

Ethnic Crop Opportunities for Growers on the East Coast: A Demand Assessment

RAMU GOVINDASAMY¹, RICHARD VANVRANKEN², WILLIAM SCJARAPPA²,
ALBERT AYENI³, VENKATA S. PUDURI¹, KIM PAPPAS⁴, JAMES E. SIMON⁵,
FRANK MANGAN⁶, MARY LAMBERTS⁷, AND GENE MCAVOY^{8*}

¹Rutgers—The State University of New Jersey, 55 Dudley Road, New Brunswick, NJ 08901-8520

²Rutgers Cooperative Research and Extension Service, New Jersey Agriculture Experiment Station,
Cook College, New Brunswick, NJ 08901

³Rutgers—The State University of New Jersey, 59 Dudley Rd., New Brunswick, NJ 08901

⁴Marquis Who's Who, 890 Mountain Ave, Suite 300, New Providence, NJ 07974-1218

⁵Center for New Use Agriculture and Natural Plant Products, Rutgers University, New Brunswick,
NJ 08901

⁶University of Massachusetts, Department of Plant, Soil & Insect Sciences, French Hall 201,
Amherst, MA 01003

⁷University of Florida, 18710 SW 288th St., Homestead, FL 33030

⁸University of Florida, PO Box 68, LaBelle, FL 33975

ADDITIONAL INDEX WORDS. ethnic vegetables, new crops, new markets

The rapid change in the ethnic population in the eastern coastal USA has consequences in the food and vegetable markets. As demographic profiles change, growers may wish to change their focus of food and vegetable production to capture the changes in demand. In this paper the scope of the expansion of ethnic crops in the eastern coastal USA by the growers from an economic perspective based on demand revealed by a survey is examined. It gives us an idea and understanding of the demand for ethnic crops by four ethnic groups: Chinese, Asian Indians, Mexicans, and Hispanics. In this report the differences and similarities with respect to crop selection and spending patterns are summarized. Results reported have important implications for the development of ethnic crop production locally.

The rapid expansion of ethnic populations presents significant opportunities for fruit and vegetable producers along the East Coast to take advantage of their close proximity to densely populated areas. This study was undertaken to document and quantify the current market for selected ethnic vegetables and assess the demand so farmers may grow crops targeted from a demand perspective. The project has two phases: Phase I and II. In Phase I, the focus of the project was on assessment and quantification of ethnic market demand to guide production efforts in the subsequent phase. In Phase II, the demand findings were utilized as a basis for the development of production trials, grower recommendations, and strategies to coordinate year-round production of select ethnic crops to serve this market niche.

Materials and Methods

The specific ethnic market subjects of study were the Asian and Hispanic segments, chosen for their strong recent growth and continued growth expectations. The top two sub-groups within each of these segments were chosen for the study; Chinese and

Asian Indian (Asian sub-groups) and Puerto Rican and Mexican (Hispanic sub-groups). The geographic focus is the East Coast and includes Washington, DC, and 16 states bordering the East Coast. A statistically representative sampling of consumers from each of the four ethnic sub-groups in the area was gathered via a stratified sampling method. Bilingual phone surveys were developed and administered and 1084 completed surveys were collected to assess ethnic produce demand, quantify the current market, and acquire purchase data for ethnic crops to prioritize selections for production trials (Govindasamy, 2007a).

The ethnic crops of interest were identified through a selection process that began with a crop expert panel review of an initial list of over 100 ethnic crops to select 42 produce items for inclusion in the ethnic consumer survey questionnaire. Results of the survey of 271 randomly selected East Coast consumers from each of the four ethnic groups were used to rank the crops included in the questionnaire, within ethnicity, according to expenditure and/or purchase data. Multiple criteria were established to rank produce items and allow for comparisons across produce items of various unit types (i.e., pounds, bunches, and numbers). In the survey, demand criteria included average expenditures, frequency of purchase, and volume of purchase. In addition to the surveyed demand, crops were also evaluated for

*Corresponding author; email: gmcavoy@ifas.ufl.edu; phone: (863) 674-4092

production research potential (research interest, yield potential, and anticipated cost effectiveness) by production trial participants in three states. A combined assessment (actual survey demand and estimated production potential) was particularly important in cases where a single systematic demand approach (comparison) was not sufficient to distinguish between crops for research prioritization purposes.

Results

Survey results revealed that a majority of shoppers in each group were female between the ages of 36 and 50 years of age. More than half of the respondents from each group were married. Roughly two-thirds of the respondents were employed, and had an average income of under \$60,000 per year. A higher percentage of Asian Indians fell into higher income categories, followed closely by Chinese, seemingly corresponding to higher education levels. Average monthly ethnic produce expenditure per household ranged from \$77 to \$98 by ethnic group and averaged \$86 across all respondents. Respondents shopped for ethnic produce four to six times per month. The most common places of purchase for all groups were ethnic grocery stores and typical American grocery stores. Community farmers' markets and on-farm/roadside markets were not as popular. Roughly one-third of the Mexicans grew their own ethnic produce, as compared to a quarter or less from the other three groups.

A majority of ethnic produce purchasers from each group (59% to 78%) and just under half of the current non-purchasers (40%) indicated that they would be "more willing" to purchase ethnic produce that is sold in ethnic outlets. More than 80% of ethnic produce purchasers from each group live within 20 miles of ethnic grocery store/markets. Freshness and quality were consistent priorities among 98% or more of all ethnic groups of current purchasers. Selection was the third most commonly cited important attribute by all groups, followed by store availability and price. Half or more respondents from each ethnic group were willing to pay more for ethnic produce than the comparable American or conventional substitutes. As vegetarians, Asian Indians are a prime target for ethnic produce promotions, but they also have a higher price elasticity of demand.

In Table 1, total expenditures by ethnic consumer groups are summarized. The typical monthly personal expenditure for all ethnic produce items purchased averaged \$26 and ranged from \$22 to \$32 by ethnic group, with the Asian and Hispanic subgroups above and below the mean, respectively. The ethnic produce comprised more than 60% of total produce expenditures from each ethnic group surveyed. The ethnic expenditure data

were combined with census population data to develop market estimates for the ethnic populations along the East Coast. The extrapolations resulted in the following estimates with 90% confidence interval: \$245M to \$296M for Chinese, \$190M to \$230M for Asian Indian, \$281M to \$362M for Mexican, and \$531M to \$655M for Puerto Ricans. The results suggest a strong demand, in the region studied, for ethnic crops produced locally.

The crops were first ranked according to their importance in the consumer choice as documented. An overall rank threshold of eight was established to help identify crops with relatively low demand in an initial attempt to arrive at 28 crops (seven per ethnic group). A few items which consistently ranked eight or higher in the survey were eliminated from potential research list. The remaining crops were further evaluated for supply-side potential and consolidated across ethnic groups to maximize production research. This process resulted in 28 production research crops. Crops selected for research and demo from each subgroup are listed in Table 2.

The crops which were not included in the study as potential candidates for further research were: oriental mustard (*Brassica juncea* L.), basil (*Ocimum basilicum* L.), 'Malabar' spinach (*Basella alba* L.) and perilla (*Perilla frutescens* L.) from Chinese survey; mint leaves (*Mint spicata* L.), amaranth (*Amarantus* sp.) and white pumpkins (*Cucurbita* sp.) from the Asian Indian survey; Anaheim pepper (*Capsicum annuum* L.), chili habanero (*Capsicum chinense* Jacq.) and tutuma (*Crescentia cujete* L.) from Mexican survey and berenjena (*Solanum melongena* L.), calabacita (*Cucurbita pepo* L.) and verdolaga (*Portulaca oleracea* L.) from the Puerto Rican survey.

The remaining crops were re-evaluated for possible research candidacy. In the case of Chinese crops, the crops that emerged as potential research candidates were: baby pak choy, oriental eggplant, oriental spinach, snow peas, napa cabbage, and ridged gourd/luffa.

The result of production research prioritization process based upon primarily survey demand, combined with production considerations, yielded the targeted list of 28 crops recommended for production trials. The re-prioritized list contained four species that had significant cross-ethnicity demand. They were, hence, deemed high production research priorities as a result. The four species in the list were: cucurbits (cucurbita), eggplant, chili/peppers and coriander. There were two trellised cucurbits, viz. ridged gourd demanded by both Asian groups and bitter melon (bitter gourd/pepinillo) demanded by Asian Indians and Puerto Ricans and three non-trellised cucurbits, such as bottle gourd demanded by Asian Indians, calabaza (Hispanic winter squash) and zucchini (calabacita – Hispanic summer squash). Eggplants

Table 1. Ethnic and total produce expenditures by ethnic consumer group.

Frequency and spending	Ethnicity					Total	Minimum N
	Chinese	Asian Indian	Mexican	Puerto Rican			
AVG expenditure per month on ethnic produce (\$ per person) ^z	\$32	\$27	\$22	\$23		\$26	213
AVG expenditure per month on all produce (\$ per person)	\$48	\$33	\$31	\$37		\$37	237
Ethnic as % of total produce expenditure (per person)	67%	82%	71%	62%		69%	

^zAVG Exp/month across all respondents (i.e., visits/month × \$/visit, divided by household size, by respondent); a function of exp/month for each respondent that reported visits/month, \$/visit, and HH size (i.e. NOT the product of AVG Visits/month pp and AVG \$/visit pp, by ethnic group).

Table 2. Production crop selection.

Ethnic group	Plot type	Ethnic crop name	Scientific name
Chinese	Research	Baby pak choy	<i>Brassica rapa</i> L. ssp. <i>chinensis</i>
		Oriental eggplant	<i>Solanum melongena</i> L.
		Smooth luffa	<i>Luffa aegyptiaca</i> Mill. [or <i>L. cylindrica</i> (L.) M. Roemer]
	Demo	Edamame	<i>Glycine max</i> (L.) Merr.
		Napa cabbage	<i>Brassica rapa</i> L. ssp. <i>chinensis</i>
		Oriental spinach	<i>Spinacia oleracea</i> L.
		Pak choy	<i>Brassica rapa</i> L. ssp. <i>chinensis</i>
		Snow peas	<i>Pisum sativum</i> L. var. <i>macrocarpon</i>
Asian Indian	Research	Bottle gourd	<i>Lagenaria siceraria</i> (Mol.) Standl.
		Eggplant (Raavayya)	<i>Solanum melongena</i> L. var. <i>Raavayya</i>
		Eggplant (Bharta)	<i>Solanum melongena</i> L. var. <i>Bharta</i>
		Ridged gourd	<i>Luffa acutangula</i> (L.) Roxb.
	Demo	Fenugreek leaves	<i>Trigonella foenum-graecum</i> L.
		Mint leaves (Spearment)	<i>Mentha spicata</i> L.
Mexican	Research	Chili Jalapeno	<i>Capsicum anuum</i> L.
		Tomatillo	<i>Physalis philadelphica</i> Lam. (or <i>P. ixocarpa</i> Brot.)
	Demo	Calabacita	<i>Cucurbita pepo</i> L.
		Chili pablano/ancho	<i>Capsicum anuum</i> L.
Puerto Rican	Research	Aji Dulce	<i>Capsicum chinense</i> Jacq
		Batata	<i>Ipomoea batatas</i> (L.) Lam.
		Pepinillo/bitter gourd	<i>Momordica charantia</i> L.
	Demo	Cilantro/coriander	<i>Coriandrum sativum</i> L.

were in demand by all three groups except the Mexicans. Three types of eggplants made the list: Oriental eggplant, Asian Indian eggplant (Raavaya variety) and Berenjana/Dominican eggplant. A total of six types of peppers were included in the candidate list: chili jalapeño, chili poblano, chili Serrano, chili caribe, aji dulce, and anaheim pepper. Coriander was in demand by Mexicans and Puerto Ricans.

Logistical concerns, which included space, labor, and budget constraints, drove decisions to further limit the number of crops to 12 and include crops of similar species suited for production on black plastic mulch with drip irrigation systems. Species with cross-ethnic demand were given higher priority for replication to maximize the rate of return on research efforts. Because of unavailability of appropriate seeds for replication purposes, only four cucurbits were included in the replicated plots. The final decision drove bitter gourd, bottle gourd, Asian Indian eggplant variety, Oriental eggplant and Raavayya variety, chili jalapeño and aji dulce in the replicated trials. Three additional highest ranked crops from each ethnic list were added to the replicated plots to complete the list of 12 crops to be included in the replicated trials. Six sites were located in three states along the East Coast: two in Florida, one in Massachusetts, and three in New Jersey. Crops quality and yield parameters were developed to make recommendations for geographic sequencing of production by month/season to sustain a year-round supply in the eastern United States.

Demonstration and research trials were established at six sites located in three states along the East Coast (two in Florida, one in Massachusetts, and three in New Jersey). Trials are to be conducted at each location for two seasons. Due to varying climates, production seasons vary from site to site and special attention to

variations in yield and quality of produce, as may be affected by season and geographic location, is warranted.

Field trials in Florida were conducted during the fall, winter and spring of 2007–08. Crops were divided into groups based on temperature preference and planted at the appropriate season. In general, results indicate all the selected crops could be grown in Florida, although some pest and disease issues were apparent. Economic viability will have to be evaluated on a case-by-case basis.

Crop quality and yield parameters are being evaluated statistically to determine suitability for commercial production and develop recommendations for geographic sequencing of production, by month/season, to sustain a 12-month production supply in the eastern United States. Information from the production trials will be combined with case study findings to make final crop recommendations and communicated accordingly to East Coast farmers. Completion of the second phase of the study is targeted for 2009.

Literature Cited

- Govindasamy, R., R. VanVranken, W. Sciarappa, A. Ayeni, V.S. Puduri, K. Pappas, J.E. Simon, F. Mangan, M. Lamberts, and G. McAvoy. 2007a. Demographics and the marketing of Asian and Hispanic produce in the eastern coastal USA. Rutgers University agricultural marketing website: <<http://www.dafre.rutgers.edu/documents/ramu/agmkt.htm>>.
- Govindasamy, R., R. VanVranken, W. Sciarappa, A. Ayeni, V. Puduri, K. Pappas, J.E. Simon, F. Mangan, M. Lamberts, and G. McAvoy. 2007b. Survey methods and identification of ethnic crops for the east coast in the USA: A procedural synopsis. Rutgers University agricultural marketing website: <<http://www.dafre.rutgers.edu/documents/ramu/agmkt.htm>>.