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Consumer Purchasing Habits of Environmental Horticulture Products in Florida[1]

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Abstract

A garden center exit survey examining consumer purchasing habits of environmental horticulture products was conducted in Florida in 2002. A total of 910 surveys were completed with information on why a particular store was chosen for shopping, the items planned for purchase and whether or not the final purchase matched the intentions of the buyer. Convenience/location was the most important reason for shopping at a particular store, followed by price, quality, service, information and miscellaneous other reasons. Most respondents were shopping for non-plant (hardgood) items, but when shopping for plants, flowering plants for the outdoors were the most sought after. Seasonal shopping habits were identified with nearly every respondent shopping at least once during the spring and fewer respondents shopping at least once during each of the other seasons. Information was also collected on gender, age, education level, and annual income of respondents, as well as location and type of store (chain or independent). Respondents who reported having college level education, an annual income greater than $50,000 or were shopping at an independent garden center, also indicated convenience/location as their primary reason for selecting a particular garden center; however, unlike other respondents, price was not their second reason for shopping at a particular store.

Key words: garden centers, shopping preferences, frequency of garden center shopping, nursery plants.

Significance to the Nursery Industry

Nursery producers grow products that they expect consumers will buy, but because wholesale growers usually do not have contact with the final customer, they may not be aware of consumer purchasing habits. Growers who are frustrated by continued stagnant or falling market prices may wish to learn the underlying reasons that stimulate buyers' purchasing decisions for ornamental plants. Understanding these factors for consumer demand at the retail level can in turn increase potential orders at the grower/wholesale level. Information regarding consumer purchasing habits can provide useful guidelines for nursery producers and retailer garden centers in terms of which products to offer, what quality standards should be met and the best retail locations to promote specific product lines. The results of this market research present practical information for nursery growers and retailers regarding critical marketing decisions.

Introduction

Past research on consumer purchasing patterns for environmental horticulture products has mainly focused on preferences for various product attributes such as plant size, shape, color and price (2, 6). Distinct customer groups purchasing floral products at supermarkets were identified using factor and cluster analysis (1). Consumer perceptions and expectations of product and service quality at retail garden centers were evaluated by Hudson et al (4) and it was found that traditional garden centers better met customer expectations than did non-traditional garden retailers.

Floriculture and environmental horticulture has been one of the fastest growing segments of U.S. agriculture. Florida is the second largest state (behind California) in nursery and greenhouse sales. According to USDA estimates for 2004, Florida nursery and greenhouse crops were valued at $1.63 billion, including $826 million for floriculture crops such as foliage, flowering potted plants, bedding plants, and cut flowers/foliage, and $803 for nursery crops like woody ornamental trees and shrubs and miscellaneous greenhouse crops (5). Over the past 10 years, Florida greenhouse and nursery sales have grown at a compound annual rate of 2.5 percent in inflation-adjusted terms, however, since 2001 total value has declined as the U.S. recession took effect (Fig. 1). Total economic impacts of the nursery and greenhouse industry in Florida in 2002 were estimated at $2.5 billion in value-added or income and 33,000 jobs (3).

Nursery growers in Florida have become increasingly frustrated with the slow growth in sales and stagnant or declining product prices at a time when many of their input costs continue to rise. In response to this, the marketing committee of the Florida Nursery, Landscape and Growers Association (FNGLA) undertook a survey at retail garden centers throughout the state for the purpose of ascertaining information about the purchasing habits of Florida consumers for environmental horticulture products.

Materials and Methods

Consumers were individually interviewed in March and April, 2002, at selected Florida retail locations of either local garden centers or big box retailers (chain stores) where environmental horticulture goods were sold. Respondents were approached by survey enumerators as they exited the store and asked if they would answer questions regarding their visit. Four major questions were asked of respondents: 1) Why did you choose to visit this location? 2) What kinds of products or information did you anticipate obtaining? 3) Are you leaving with what you planned, less than you planned or more than you planned? and 4) How frequently do you

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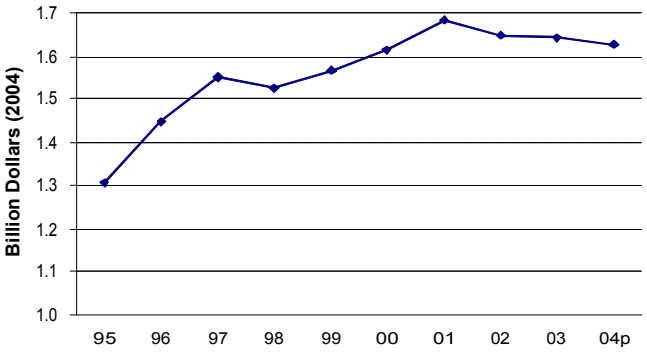

Fig. 1. Value of Florida nursery and greenhouse crops, 1995–2004. Source for data: Jerardo (2005). Values adjusted for inflation using the GDP implicit price deflator (U.S. Commerce Dept.).

shop for garden products in each of the four seasons? Demographic information was also collected on respondents, including gender, age, education and annual household income.

A total of 910 questionnaires were completed. The major questions were answered by nearly 100% of the respondents. Twenty-three separate locations were identified in the surveys, with nearly two-thirds (62%) in and around Orlando, and smaller shares in the areas of Jacksonville (18%), Miami (9%), Tampa (7%) and Southwest Florida (3%). One location had 157 surveys conducted, three locations had 31 or more surveys, and 19 locations had 30 or fewer surveys. Over half of the surveys included the type of retail establishment (independent vs. chain) with 87% of those surveys conducted at retail chain stores.

Optional respondent demographic information on gender, age, education and income was filled-out to a much lesser extent. About half of the respondents provided gender information (199 males, 236 females). Nearly three-quarters of the respondents were between the ages of 30 and 50, 9% were aged 20–30 and 16% were over 50 years of age. Some 15% of respondents furnished education information and nearly all had either a high school diploma or college education. Annual household income information was supplied by 28% of the respondents and was split almost equally between income categories of less than $50,000 and more than $50,000.

Regarding survey questions such as 'Why did you choose to visit this location?', respondents were asked to rank the

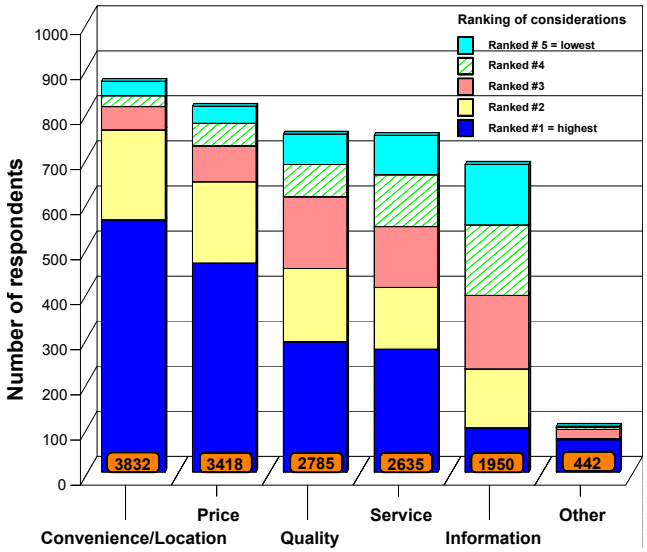

Fig. 2. Weighted rankings of customer considerations when choosing to shop at a particular outlet for nursery products.

importance of five possible major reasons or factors (convenience, price, quality, service, other). An overall weighted score for each factor was developed by multiplying the number of #1, #2, #3, #4 and #5 rankings by 5, 4, 3, 2, and 1, respectively, then summing the resulting products.

Statistical analysis of the survey data was conducted using Excel spreadsheets and the *Statistica* software (StatSoft, Inc., Tulsa, OK). Analyses included regression analysis (general linear models, ordinal multinomial logit procedure) for relationships between demographic characteristics and the dependent variables for shopping frequency and actual vs. anticipated purchases, and tests for differences in the factor rankings for choice of a particular retailer (paired t-test and the non-parametric Wilcoxon test).

Results and Discussion

Convenience, as it relates to a store's location, was the major reason that customers chose to shop at a particular garden center (Fig. 2). Specifically, 560 respondents stated that 'convenience/location' (C/L) was their #1 reason for selecting a particular store, 199 respondents said C/L was their #2 reason for selecting it, 52 respondents ranked C/L

Table 1. Analysis of factors for choosing a retail location, using t-test for dependent samples.

Factors compared	N	Diff.	Std. Dev.	t	df	p
Convenience-Price	791	–0.182	1.221	–4.193	790	0.0000
Convenience-Service	731	–0.818	1.672	–13.228	730	0.0000
Convenience-Information	678	–1.425	1.615	–22.972	677	0.0000
Convenience-Quality	730	–0.638	1.605	–10.744	729	0.0000
Convenience-Other Factor	97	–0.670	1.143	–5.774	96	0.0000
Price-Service	698	–0.650	1.764	–9.742	697	0.0000
Price-Information	678	–1.218	1.608	–19.732	677	0.0000
Price-Quality	708	–0.459	1.653	–7.389	707	0.0000
Price-Other Factor	97	–0.619	1.177	–5.178	96	0.0000
Service-Information	674	–0.550	1.199	–11.923	673	0.0000
Service-Quality	700	0.186	1.439	3.414	699	0.0007
Service-Other Factor	96	–0.313	1.164	–2.631	95	0.0099
Information-Quality	673	0.750	1.263	15.412	672	0.0000
Information-Other Factor	97	0.876	1.293	6.674	96	0.0000
Quality-Other Factor	97	–0.134	1.328	–0.994	96	0.3227

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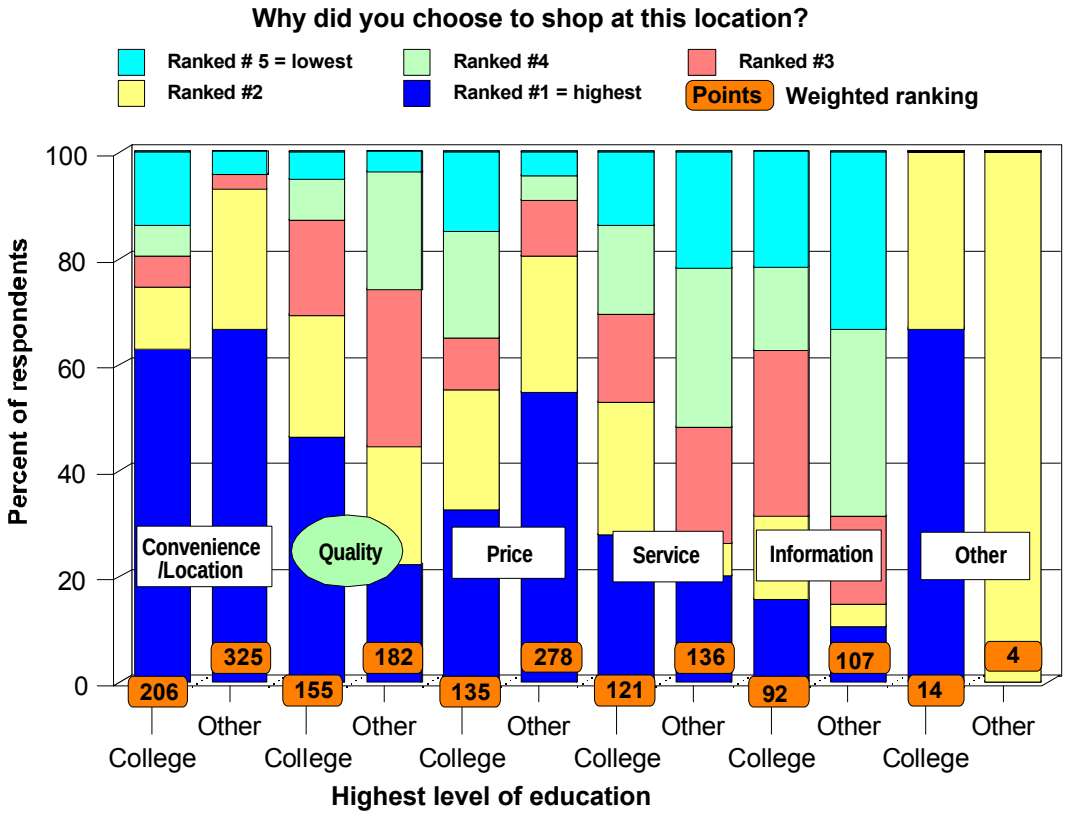

Fig. 3. Weighted rankings of considerations by respondents, according to education level, when choosing to shop at a particular outlet for nursery products.

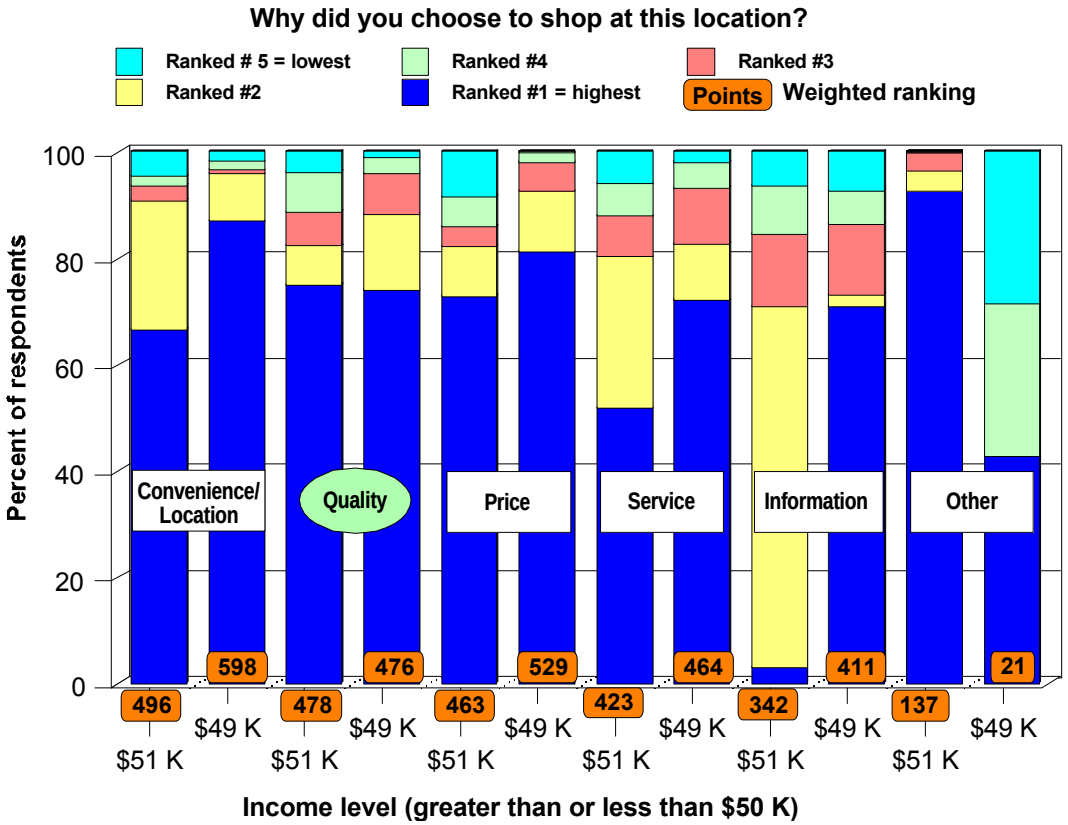

Fig. 4. Weighted rankings of considerations by respondents, according to annual income, when choosing to shop at a particular outlet for nursery products.

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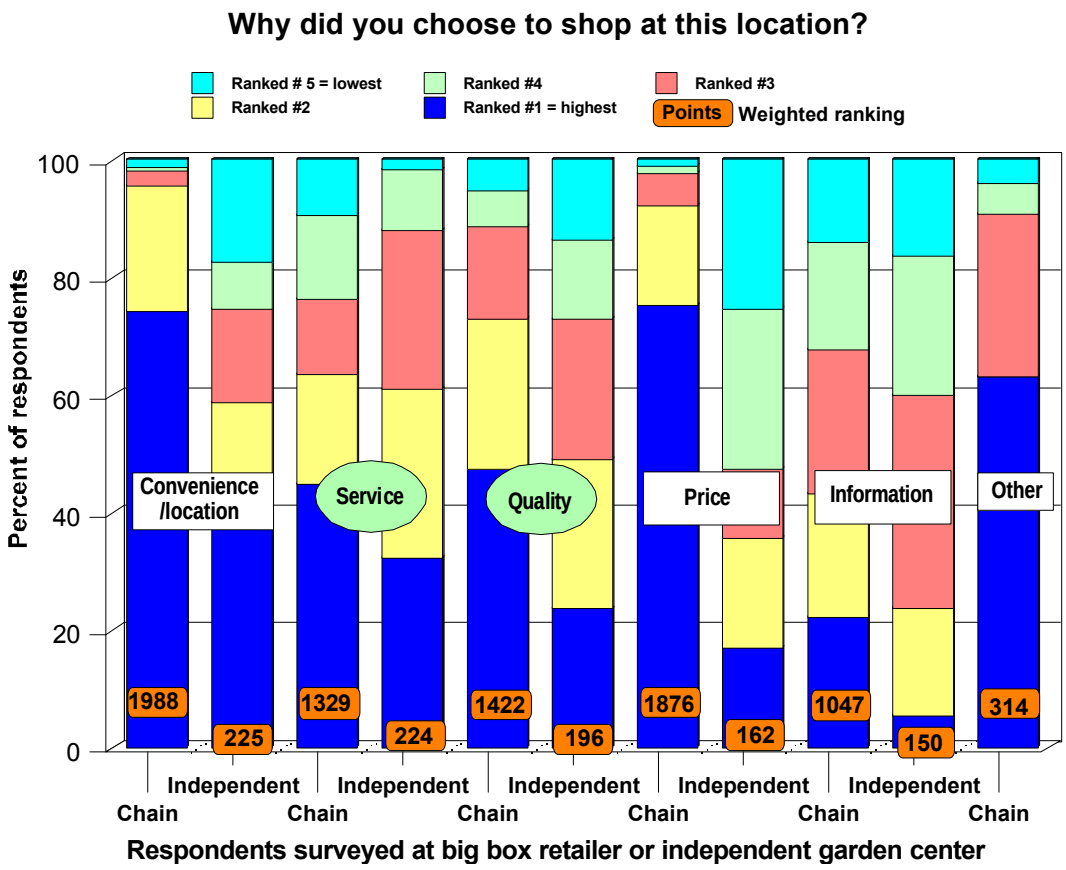

Fig. 5. **Weighted rankings of considerations by respondents, according to store type, when choosing to shop at a particular outlet for nursery products.**

third, 24 ranked it fourth and 32 respondents ranked it fifth. The remaining factors considered for choosing a retailer, in order of importance, were 'price', 'quality', 'service', 'information' and 'other' miscellaneous reasons. The weighted rankings for each of the various criteria are shown at the bottoms of the bars in Figures 2–5. Pairwise statistical tests showed that the rankings for all factors were significantly different ($p < 0.01$), with the exception of the factors 'quality' and 'other', due to the small number of responses for 'other' (Table 1). These differences also held under analysis by demographic groups for gender, age and education. For respondents with a college education and annual household income greater than $50,000, convenience/location was still considered the number one reason to shop at a particular store, however, 'quality' surpassed 'price' as the second most important reason (Figs. 3 and 4, respectively). Respondents shopping at independent retailers rather than chains, perhaps not surprisingly, indicated that 'service' was the number two reason for choosing a place to shop, and 'quality' continued to rank above 'price', while 'information' and 'other' reasons were less important (Fig. 5).

Given the importance that consumers place on convenience and location, businesses should weigh this heavily if considering opening a new garden center. This also suggests that existing stores that do not have a strategic location will be at a competitive disadvantage in the local market. Owners and managers of these garden centers will need to offset this problem by identifying and utilizing other strategies such as adjusting prices, unique product lines, larger product selection or special services not offered by competitors. According to this study, convenience/location was the most important reason consumers selected a particular garden center store. Other factors to be considered include the results that those who frequent chain store garden centers are looking for the best price with less emphasis on quality or service. In contrast, those who frequent independent garden centers place more emphasis on service, then quality, rather than price. Furthermore, if the garden center is located in an area where many of the shoppers are highly educated or have above average incomes, quality merchandise should be the goal of the retailer.

Types of goods purchased. Preferences for various types of environmental horticulture goods were examined in terms of the major categories of plants, non-plants (e.g. hardgoods) and information, with additional subcategories under each. Fifty-five percent of the respondents indicated that they were shopping for non-plant items. Of those consumers purchasing hardgoods, nearly one-third sought mulches, followed by fertilizers (16%) and pesticides (14%) (Fig. 6). Forty percent of survey participants said they were looking for plants with the majority (53%) looking for flowering plants for outdoor use. Approximately one-third (33%) were purchasing either shrubs (21%) or trees (12%) for the outdoors and 8% were buying indoor house plants. Only 5% of the participants indicated that they were looking for information and over half of them were looking for non-specific 'other things' rather than plant care or design information.

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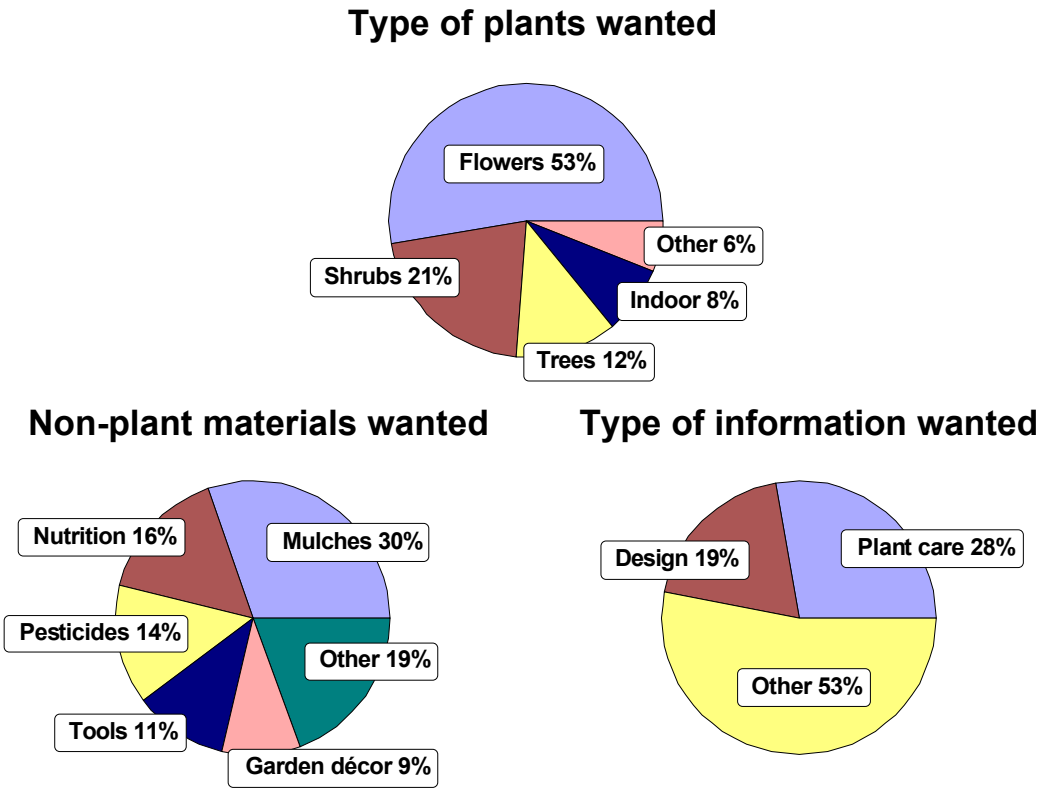

Fig. 6. Types of items desired by 910 shoppers participating in an exit survey at various garden center retail outlets.

Table 2. Analysis of demographic effects on actual vs. intended purchases and shopping frequency by Statistica (v. 6) general linear/non-linear models procedure with ordinal multinomial logit function.

Parameter	Level of effect	Parameter estimate	Standard error	Wald statistic	Probability (p)
Actual purchases vs. intentions (1 = less, 2 = exactly, 3 = more)					
Intercept 1		–0.211	1.652	0.016	0.898
Intercept 2		2.559	1.689	2.294	0.130
Highest shopping frequency (1–3)		–1.070	0.455	5.523	0.019
Age (1–4)		0.607	0.448	1.838	0.175
Education 2 (1–2)		0.778	0.672	1.341	0.247
Income (1–2)		–1.162	0.750	2.402	0.121
Gender	male	–1.323	0.735	3.242	0.072
	female	0.000			
Store type	independent	0.087	0.996	0.008	0.930
	chain	0.000			
Gender × Store type	male-independent	2.991	1.646	3.300	0.069
	female-independent	0.000			
	male-chain	0.000			
	female-chain	0.000			
Scale		1.000	0.000		
Highest shopping frequency (1 = weekly, 2 = monthly, 3 = biannually/seasonally)					
Intercept 1		–0.129	1.290	0.010	0.920
Intercept 2		1.951	1.322	2.178	0.140
Age (1–4)		–0.494	0.368	1.802	0.179
Education 2 (1–2)		0.274	0.592	0.214	0.643
Income (1–2)		–0.329	0.625	0.276	0.599
Gender	male	0.222	0.616	0.129	0.719
	female	0.000			
Store type	independent	–1.566	0.975	2.580	0.108
	chain	0.000			
Gender × Store type	male-independent	1.334	1.496	0.796	0.372
	female-independent	0.000			
	male-chain	0.000			
	female-chain	0.000			
Scale		1.000	0.000		

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Actual vs. expected purchases. A third question delved into customer satisfaction or the 'shopping experience'. Specifically, respondents were asked 'Are you leaving with only what you planned to purchase, more than you planned or less than you planned?'. Sixty percent of the respondents indicated that they left with more than they had anticipated buying. The multinomial logit regression analysis of actual vs. expected purchases revealed that shopping frequency had a significant effect ($p < 0.05$), with the negative sign for this parameter indicating that more frequent shoppers had higher-than-expected purchases (Table 2). No other demographic variables (age, sex, education, income) or store type had a statistically significant effect.

From a management standpoint, this suggests that retailers have opportunities to increase sales if the right incentives are provided to consumers. The finding emphasizes the importance of impulse buying. To take advantage of this, retailers should strive to have a full complement of goods and services. Having adequate variety and availability of these products may be especially important during high activity seasons like spring and fall.

Seasonal purchasing frequency. As another question, consumers were asked about their shopping frequency (weekly, monthly, seasonally, biannually) for environmental horticulture products during the four seasons (spring, summer, fall, winter). Results indicate that, despite mild fluctuations in purchasing activity across seasons, Florida consumers shop aggressively for horticulture products year round. Nearly all participants (98%) shop for these types of items in the spring and somewhat fewer participants (89%) shop in the fall, while summer (82%) and winter (78%) represent the least active seasonal periods.

A further break down of shopping patterns showed that nearly 40% of those who shop in the spring do so on a weekly basis, 31% shop at least monthly, and the remainder were equally split between shopping once a season or only twice a year. Only 13% of the summer shoppers did so on a weekly basis while nearly half (44%) shopped monthly during this season. Twenty-five percent shopped only once during the summer months. The majority (53%) of fall garden center shoppers do so monthly and the remainder were split nearly equally as weekly, twice a year or once during the season shoppers. Winter shoppers are split into basically three equal groups — once a season shoppers (33%), monthly shoppers (30%) and bi-annual shoppers (28%). During the winter only 8% of the shoppers do so weekly. For the multinomial logit regression analysis of shopping frequency, the data were recoded to represent the highest frequency of shopping in any season. This analysis did not reveal any statistically significant effects of demographic variables or store type (Table 2).

Nursery producers should keep these findings in mind when marketing their products at various locations. Placing their higher quality plants at the independent garden centers might allow the growers to market at a higher price because consumers are not so cost conscious at these locations when compared to a big box retail store. Regardless of the type of store, people's purchasing habits can be swayed. While the most frequently purchased items include mulches and flowering plants for the outdoors, the majority of shoppers will purchase more than initially planned. This suggests that retailers, and the hard good suppliers, have opportunities to increase sales if the right incentives are provided to the consumers.

Literature Cited

1. Behe, B.K., T.A. Prince and H.K. Tayama. 1992. Market segmentation of supermarket floral customers. HortScience 27:459–462.

2. Behe, B., R. Nelson, S. Barton, C. Hall, C.D. Safley and S. Turner. 1999. Consumer preferences for geranium flower color, leaf variegation, and price. HortScience 34:740–742.

3. Hall, C.R., A.W. Hodges and J.J. Haydu. 2005. Economic impacts of the green industry in the United States. Final report to the National Urban and Community Forestry Advisory Committee, 81 pp., June 3, 2005. Available at http://economicimpact.ifas.ufl.edu.

4. Hudson, J.T., B.K. Behe, H.G. Ponder and W.E. Barrick. 1997. Consumer perceptions and expectations of garden center product and service quality. J. Environ. Hort. 15:12–15.

5. Jerardo, A. (principal contributor) 2005. Floriculture and nursery crops situation and outlook yearbook. Economic Research Service, U.S. Department of Agriculture, FLO-2005, June 2005, 131 pp.

6. Townsley-Brascamp, W. and N.E. Marr. 1995. Evaluation and analysis of consumer preferences for outdoor ornamental plants. Acta Hortic. 391:199–206.

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