	33(12%)	56(21%)	32(12%)	48(18%)	58(21%)
	Unsure	33(12%)	15(6%)	15(6%)	12(4%)	52(18%)
Genetically Modified	More willing	49(18%)	26(10%)	31(11%)	33(12%)	26(9%)
	Indifferent	63(23%)	84(31%)	59(22%)	48(18%)	62(22%)
	Less willing	110(41%)	130(48%)	152(56%)	170(63%)	128(45%)
	Unsure	49(18%)	31(11%)	29(11%)	20(7%)	66(23%)
COOL Labeling	More willing	141(52%)	75(28%)	118(44%)	136(50%)	69(24%)
	Indifferent	83(31%)	130(48%)	117(43%)	103(38%)	103(37%)
	Less willing	24(9%)	42(15%)	23(8%)	24(9%)	53(19%)
	Unsure	23(8%)	24(9%)	13(5%)	8(3%)	57(20%)
Recently Introduced/ new	More willing	166(61%)	94(35%)	157(58%)	138(51%)	85(30%)
	Indifferent	59(22%)	93(34%)	68(25%)	67(25%)	73(26%)
	Less willing	21(8%)	58(21%)	37(14%)	52(19%)	62(22%)
	Unsure	25(9%)	26(10%)	9(3%)	14(5%)	62(22%)
N=		271	271	271	271	282

*Non-purchasers data collected separately and excluded in the 271 sample surveys from each group.

Table 9a. Average weekly expenditure on specific ethnic produce items: Asian ethnic respondents

Chinese				Asian Indian			
Produce Item	**Average Weekly Expenditure**	**Average Annual Family Expenses (US$)**	**No. of Respondents (%)**	**Produce Item**	**Average Weekly Expenditure**	**Average Annual Family Expenses (US$)**	**No. of Respondents (%)**
Baby Pak Choy	$2.91	$151	188 (69%)	Bitter Gourd	$4.07	$212	138 (51%)
Pak Choy	$2.05	$107	207 (76%)	Eggplant	$2.87	$149	174 (64%)
Oriental Eggplant	$2.51	$131	155 (57%)	Fenugreek Leaves	$2.53	$132	141 (52%)
Oriental Spinach	$1.77	$92	173 (64%)	Cluster Beans	$3.64	$189	87 (32%)
Snow Peas	$2.19	$114	139 (51%)	Bottle Gourd	$2.72	$141	114 (42%)
Luffa	$2.35	$122	111 (41%)	Mustard Leaves	$4.34	$226	62 (23%)
Napa Cabbage	$1.43	$74	177 (65%)	Ridged Gourd	$3.11	$162	76 (28%)
Edamame	$1.74	$90	112 (41%)	Mint Leaves	$1.45	$75	116 (43%)
Oriental Mustard	$1.70	$88	104 (38%)	Amaranth	$3.54	$184	46 (17%)
Basil	$1.22	$63	48 (18%)	White Pumpkin	$2.22	$115	62 (23%)
Malabar Spinach	$1.78	$93	30 (11%)				
Perilla	$1.39	$72	37 (14%)				
Note: Figures in parenthesis indicate the percentage of respondents							

Table 9b. Average weekly expenditure on specific ethnic produce items: Hispanic ethnic respondents

Mexicans				Puerto Ricans			
Produce Item	**Average Weekly Expenditure**	**Average Annual Family Expenses (US$)**	**No. of Respondents (%)**	**Produce Item**	**Average Weekly Expenditure**	**Average Annual Family Expenses (US$)**	**No. of Respondents (%)**
Chili Jalapeno	$4.06	$211	161 (59%)	Cilantro	$2.57	$134	165 (61%)
Tomatillo	$3.97	$206	104 (38%)	Batata	$3.48	$181	120 (44%)
Calabaza	$4.08	$212	85 (31%)	Aji Dulce	$4.54	$236	90 (33%)
Chili Poblano	$4.45	$231	72 (27%)	Calabaza	$2.43	$126	98 (36%)
Calabacita	$3.90	$203	79 (29%)	Pepinillo	$2.14	$111	83 (31%)
Cilantro	$1.68	$87	176 (65%)	Fava Beans	$3.02	$157	54 (20%)
Chili Serrano	$3.36	$175	69 (25%)	Chili Caribe	$3.64	$189	41 (15%)
Anaheim Pepper	$3.42	$178	61 (23%)	Berenjena	$2.68	$139	49 (18%)
Chili Habanaro	$2.38	$124	26 (10%)	Calabacita	$3.12	$162	36 (13%)
Tutuma	$2.85	$148	9 (3%)	Verdolaga	$4.68	$243	6 (2%)
Note: Figures in parenthesis indicate the percentage of respondents							