

Consumer Product and Service Preferences Related to Landscape Retailing

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Abstract. Survey data from 788 single-family residences from New England were analyzed to evaluate purchasing preferences and gardening habits. Particular attention was focused on plant attributes and choices of independent garden centers vs. mass merchandisers. Independent garden centers, magazines, and friends were the most important sources of gardening information, while mass merchandisers were relatively unimportant information sources. While consumers trusted information received at independent garden centers, they did not trust mass merchandiser information as much. The most important product and service attributes of retail establishments were well-maintained plants, informative signage, knowledgeable staff, and a wide selection of plant material. Gardening chemicals and fertilizers were purchased at mass merchandisers due to price. Consumers preferred to purchase high-value, long-lived plants (trees and shrubs) at independent garden centers due to higher plant quality and access to knowledgeable staff. When making plant purchases, plant appearance was the most important consideration regardless of whether the plant was an annual, perennial, or woody plant. The presence of flowers on plants was not ranked as influential in making purchase selections, but evidence of new growth, the presence of dark green foliage, and knowledge of a northern-grown source were important. For trees and shrubs, the significance of a plant guarantee and knowledge of a northern-grown source increased in importance in comparison to annuals and perennials.

Production and marketing of nursery crops has been an increasing component of the agricultural sector in the United States over the last four decades (Makus et al., 1992). In New England, the environmental horticulture industry, comprised of wholesale nursery and greenhouse growers, retail garden centers, and landscape and tree care services, surpassed \$3.7 billion in 1998 (Perry and Stack, 2000). The ornamental plant industry is the largest agricultural sector in most New England states.

Although there has been steady growth of the ornamental plant market, independent garden centers and retailers feel that they are facing increased competition from mass merchandisers. Successful merchandisers of ornamental horticulture products need to address the relative importance of product attributes and desired services demanded by

their customers. Better comprehension of customer buying patterns and behavior will also help retailers optimize sales.

Studies addressing at least some consumer preferences for products and services related to landscape retailing have been conducted in Arizona (Niemiera et al., 1992), California (Stamen et al., 1990), Georgia (Day, 1994), Kansas (Khatamian and Stevens, 1994), New Jersey (Baker, 1965), North Carolina (Safley and Wohlgenant, 1995), and Oklahoma (Henderson and Schnelle, 1991). Barton et al. (1998) have written a review of customer preference research in the nursery and landscape industry. Several previous studies only surveyed consumer preferences in relation to independent garden centers and did not make comparisons between independent retailers and mass merchandisers. Consumer preferences for landscape products and services have not been previously reported for New England. This paper presents results of a survey of New England residents of single family dwellings. The objectives of the research were to: 1) assess consumer gardening habits, gardening purchase patterns, horticultural information sources, and important plant characteristics; and 2) identify differences in consumer predisposition toward independent retailers and mass merchandisers.

A survey was developed to obtain information on reasons for gardening, sources of gardening information, factors affecting retail store selection, relative importance of various retail store characteristics, planting time, and relative importance of various plant attributes. The 18-question survey was mailed to 2900 single-family dwellings in New England. Names and addresses were randomly selected from lists purchased from MidAmerica Lists, Cedar Rapids, Iowa. The number of single-family dwellings surveyed in each of the six New England states was proportional to the population of that state. The survey was mailed to 721 (24.9%) Connecticut, 1322 (45.6%) Massachusetts, 270 (9.3%) Maine, 243 (8.4%) New Hampshire, 220 (7.6%) Rhode Island, and 124 (4.3%) Vermont residents.

A mailing of 2900 surveys was done in March, with a follow-up mailing 4 weeks later. A cover letter and postage paid reply envelope were included with each survey. A free fact sheet on dogwood decline was included with the follow up and supplementary mailing to encourage completion and return of the surveys. Validity and reliability of the survey were tested by members of the New England Nursery Association Board of Directors and 40 single-family residences. Questions were modified to reduce ambiguity following each assessment. Survey respondents were asked to provide their state and the town name they used for census and tax purposes. Each respondent was assigned a house value and population density based on the average house value and population density of the survey respondent's town.

Survey data were analyzed using the univariate procedure of SAS for Windows vers. 6.12 (SAS Institute, 1998). Data were sorted by average house value, population density, region (northern vs. southern New England), and state. Responses with missing information for particular variables were excluded on an analysis-by-analysis basis. This caused slight variation in the effective sample size for each analysis. Differences between category or rank means were determined using multiple comparisons for proportions and the Tukey test (Williams and LeBlanc, 1995).

Results and Discussion

A total of 788 surveys was returned to yield a 27% survey return rate. Surveys from Massachusetts residents were returned at a lower frequency than surveys from all other states, so Massachusetts is slightly underrepresented in the data (Table 1). Almost three-quarters of the surveys were from southern New England states. House values of respondents ranged to over \$300,000 dollars, but 73% of respondents had houses with values between \$100,000 and \$200,000. The mean house value of respondents was \$162,000 and the median value was \$151,000. Most respondents (83%) lived in areas with population densities of <1000 persons/km². The average population

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Table 1. Selected characteristics of surveyed gardening consumers.

Respondent Characteristic	Respondents (%)	Response Rate (%)
<i>Location</i>		
Massachusetts	34	20
Connecticut	29	32
Maine	12	35
New Hampshire	11	36
Rhode Island	9	32
Vermont	5	32
Southern New England ²	72	25
Northern New England ³	28	35
<i>House value</i>		
\$0-\$49,999	1	
\$50,000-\$99,999	10	
\$100,000-\$149,000	38	
\$150,000-\$199,999	35	
\$200,000-\$249,999	9	
\$250,000-\$300,000	4	
>\$300,000	4	
<i>Population density/m²</i>		
0-99	22	
100-249	22	
250-499	21	
500-999	18	
1,000-2,000	12	
>2,000	5	

²Southern New England = Connecticut, Massachusetts, Rhode Island.

³Northern New England = Maine, New Hampshire, Vermont.

density was 607 persons/km² and the median population density was 289 persons/km².

Reasons for gardening. Data are presented as mean rank and percentage of respondents selecting each rank (Table 2). While mean ranks are useful to see overall preferences, use of multiple comparisons for proportions and the Tukey test provide a clearer picture of the distribution of rankings within a given reason for gardening. For example, exercise and increase property value had fairly close mean ranks of 3.0 and 3.4. The mean rank for exercise of 3.0 resulted from a relatively even distribution of rankings of 2, 3, or 4. The mean rank of 3.4 for increase property value was largely the result of many rankings of 4, indicating a stronger feeling among respondents that this reason for gardening was not important.

Relaxation and enjoyment rank as the most important reason people garden (Table 2). It was ranked first by 66% of respondents. The second most important reason to garden, receiving a rank of 1 or 2 by 69% of respondents, was improving outdoor living space. Nearly 50% of homeowners in California ranked beautification, one way of improving outdoor living space, as the most important reason to garden (Stamen et al., 1990). In 1965, a Delaware survey found that only 1% of respondents planted trees and shrubs to provide privacy and improve their outdoor living space (Raleigh, Jr. and Smith, 1965). Residents today may feel a greater need to extend their living space outside the confines of their homes than in the past, possibly due to population increase and congestion. In our study, increasing property value was ranked as the least important reason to garden. Fifty-five percent

Table 2. Consumer rankings of reasons for gardening.

Reason for gardening	Respondents selecting each rank (%)				
	Rank 1 ²	Rank 2	Rank 3	Rank 4	Mean rank
Relaxation/enjoyment	66 a ³	23 b	7 c	4 c	1.5
Improve outdoor living space	29 b	40 a	23 b	8 c	2.1
Exercise	3 c	28 b	36 a	33 ab	3.0
Increase property value	3 d	10 c	32 b	55 a	3.4

²Rank 1 = the most important, rank 4 = the least important.

³Separation of percentages within rows by multiple comparisons for proportions and the Tukey test at $P \leq 0.05$.

of respondents ranked it last in importance, while only 3% ranked it first (Table 2). Twenty-five percent of California homeowners ranked increasing property value as the most important reason to garden (Stamen et al., 1990), indicating differing priorities between the west and east coasts of the United States. It also appears that in the last 35 years, east coast resident priorities have changed, since increasing property value was one of the more important reasons Delaware residents planted trees and shrubs in 1965 (Raleigh and Smith, 1965).

Gardening information sources. If retailers know where customers receive their gardening information, they can respond more rapidly and accurately to market trends and provide specific information to influence consumer purchases. Our survey found that the most popular sources of gardening information were independent garden centers and nurseries, magazines, friends, and mail order catalogs (Table 3). Independent garden centers and nurseries were an information source for 65% of respondents. The fewest respondents chose garden departments of large chain stores, gardening classes and club meetings as sources of information. Several other studies from California, Delaware, New Jersey, and North Carolina have also found the most used sources of gardening information to be independent garden center personnel, magazines, newspapers, and friends/neighbors (Baker, 1965; Raleigh and Smith, 1965; Safley and Wohlgenant, 1995; Stamen et al., 1990).

Residents with high house values ($\geq \$150,000$) used independent garden centers and nurseries as an information source more than residents with low house values (Table 3). Residents located in low house value areas relied on television and garden departments of large chain stores for information more than residents located in high house value areas. Mail order catalogs were an information source for more residents from low population density areas (≤ 300 persons/km²) than for residents from high population density areas (Table 3). This may reflect reduced access to certain information sources in low population density areas. Northern New Englanders also used mail order catalogs as an information source more than southern New Englanders, while southern New Englanders depended more heavily on independent garden centers as a source of information. Only 9% of respondents indicated that they were currently using the Internet to obtain horticultural product information. However, when asked if they expected to use the Internet to obtain horticultural information within the next two years, 43% of respondents felt they would.

While the Internet was not a primary source for gardening information, it appears that the use of the Internet for obtaining horticultural information will increase significantly in the near future.

When asked about the reliability of information obtained from independent garden centers and nurseries, 89% of respondents had at least moderate confidence in the information they received (Table 4). Only 24% of respondents had confidence in the information they received from garden departments of large chain stores. A consumer survey comparing service expectations to services actually received also found that mass merchandisers fell well short of meeting consumers' expectations for employee knowledge and assistance (Hudson et al., 1997). While independent garden centers also failed to meet consumer expectations, the differences between expectations and actual services received were much smaller. Clearly, independent garden centers are viewed by consumers as being better able to provide accurate horticultural information than garden departments of large chain stores. Horticultural information is a strength of the independent garden centers that can be utilized to compete with mass merchandisers.

Store selection and preference. New England residents visited independent garden centers or nurseries an average of 6.5 times per year, garden departments of large chain stores 4.1 times per year, and made mail-order purchases an average of 1.9 times per year. Khatamian and Stevens (1994) also found that gardeners shopped most frequently at garden centers, followed by discount stores, and then mail-order sources.

Safley and Wohlgenant (1995) found that customers view garden centers as specialty stores and expect a larger selection of plant material there than at mass merchandisers. In our survey, 89% of respondents indicated satisfaction with the selection of plant varieties available at independent garden centers and nurseries, but only 39% were satisfied with plant selection at garden departments of large chain stores. Thirty-five percent of respondents indicated a willingness to travel an average of 20.9 miles one way to search out new, rare or unusual plants or products. Padgett et al. (1965) found that nearly 80% of respondents made special trips to shop for garden supplies. In a Georgia study, customers were more willing to travel significant distances if they were shopping for trees, shrubs, or specimen plants (Day, 1994). The ability to offer a wide range of unique and unusual plants is another marketing strength of independent garden centers, and one they should maintain

Table 3. Consumer ranking of horticultural information sources.

Information source	Total	Respondents (%)								
		House value ^z			Population density ^y			Region ^x		
		High	Low	Sign. ^v	High	Low	Sign.	NNE	SNE	Sign.
Independent garden centers & nurseries	65 a ^w	70	59	*	68	62	NS	56	68	*
Magazines	55 b	56	54	NS	54	56	NS	55	55	NS
Friends	50 bc	50	48	NS	51	47	NS	45	51	NS
Mail order catalogs	47 c	45	49	NS	43	51	*	54	44	*
Television programs	28 d	23	32	*	29	26	NS	33	26	NS
Books	25 d	25	25	NS	24	26	NS	26	25	NS
Garden departments of large chain stores	18 e	16	21	*	17	19	NS	19	18	NS
Classes or club meetings	4 f	5	3	NS	4	5	NS	4	4	NS

^zHouse values: <\$150,000 = low; ≥\$150,000 = high.

^yPopulation density: <300 persons/km² = low, ≥300 persons/km² = high.

^xNNE = northern New England (Maine, New Hampshire, Vermont); SNE = southern New England (Connecticut, Massachusetts, Rhode Island).

^wMean separation within the column by multiple comparisons for proportions and the Tukey test at $P \leq 0.05$.

^vMean separation within subgroupings by multiple comparisons for proportions and the Tukey test at $P \leq 0.05$.

^{ns} *Nonsignificant or significant at $P \leq 0.05$.

to remain competitive with mass merchandisers that have difficulty providing a wide range of plant species and cultivars.

Residents were asked how much shopping around they do before purchasing various plant and gardening supplies. Survey respondents did not report strong differences in comparison shopping for annuals and perennials vs. trees and shrubs vs. gardening tools/supplies (Table 5). The data did suggest that respondents were slightly more likely to comparison shop for trees and shrubs than they were for herbaceous plants and gardening tools/supplies. Since trees and shrubs are costlier and will have extended utility, the consumer is probably interested in comparison shopping to save money and obtain the healthiest stock possible.

Garden departments of large chain stores were the most frequent consumer sources for gardening chemicals and fertilizers (Table 6). Consumers cited price as the overwhelming (90%) reason for making these purchases at chain stores. Safley and Wohlgenant (1995) found that their focus group also indicated that customers tend to purchase gardening supplies from mass merchandisers. Consumers who purchased gardening chemicals and fertilizers at independent garden centers and nurseries cited convenience as the primary reason they did so (Table 6). Independent garden centers and nurseries were used for the majority of consumer plant purchases (Table 6). Day (1994) also found that customers choose independent garden centers for major plant purchases. Respondents cited the high plant quality as the reason for making their purchases at independent garden centers and nurseries (Table 6). Consumers expect garden center personnel to be better trained to care for plants than personnel at mass merchandisers (Safley and Wohlgenant, 1995). When plants were purchased at chain stores, price was cited as the reason (Table 6). As plant value and the potential longevity in the landscape increased, from annuals to perennials to shrubs/trees, the percentage of purchases made at independent garden centers and nurseries increased (Table 6). Furthermore, an increasing number of consumers cited plant quality as the reason for making purchases at independent garden cen-

Table 4. Consumer rating of horticultural advice from independent garden centers and mass merchandisers.

Source of advice	Respondents trusting horticultural product advice (%)							Mean rating
	Yes		Somewhat			No		
	1	2	3	4	5	6	7	
Independent garden centers and nurseries	41 a ^z	32 b	16 c	8 d	2 e	1 e	1 e	2.0
Garden departments of large chain stores	4 c	4 c	16 b	24 a	21 a	15 b	17 b	4.7

^zMean separation within type of business by multiple comparisons for proportions and the Tukey test at $P \leq 0.05$.

Table 5. Consumer willingness to shop at multiple retail establishments before making horticultural purchases.

	Respondents in designated response category (%)							Mean rank
	Agree						Disagree	
	1	2	3	4	5	6		
Seldom try other sources after finding a good source of yard and garden products	16.3 bc	22.6 a	21.1 ab	15.3 c	8.5 d	9.2 d	7.1 d	3.3
Shop at a number of stores before buying trees and shrubs	21.9 a	20.2 a	13.2 b	12.2 b	9.2 b	11.8 b	11.5 b	3.5
Shop at a number of stores before buying gardening tools/supplies	17.2 a	15.9 a	15.6 a	16.1 a	11.2 b	12.7 b	11.3 b	3.7
Shop at a number of stores before buying annuals and perennials	16.9 a ^z	14.9 a	16.5 a	12.9 a	12.8 a	13.4 a	12.5 a	3.8

^zMean separation within type of horticultural product by multiple comparisons for proportions and the Tukey test at $P \leq 0.05$.

Table 6. Retail establishment preferences of consumers for different horticultural products.

Product category	Primary source	Purchases made (%)	Reasons specified for purchases (%)		
			Convenience	Price	Quality
Annuals	Independent garden centers and nurseries	69 a ^z	25 b ^y	10 c	65 a
	Garden departments of large chain stores	26 b	30 b	67 a	3 c
	Mail order companies	5 c	48 a	18 b	33 b
Perennials	Independent garden centers and nurseries	74 a	14 b	8 c	78 a
	Garden departments of large chain stores	14 b	22 b	70 a	9 c
	Mail order companies	12 b	41 a	20 b	49 a
Trees and shrubs	Independent garden centers and nurseries	84 a	13 b	5 c	83 a
	Garden departments of large chain stores	10 b	13 b	78 a	9 b
	Mail order companies	6 c	13 b	28 ab	49 a
Chemicals and fertilizers	Independent garden centers and nurseries	30 b	49 a	20 c	31 b
	Garden departments of large chain stores	68 a	9 b	90 a	1 c
	Mail order companies	3 c	6 b	44 a	50 a

^zMean separation within the column by multiple comparisons for proportions and the Tukey test at $P \leq 0.05$.

^yMean separation between reasons for purchase by multiple comparisons for proportions and the Tukey test at $P \leq 0.05$.

Table 7. Consumer evaluation of product and service characteristics of retail establishments.

Product and service characteristics for horticultural retailers	Respondents (%) ^z
Healthy, fresh, and well-maintained plants	92 a ^y
Informative plant labels and signs	69 b
Knowledgeable and friendly staff	67 b
Wide selection of plant material in stock	67 b
Low everyday prices	56 c
Plant guarantee	51 cd
Convenient location	46 d
Prompt service, easy checkout, and loading assistance	31 e
Sales specials, including quantity and package discounts	29 ef
Attractive displays	23 fg
Shopping carts or wagons	18 gh
Educational display gardens	15 h
Landscape design assistance	15 h
Evening hours	13 h
Educational seminars	4 i

^zPercentages based on selection of the six most important characteristics.

^yMean separation within the column by multiple comparisons for proportions and the Tukey test at $P \leq 0.05$.

ters as the value and longevity of the purchases increased. In part, this may be because consumers feel less qualified to assess the quality of perennials and woody plants than bedding plants (Day, 1994). When spending more money and purchasing long-lived landscape plants, consumers are more compelled to purchase at independent garden centers where they perceive that plant quality is better and they are less likely to make purchasing mistakes.

Importance of store features. The most important features of a retail establishment were healthy, fresh, and well-maintained plants; informative plant labels and signs; knowledgeable and friendly staff; and a wide selection of plant material in stock (Table 7). Several other surveys conducted at different locations in the United States have also found plant quality, plant selection, and knowledgeable staff to be the top reasons why gardeners choose particular retail establishments (Khatamian and Stevens, 1994; Niemiera et al., 1992; Safley and Wohlgenant, 1995; Swanson, 1994). Retailers must focus some of their efforts on improving plant labeling and informational signage, while continuing to maintain a large selection of well-maintained plant material. Consumers reported that educational seminars, evening hours, landscape design assistance, and educational display gardens were not as important as other retail establishment features (Table 7).

Planting season. Over three-quarters (78%) of respondents indicated they plant trees and shrubs in the spring. Only 22% of respondents plant trees and shrubs in the fall. Regardless of the planting season, consumers most often cited "more favorable conditions for the plants" as the reason they chose the season they did (Table 8). More fall planters than spring planters cited "more favorable conditions for the plants" as

Table 8. Consumer ranking of reasons for planting time preference.

Reason for choice of season	Respondents selecting each rank (%)				Mean rank
	Most important Rank 1	Rank 2	Least important Rank 3 Rank 4		
<i>Plant in the spring</i>					
More time for gardening	9.8 c ^z	15.4 c	26.8 b	48.0 a	3.1
More enthusiasm for gardening	32.4 a	19.0 c	27.3 ab	21.2 bc	2.4
More favorable conditions for the plants	43.7 a	25.6 b	18.3 bc	12.4 c	2.0
Wider selection of available plant material	14.1 c	40.0 a	27.6 b	18.3 c	2.5
<i>Plant in the fall</i>					
More time for gardening	11.6 b	36.2 a	28.3 a	23.9 a	2.6
More enthusiasm for gardening	5.8 c	18.8 b	47.1 a	28.3 b	3.0
More favorable conditions for the plants	76.8 a	14.5 b	5.8 bc	2.9 c	1.3
Wider selection of available plant material	5.8 c	30.4 ab	18.8 b	44.9 a	3.0

^zMean separation within reasons for purchase by multiple comparisons for proportions and the Tukey test at $P \leq 0.05$.

Table 9. Importance of selected plant and marketing factors to consumers.

	Respondents selecting each rank (%)						Mean rank
	Most important Rank 1 Rank 2 Rank 3			Least important Rank 4 Rank 5 Rank 6			
<i>For annuals</i>							
Plant appearance	59.2 a ^z	25.0 b	9.5 c	4.4 d	1.5 de	0.4 e	1.7
Price	11.4 cd	22.8 ab	30.2 a	16.9 bc	8.9 d	9.9 d	3.2
In bloom (for flowering plants)	10.4 c	20.5 a	20.1 a	20.3 a	16.9 ab	11.8 bc	3.5
Northern grown	10.2 c	15.7 b	16.7 b	16.9 b	13.9 bc	26.6 a	3.9
Knowledgeable staff	3.6 f	9.1 e	14.8 d	22.6 bc	29.0 ab	20.9 cd	4.3
Plant guarantee	5.1 c	7.0 c	8.7 c	18.8 b	29.4 a	30.9 a	4.5
<i>For perennials</i>							
Plant appearance	52.4 a	22.1 b	13.2 c	9.1 c	2.6 d	0.6 d	1.9
Price	8.9 c	18.1 b	27.6 a	18.9 b	14.2 bc	12.3 c	3.5
In bloom (for flowering plants)	4.5 d	14.6 c	12.3 c	18.5 bc	24.0 ab	26.1 a	4.2
Northern grown	16.1 bc	22.7 ab	12.5 c	12.7 c	14.0 c	22.1 ab	3.5
Knowledgeable staff	6.2 b	10.0 b	21.2 a	20.0 a	24.4 a	18.1 a	4.0
Plant guarantee	11.9 b	12.5 b	13.2 b	20.8 a	20.8 a	20.8 a	3.9
<i>For shrubs</i>							
Plant appearance	46.2 a	22.1 b	14.2 c	12.6 c	4.7 d	0.2 e	2.1
Price	8.9 c	15.2 b	26.4 a	17.8 b	19.1 ab	12.6 bc	3.6
In bloom (for flowering plants)	2.4 e	7.3 d	8.7 cd	12.8 c	25.4 b	43.4 a	4.8
Northern grown	17.2 ab	23.7 a	11.6 b	16.4 b	14.6 b	16.6 ab	3.4
Knowledgeable staff	8.3 b	12.4 b	20.1 a	21.9 a	20.9 a	16.4 ab	3.8
Plant guarantee	16.8 ab	19.3 a	19.1 a	18.5 a	15.6 ab	10.8 b	3.3
<i>For trees</i>							
Plant appearance	41.4 a	21.6 b	17.0 bc	13.7 c	5.8 d	0.4 e	2.2
Price	10.2 c	15.2 bc	24.7 a	17.5 ab	20.8 ab	11.6 c	3.6
In bloom (for flowering plants)	1.9 e	5.8 d	7.9 cd	12.9 c	23.5 b	48.0 a	4.9
Northern grown	17.3 ab	23.7 a	12.9 b	17.3 ab	13.7 b	15.2 b	3.3
Knowledgeable staff	9.8 b	13.1 b	19.8 ab	21.0 a	21.0 a	15.4 ab	3.8
Plant guarantee	19.5 a	20.6 a	17.7 a	17.7 a	15.2 a	9.4 b	3.2

^zMean separation within attributes by multiple comparisons for proportions and the Tukey test at $P \leq 0.05$.

the reason for their choice of planting season, possibly indicating that recent advertising campaigns, promoting fall planting due to favorable planting conditions, have had some effect.

Importance of plant attributes. Plant appearance was the most important characteristic consumers considered when purchasing plants of any kind (Table 9). The importance of plant appearance to consumers decreased as plant value and longevity increased from annuals to perennials to shrubs and trees. Fifty-nine percent of consumers ranked plant appearance highest for annuals, while only 41% ranked plant appearance highest for trees. Consumers may expect instant gratification from their annual purchases, but seem more willing to delay gratification with woody ornamentals, due to their extended period of utility. Price was ranked as the second most important consideration for the purchase of

annuals and perennials, but was of only average importance for shrub and tree purchases (Table 9). For shrubs and trees, a plant guarantee was the second most important factor for the consumers. As might be expected, due to their low monetary value, plant guarantee was ranked as least important for annuals. In general, consumers believe that nursery product prices are reasonable (Khatamian and Stevens, 1994; Padgett et al., 1965). A North Carolina study found that price was the only factor affecting sales demand for various annuals (Abdelmagid et al., 1996).

A significant number of New England consumers believe they will have greater gardening success with plants produced in northern locations than with plants grown in other regions (Table 9). Whether or not a plant was northern grown increased in importance from annuals to perennials to shrubs and trees. Only

Table 10. Importance of various plant attributes to consumers.

	Respondents selecting each rank (%)						Mean rank
	Most important		Rank 3		Least important		
	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5	Rank 6	
<i>For a generic ornamental plant</i>							
Evidence of new growth	33.5 a ^c	27.4 a	18.6 b	15.5 b	5.0 c	N/A	2.3
Absence of discolored or damaged foliage	21.1 b	29.9 a	24.2 b	19.4 c	5.4 d	N/A	2.6
Absence of dropped or wilted leaves	10.4 b	21.1 a	26.7 a	27.0 a	14.9 b	N/A	3.1
Compact shape with no spindly growth	19.2 b	16.0 b	18.6 b	23.7 a	22.5 a	N/A	3.1
In bloom (for flowering plants)	16.1 b	5.4 c	11.8 b	14.3 b	52.4 a	N/A	3.8
<i>For a broadleaf, flowering, evergreen shrub</i>							
Northern grown rather than from unknown origin	36.7 a	16.0 b	13.5 bc	10.2 c	11.2 b	12.5 b	2.8
Dark green rather than green foliage	21.7 a	25.0 a	21.2 a	13.8 b	11.3 b	7.0 b	2.9
First year loss rate of 5% rather than 20%	12.5 c	22.5 a	19.0 ab	18.5 ab	15.7 bc	11.8 c	3.4
Numerous flowers present rather than few flowers	15.2 a	15.3 a	15.8 a	21.0 a	18.2 a	14.5 b	3.6
Priced at \$20 rather than \$30	10.3 c	13.7 bc	18.3 ab	17.0 b	16.5 b	24.2 a	3.9
A 24" spread rather than a 15" spread	3.7 d	7.5 c	12.2 c	19.5 b	27.2 a	30.0 a	4.5
<i>For a flowering herbaceous perennial</i>							
Unusual flower color rather than standard color	24.8 a	24.1 a	20.2 a	13.1 b	10.2 bc	7.6 c	2.8
Northern grown rather than from unknown origin	29.9 a	15.4 bc	12.9 bc	11.5 c	12.5 bc	17.8 b	3.1
Numerous flowers present rather than few flowers	15.2 a	18.9 a	18.0 a	18.1 a	15.4 a	14.4 a	3.4
First year loss rate of 5% rather than 20%	9.9 b	20.2 a	17.2 a	17.5 a	18.9 a	16.3 a	3.6
Priced at \$3 rather than \$6	15.4 bc	11.0 c	13.6 bc	18.3 b	12.9 bc	28.8 a	3.9
A 12" spread rather than a 6" spread	4.5 f	10.5 e	18.4 cd	21.4 bc	30.3 a	14.9 de	4.1

^cMean separation within plant attributes by multiple comparisons for proportions and the Tukey test at $P \leq 0.05$.

29% of consumers ranked northern grown first and second in importance for annuals, while 41% ranked it first and second for trees. The low monetary value of annuals and the fact that they are grown only during the warm months of the year probably accounts for the decreased importance of "northern grown" in purchase considerations for annuals.

Access to knowledgeable staff was a more important consideration for shrub and tree purchases than for annuals (Table 9). The importance of access to knowledgeable staff for perennials purchases fell between annuals and woody plants. Consumers felt relatively sure of their own knowledge about annuals, but less sure about their knowledge of perennials, shrubs, and trees (Day, 1994). The higher monetary value of shrubs and trees may also make consumers less willing to rely on their own knowledge of these plants. Access to knowledgeable staff gives consumers greater confidence that they will have success with their shrub and tree purchases.

Being in bloom was ranked as the least important purchasing factor for perennials, shrubs and trees (Table 9). This seems to be at odds with the generally-held belief of retailers, that color sells and the customer will always pick a plant in bloom over the same plant not in bloom. "In bloom" was ranked as somewhat important for annuals, again indicating the consumers' need for more instant gratification from their annuals purchases. In fact, gardeners often do use annuals to provide instant color to their landscapes.

When evaluating plant quality, consumers ranked evidence of new growth and absence of discolored or damaged foliage as the most important attributes (Table 10). Again, the least important plant attribute was whether or not the plant was in bloom. Compact shape, believed by many retailers to be important, was ranked as relatively unimportant by 46% of the respondents. Customers ranking plant

quality from photographs rated plant compactness and density as less important than plant size (Padgett, 1961).

For broadleaf, flowering, evergreen shrubs, consumers ranked northern grown and dark green foliage as the most important plant characteristics (Table 10). In a New Jersey survey, plant foliage color ranked highest as a factor in determining plant quality (Baker, 1965). These findings should compel growers and retailers to be sure to provide adequate fertility and possibly shading, to maintain rich, green foliage color on plants for sale. Even though a plant guarantee was assumed, consumers ranked higher plant survival in their landscapes as a relatively important factor for flowering, evergreen shrubs. Having to purchase replacement plants is apparently something that consumers wish to avoid. In addition, they may be considering the lost plant growth that results when replanting is required.

Consumers deemed a larger plant spread unimportant for both flowering, evergreen shrubs and herbaceous perennials. Other studies have found plant size to be a relatively important factor for nursery crop purchases (Padgett, 1961). It is possible that consumers either did not understand what "plant spread" meant, or they had difficulty visualizing the difference in plant appearance between, for example, a 24" wide and 15" wide plant.

For flowering, evergreen shrubs and herbaceous perennials, consumers did not rank number of flowers as an extremely important factor (Table 10). However, for herbaceous perennials, the most important factor was unusual or nonstandard flower colors. Consumers are apparently interested in purchasing herbaceous perennials that have atypical or unique flower colors. Breeding and development of new herbaceous perennial cultivars should continue to be a priority. Furthermore, growers and retailers should focus resources on obtaining, producing and delivering new

cultivars to consumers as quickly as possible.

"Northern grown" was ranked almost as important as unusual flower color for herbaceous perennials. Consumers recognize that herbaceous perennials, like shrubs, must survive the winter to fulfill their intended utility in the landscape. Whether correct or not, consumers believe that northern grown plants are more likely to survive New England winters than plants from other sources. For both herbaceous perennials and flowering evergreen shrubs, price was ranked as less important than most other plant attributes (Table 10). Powell (1994) also found that price was a relatively unimportant factor that influenced consumer decisions about where to shop. Plant quality, selection and knowledgeable staff were found to be more important than price in selection of retail establishment (Khatamian and Stevens, 1994).

Conclusion

The nursery industry continues to increase in size and importance to the agricultural sector. In spite of the size of the industry, marketing research has been limited for ornamentals. The potential for continued growth and the long crop production times for nursery crops suggests a need to develop information on consumer preferences and buying habits. Increased competition between independent garden centers and mass merchandisers further necessitates the need for understanding of consumer preferences. This survey used a regional approach to ascertain consumer preferences and buying habits in the New England area. Consumers choose mass merchandisers primarily to take advantage of their lower prices and independent garden centers because of their higher plant quality and access to knowledgeable staff. Throughout several questions in our survey, respondents selected plant quality as an overwhelmingly important

factor in purchases. Independent garden centers may be able to maximize their competitiveness with mass merchandisers by maintaining high plant quality, a wide range of plant material, and emphasizing consumer access to knowledgeable staff.

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