

SECTION 11 MARKETING

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Initial Evaluation of an Extension Program Promoting Environmental Landscape Management

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Nature of Work: Extension educational programs are beneficial when they can successfully educate their audience. Extension programs need to be evaluated to determine their efficacy and improve delivery to their customers.

Environmental Landscape Management (ELM) is an Extension educational program developed by an interdisciplinary team of faculty at the University of Florida (Park Brown and Knox, 1991). ELM is a comprehensive environmental educational program with the goal of increasing consumers' use of environmentally-friendly landscape practices. ELM encompasses aspects of water and energy conservation and promotes practices that reduce disposal of yard wastes and minimize pollution from over-applications of fertilizers and pesticides. The intended audience for the program includes Florida consumers, landscape design and maintenance personnel, environmental regulatory organizations, and retail nursery personnel.

Florida county and state faculty have been promoting ELM through educational programs and publications since 1990. In 1992, the ELM team developed an evaluation plan to determine ELM's impact on the program participants' landscape practices and to provide information concerning ways to improve the delivery and impact of the ELM program. The evaluation used a pre-test/post-test format with a questionnaire that asked about currently-used landscape practices. Before participating in an ELM program, audience members are asked to complete the questionnaire. Six months after the ELM program, a follow-up questionnaire is mailed to each audience member. If the questionnaire is not received within a reasonable time period, "reminder" post cards and, if necessary, a second copy of the questionnaire are sent in order to increase participation in the evaluation.

Extension faculty in 11 counties have been participating in this evaluation plan, but data for the complete evaluation are still being analyzed. This report focuses on data from the pilot study which measured the impact of an ELM workshop held in Hillsborough Co., Florida (the Tampa area), in May 1992 (Israel et. al, 1993). Initial data were gathered from questionnaires distributed prior to the workshop, and data from follow-up questionnaires were gathered from November 1992 through January 1993.

Results and Discussion: Of 269 participants in the May 1992 program, 113 completed both the pre- and post-program questionnaires. Practices relating to cultural conditions for plant growth or promoting lower maintenance were widely adopted by the audience (Figures 1 and 2). Many of these cultural practices are relatively easy for participants to change or adopt. Some of these landscape practices are based on relatively new research and had not been widely promoted prior to the program. Thus, some of the increase in adoption might be attributed to better retention of practices that

were new to the audience. Other practices showed generally positive increases in adoption after 6 months, although the increases were not significant (results not shown). These practices included: using plants adapted to the site; identifying sunny/shady areas; designing low maintenance areas; watering the lawn separately from beds; irrigating according to season; reducing the frequencies of lawn and bed fertilizations; using slow-release fertilizers; fertilizing when needed; avoiding special fertilizers for established woody plants; using the least harmful pesticides; leaving grass clippings on the lawn; using recycled materials for mulch; and pulling mulch away from stems of plants.

The fewest changes in behavior were for practices involving a significant investment in money and/or labor (Figure 3). Other poorly accepted practices included: tolerating slight damage from pests rather than spraying; using hand pruners for pruning instead of shears; installing evergreen plantings to deflect winter winds; and using iron sulfate to green up the lawn.

Increases in adoption of specific ELM practices were variable but there was an overall pattern of increased use of recommended ELM practices. Practices with relatively low adoption rates will need to be emphasized in our future programs. Since initial costs and labor seem to be important disincentives, we will need to emphasize the lower maintenance and long-term cost savings of these landscape practices. Future evaluation of ELM will help us fine-tune our program and increase its impact.

Significance to Industry: The nursery and landscape industries benefit from effective Extension programs that create better-educated consumers of plant materials and landscape services. Informed consumers should make more appropriate choices for their landscapes which, in turn, should lead to healthier landscapes and more satisfied customers. The extension program, Environmental Landscape Management, increases consumers' use of environmentally-sound landscape practices.

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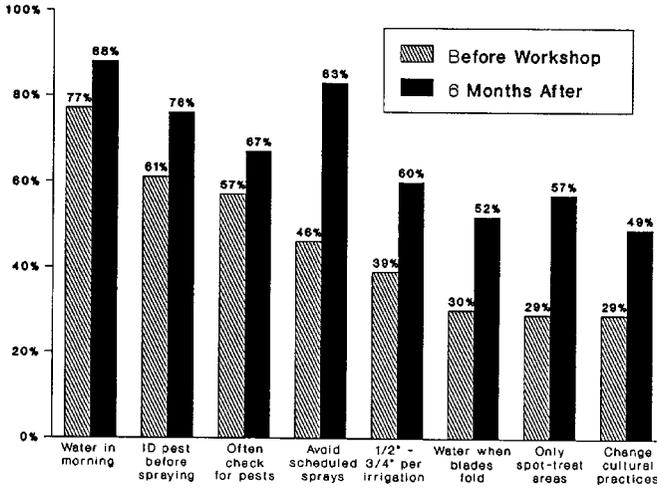


Figure 1. Percent of program participants using recommended landscape practices relating to cultural conditions or lower maintenance.

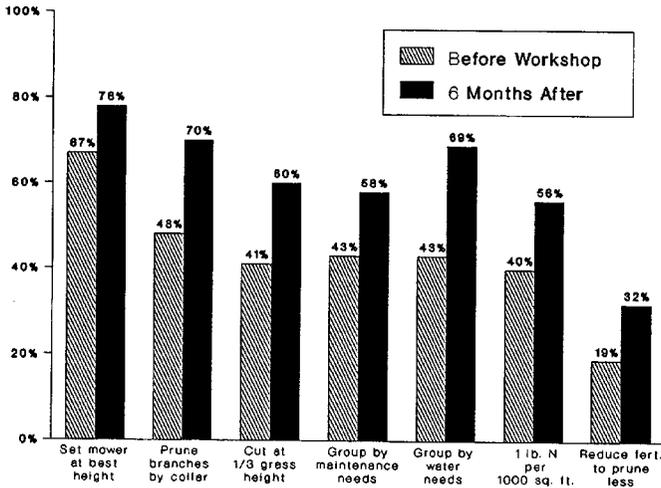


Figure 2. Percent of program participants using recommended landscape practices relating to cultural conditions or lower maintenance.

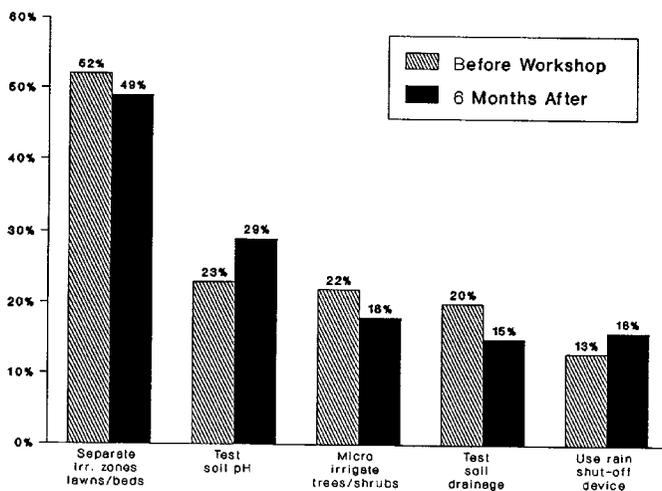


Figure 3. Percent of program participants using recommended landscape practices having initial costs or requiring additional labor or skills.

Marketing Perennials in the Southeast

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Nature of Work: Perennials are becoming more popular additions to the American garden. Part of the difficulty producers and retailers have in marketing perennials is a lack of information on production and purchasing. The USDA reports perennial plant production only once every decade. Perennial plant production was reported to be \$21 million in 1987 (USDC, 1988). Wholesale bedding plant production was valued at \$681 million that year (USDA, 1988). Perennials would have accounted for only 3% of the total herbaceous plant market. The objective of this paper was to compare the perennial marketing of Southern growers to that of growers throughout the rest of the U.S.

The 1992 and 1993 Professional Plant Growers Association (PPGA) & Greenhouse Manager Magazine Season Sales Summaries were conducted by Auburn University researchers. These studies collected information on herbaceous plant producers across the United States. We mailed two survey forms to 1400 PPGA members in June and July of 1992 and 1993. Response rates were 21% and 22% respectively. Respondents were divided into two categories, the Southern region and the remainder of the U.S. There were 42 and 47 growers from the Southern region in 1992 and 1993 respectively. Their responses were compared to 251 and 258 producers from the rest of the country. Questions focused on (1) the percentage of total perennial sales accounted for by each crop listed, (2) planned changes in production, (3) rating the sales of the crop [in 1993 only], and (4) perennial sales information. Specific perennials listed on the form were the following: *Achillea*, *Aquilegia*, *Chrysanthemum*, *Dianthus*, *Hemerocallis*, *Hosta*, *ornamental grasses*, *Phlox*, *Primula*, and *Salvia*.

Results and Discussion: In comparing perennials grown by Southern producers in 1992, we saw that *Chrysanthemum*, *Hosta*, and *Hemerocallis* were the species that accounted for the largest percentage of production (Table 1). For Southern growers, *Aquilegia* and *Primula* accounted for a lower percentage of the total perennial crop, whereas *Salvia* accounted for a higher percentage of total perennial plant production. In 1993, Southern producers grew a lower percentage of *Primula* and a higher percentage of *Salvia* when compared to growers throughout the rest of the country. Most crops, other than *Chrysanthemum*, accounted for only small percentages of the total crop.

We asked growers to report if they were planning increases next year in the number of units of each type of perennial they grew. A smaller percentage of Southern growers planned increases in *Aquilegia*, *Hemerocallis*, and *Primula* than other growers did. In 1993, fewer Southern growers planned increases in *Aquilegia*. Most categories of perennial plants were expanding at similar rates for all growers.

In 1993 we asked growers to report their perceptions of the sales trends for the 10 perennial crops listed. Ratings were made on a scale from 5 = excellent sales to 1 = poor sales (Table 3). Crops received an average rating between 2.3 (*Primula*) and 3.2 (*Hosta*). Only one difference was observed; Southern producers rated the sales of *Salvia* higher than did growers throughout the rest of the U.S.

Finally, growers were asked to report total firm sales and total perennial sales. Averages were calculated for the percentage of the total crop accounted for by perennial plants and the average dollar of perennial plant sales. No differences were detected. Southern producers grew perennials for an average wholesale value of \$59,993 in 1992 and \$65,876 in 1993. Growers throughout the rest of the country grew an average \$59,333 and \$66,311 in 1992 and 1993 respectively. In the South, perennials accounted for 11% of total plant sales in 1992 and 9% in 1993. For growers in the rest of the country, perennial sales accounted for 18% and 9% of production in 1992 and 1993.

Significance to the Industry: Perennial plants account for a significant portion of herbaceous plant production. The percentage is probably higher than the 3% calculated from government statistics. The percentage of specific plants grown does vary by region of the country. *Aquilegia* and *Primula* account for a greater percentage of the crop for producers located outside the Southern region. *Salvia* accounted for a higher percentage of perennial plant sales in the Southern region. Producer ratings of sales trends for these crops were similar, except for *Salvia*, which received a better sales rating in the South. The mix of crops varied, but the average wholesale value of perennial plant sales and the percentage of total firm sales accounted for by perennials did not vary by region of the country.

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Table 1. Comparison of Southern region and other growers on the percentage of total perennial plant production accounted for 10 listed perennials.

Crop	Percent of 1992 Production		Percent of 1993 Production	
	<u>South</u>	<u>Other</u>	<u>South</u>	<u>Other</u>
<i>Achillea</i>	2.5	2.2	3.1	2.8
<i>Aquilegia</i>	1.4	7.2*	3.8	3.6
<i>Chrysanthemum</i>	25.1	15.2	30.5	12.8
<i>Dianthus</i>	6.1	4.8	7.1	4.3
<i>Hemerocallis</i>	10.2	6.2	6.8	4.1
<i>Hosta</i>	10.3	7.6	7.6	9.6
Ornamental grasses	1.7	1.9	3.6	3.4
<i>Phlox</i>	4.3	5.9	4.8	4.3
<i>Primula</i>	0.4	7.1*	0.4	5.4*
<i>Salvia</i>	6.4	2.1*	6.9	2.6*

* Significant at $p < 0.05$ using Wilcoxon Rank Sum test.

Table 2. Comparison of Southern region and other growers on the percentage of growers planning increases for 10 listed perennials.

Crop	Percent planning Increases 1992		Percent planning Increases 1993	
	<u>South</u>	<u>Other</u>	<u>South</u>	<u>Other</u>
<i>Achillea</i>	10	13	9	9
<i>Aquilegia</i>	0	14*	6	11*
<i>Chrysanthemum</i>	17	14	13	10
<i>Dianthus</i>	14	15	9	10
<i>Hemerocallis</i>	5	15*	6	11
<i>Hosta</i>	7	17	4	14
Ornamental grasses	2	11	4	9
<i>Phlox</i>	10	12	6	10
<i>Primula</i>	0	13*	2	6
<i>Salvia</i>	19	11	9	9

* Significant at $p < 0.05$ using Wilcoxon Rank Sum test.

Table 3. Comparison of Southern region and other growers on their rating of the sales trends for 10 listed perennials.

Crop	Average rating ¹ 1993	
	<u>South</u>	<u>Other</u>
<i>Achillea</i>	2.6	2.4
<i>Aquilegia</i>	3.0	2.9
<i>Chrysanthemum</i>	3.0	2.9
<i>Dianthus</i>	2.9	2.8
<i>Hemerocallis</i>	2.9	2.8
<i>Hosta</i>	3.2	3.1
Ornamental grasses	2.2	2.3
<i>Phlox</i>	2.7	2.6
<i>Primula</i>	2.3	2.6
<i>Salvia</i>	3.0	2.5*

¹ Rating scale of 5 = excellent sales to 1 = poor sales.

* Significant at $p < 0.05$ using Wilcoxon Rank Sum test.

Marketing Problems of Tennessee's Green Industries - A Student Survey

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Nature of Work: Students in the 1993 Nursery Management course at Tennessee Tech interviewed nursery producers, greenhouse growers, landscapers and garden center operators to compile a list of problems facing these sectors of the green industry. Each business type has specific problems, and the areas noted are by no means inclusive. Only those problems relating to marketing (marketing, management, predicting future sales, labor pool, government regulations, customer ignorance, superstores) are discussed in this paper. Solutions were not solicited, but some suggestions have been included.

Results and Discussion:

Marketing - Marketing is one of the toughest aspects of owning a business. Projecting future market demands and determining and focusing the advertising programs were primary concerns. Identifying and soliciting a broad spectrum of customers throughout the season was critical, and several key factors were: the breadth of the marketing campaign must match the business and products; the advertising schedule must announce sales, specials, classes available, etc., to meet or entice customer desires; and the exterior appearance and interior layout of the business are very important. Lots of color, product variety, and an overall welcome appearance were suggested goals.

Management - Most growers said they did not get into the green industry because they like operating a business, and most faced situations that called for experience they rarely had. They found that many facets of management required more time than they expected. Problems included: labor, government regulations, marketing, accounting, financing, and production.

Budget items like production costs were often under-estimated, and fertilizer, labor, land payment and plant material costs were often incorrectly balanced with the income. Accurate and organized records of all transactions were needed. Attending management classes or possibly combining interests to hire a consultant may be a more reasonable solution for some.

Predicting future sales - "What does the customer want?" is the question that every grower and buyer must face each year, but to predict future sales is difficult. The yearly "favorite plant" varies, and new varieties are competing for customer demand. Although growers want that "plant of the future", it is risky to buy a large supply to grow on for 1 to 2 years and hope the plants will sell.

Labor - Lawns and landscaping are becoming more and more popular, creating a higher demand for plant materials. The expansion that is occurring in the green industry requires a work force that is knowledgeable and flexible - knowledgeable not only about plant material but also about maintenance techniques and products, and flexible to work at low wages, for long hours, and at difficult jobs. Facing deadlines and having few choices, many owners were forced to hire people with little experience or who show little interest in learning.

The attraction to jobs that provide health care, learning incentives and the possibility of advancement often lures employees away from green industries, leaving employers frustrated with the labor pool. In their literature search, the students found an article summarizing hiring techniques that might help to reduce staff turnover (Steele, 1992).

Government Regulations - Government regulations are, of course, necessary to maintain the intra- and inter-state rules regarding purchasing, selling, and maintaining plant materials, but the regulations have become more complicated. Growers face numerous changes in government reporting, and newcomers to the industry often have problems when dealing with the intricate regulations.

Labor laws, environmental procedures, equipment safety standards, employee health, and insurance programs must also be addressed, as prescribed by the Occupational Safety and Health Administration, the Environmental Protection Agency, and Federal Worker Protection Standards. Regulations are extensive and of questionable effectiveness according to some business managers. Many managers feel, regretfully, that legislators who devise these regulations are not part of the green industry and fall prey to media overkill of the problems.

Customer Ignorance - Growers who work and depend on customer satisfaction expect some degree of ignorance about plant materials. This lack of information may seem to be a small problem, but it actually affects many growers. Since the customer is one of the most important parts of a business, customer satisfaction is top priority. When a customer takes a plant home and fails to care for it properly, the grower is often blamed for the plant's death. Some customers do not feel that they have a responsibility to establish and maintain the plant.

Superstores - Superstores, large and conveniently located, with many unique products of adequate and guaranteed quality, have obtained 20%-30% of their customers from existing nursery businesses (Tilt, 1994). Maintaining competitive prices is difficult. Many superstores have exclusive suppliers, so smaller businesses have to select from leftovers that are in limited supply or are small and/or poor quality, and they may have to contend with shipments delayed by larger loads.

Significance to Industry: As the green industry expands, and customers become more demanding with requests for new plant products, pesticides, planting techniques, etc., changes will continue to affect the industry. These changes will create new problems or increase the importance of the problems specified in this study. Successful businesses must address many of these problems to ensure their survival.

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An Analysis of Out-of-State Buyers of Tennessee Nursery Stock

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Tennessee

Nature of Work: The Tennessee nursery industry is an important component of the state's agrarian economy. Cash receipts at wholesale value of nursery and greenhouse crops in Tennessee were ranked fourth among all crops category in 1993 (1). Current trends in the industry show an annual growth rate of 10 percent per year since 1982 (2). This rapid growth has created additional competition at the grower level and some marketing problems and concerns. Consequently, finding additional markets and providing an insight into the characteristics of Tennessee nursery stock buyers will be useful to producers. The purpose of the paper was to examine selected characteristics of the out-of-state buyers of Tennessee nursery stock, and to determine certain factors that influenced their purchasing decision. A mail survey of 100 randomly selected out-of-state businesses from a population of 300 potential buyers of Tennessee nursery stock was conducted in the fall of 1993. A thirty-eight percent response rate was obtained from the survey.

Results and Discussion: Most of the respondents (74%) were in business for more than 10 years, and were located more than 30 miles from a city with a population of 100,000 residents or more. Sixty percent of the out-of-state buyers had a gross sale volume of less than one million dollars, while thirty-six percent had sales of over one million. Of the thirty-eight businesses that responded, ten were growers who produced their own nursery stock but also purchased certain shrubs and trees from Tennessee growers. This characteristic is important because this group of buyers will be more knowledgeable and concerned about "product quality". When the respondents were asked to list the crucial factors that affected their decision in interstate purchase, product quality was ranked the highest (Figure 1). When they were asked under what condition they would buy more nursery stock from Tennessee, product quality was again ranked the highest of the factors that were asked (Figure 2). Consequently, if Tennessee growers want to increase their market share, paying close attention to product quality, along with other production and marketing factors is important.

Significance to Industry: Despite the growing importance of and demand for nursery products, few studies have been conducted on quality and marketing issues for this commodity group. Therefore, the information generated from the study can assist growers of nursery stock in understanding the preferences of nursery stock buyers.

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Factors Indicated by Respondents Affecting Interstate purchase

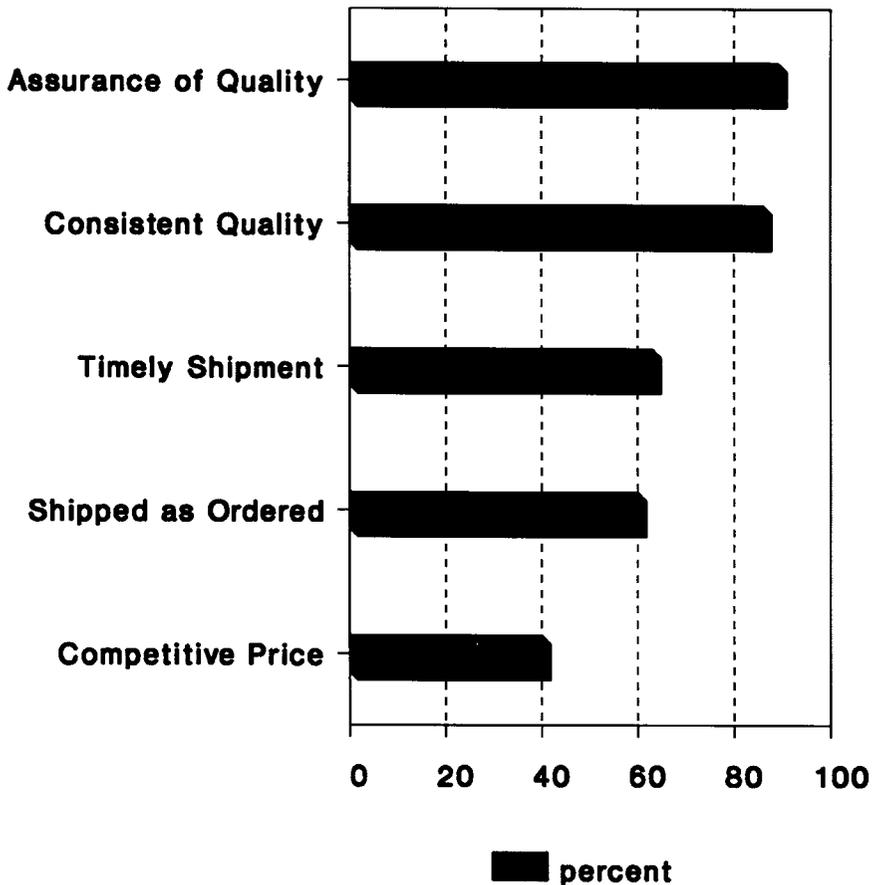
Figure 1.



*Respondents chose more than one factor

Ranking of Factors that Influenced Purchase Decision

Figure 2.



Consumer Demand Elasticities of Selected Annuals and Perennials

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Nature of Work: Marketers are concerned with the magnitude of the consumers' response to price changes and what the effect on total revenue of these product price changes will be. As price declines, quantity demanded typically increases, demonstrating the law of demand. Using the revenue equation [price per unit multiplied by the quantity of units sold equals the dollars of revenue generated], marketers easily assess the total revenue received from the product in question. The task is complicated, however, when the retail selling price per unit changes (i.e., a sale, discounts, specials, increased costs, supply and demand). How will the consumer respond to either perceived or real price changes, and by what magnitude? To address these issues, marketers and economists use demand elasticities to develop pricing strategies and determine their effects on the total revenue of the firm.

Using data supplied by cooperating garden centers, consumer demand elasticities are presented for selected annuals and perennials; the implications of these elasticities on product movement (sales volume) and the garden center's total revenue generated from the product are also discussed.

Results and discussion: Demand elasticity is calculated using the equation:

(% change in quantity demanded) divided by (% change in price).

When the percentage change in quantity is greater than the percentage change in price, demand is called elastic; when the percentage changes are equal, demand is unitary; and when the percentage change in quantity is less than the percentage change in price, demand is called inelastic.

Conclusions can be drawn about what happens to total revenue when the selling price decreases, including:

- (1.) If the percentage change in quantity demanded is greater than the percentage change in price, total revenue increases.
- (2.) If the percentage change in quantity demanded is equal to the percentage change in price, total revenue stays the same as prior to the price change.
- (3.) If the percentage change in quantity demanded is less than the percentage change in price, total revenue decreases.

Price increases reveal just the opposite outcomes for total revenue as the following conclusions apply:

(1.) When the percentage change in quantity demanded is greater than the percentage change in price, total revenue declines.

(2.) When the percentage change in quantity demanded is equal to the percentage change in price, total revenue stays the same.

(3.) When the percentage change in quantity demanded is less than the percentage change in price, total revenue increases.

Therefore, the key is the consumer purchasing response to price changes, i.e., the consumer demand elasticity. For selected annuals and perennials, prices and their associated sales volumes were reviewed in a chronological sequence to observe the percentage changes in quantity purchased relative to the direction of price change and the percentage change in the price. The flowering annuals and perennials evaluated were selected based upon the frequency of response by the cooperating garden centers, the volume of sales at various price levels, and the perceived popularity of the specific plant, as noted by the marketers.

The calculated elasticities follow:

<u>Plant Name</u>	<u>Calculated Elasticity</u>
Flowering Annuals:	
Coleus (<i>Coleus blemei</i>)	0.79
Dusty Miller (<i>Cineraria</i> species)	1.12
Geranium (<i>Pelargonium hortorum</i>)	1.58
Impatiens (<i>Impatiens wallerana</i>)	1.36
Madagascar Periwinkle (<i>Vinca rosea</i>)	1.24
Marigold (<i>Tagetes patula</i>)	0.86
Petunia (<i>Petunia hybrida</i>)	1.29
Scarlet Sage (<i>Salvia splendens</i>)	1.43
Wax Begonia (<i>Begonia semperflorens</i>)	1.70
Zinnia (<i>Zinnia elegans</i>)	0.91
Perennials:	
Daylily (<i>Hemerocallis</i>)	1.18
Delphinium (<i>Delphinium clatum</i>)	0.77
Hardy Aster (<i>Aster alpinus</i>)	1.02
Hardy Mums (<i>Chrysanthemum</i>)	1.84
Hollyhock (<i>Althea rosea</i>)	0.56
Iris	0.93
Peony	1.55
Shasta Daisy (<i>Chrysanthemum maximum</i>)	1.07
Summer Phlox (<i>Phlox paniculata</i>)	0.81

What do the calculated elasticities mean? Citing an example of each of the three categories of elasticity, hardy mums are price elastic ($1.84 > 1.00$) and a 10% change in price, either increase or decrease, will likely result in an 18% opposite response in consumer purchases. [Normally, economists report elasticities as a negative coefficient, meaning as price declines, sales rise—and vice versa moving in opposite directions.] Hardy asters reflected a unitary elasticity of 1.02, suggesting a 10% change in price would result in a similar magnitude 10% change in quantity sold, but of the opposite direction. With a calculated elasticity of 0.79, coleus is price inelastic—consumers would respond to a 10% decline in price with only an 8% increase in quantity purchased, and vice-versa.

Significance to Industry: Why is knowing about demand elasticity important to the plants marketer in a retail garden center or nursery? To establish a price that will help the firm maximize long-run profits, a marketing manager must first know whether the demand for the product is elastic or inelastic (Beierlein and Woolverton, 1991). For example, if a marketer knew that within a certain price range the demand for a product is inelastic, he could be fairly confident that raising its price would raise the firm's total revenue. But if demand for the product is actually elastic, raising its price would be the wrong choice since doing so would reduce the firm's total revenue. On the other hand, if product demand is elastic, higher total revenue can be achieved by lowering the price of the product. It is important for marketing managers to know the demand elasticity of the products they handle so they will know what type of pricing policy will maximize long-run profits (Barton, et al, 1993). Unfortunately for marketers, there are only a few items with inelastic demand over a broad range of prices; inelastic products are usually necessities with few substitutes. Most items fall into the general area of elastic demand, where price increases within a marketing season normally lead to declines in total revenue. Quantity demanded decreases because customers can readily find substitutes for the higher priced item. There are seven factors that are generally perceived as influencing demand: price of the good, price of substitute goods, price of complementary goods, consumer income, population, tastes and preferences, and seasonality. The astute marketer knows the impact of each of these factors on the market planning and pricing policy followed by the firm.

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