

A Study of the Herbaceous Perennial Plant Industry in the U. S.

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Introduction

One of the more rapidly expanding segments of the ornamental plant industry is the production and sale of herbaceous perennial plants. Perennials are plants which generally die to the ground in the winter and reemerge in the spring. The total value of this segment of the ornamental plant industry has been estimated to be \$66 to \$150 million (Voigt, 1990; Voigt, 1991). Perennial plant businesses are often assumed to be relatively small firms which lack financial resources to initiate primary data collection. Their only other sources of information are government statistics collected every ten years, too infrequently to provide specific and timely information.

Some cultural information on perennial plant production is available (Baldwin and Stanley, 1983a; Davis, 1985; Green and Adams, 1990), as well as some marketing strategy information (Baldwin and Stanley, 1983b; Beattie, 1986; Doerr, 1990). General information on propagation techniques and maintenance of perennial crops can be found, but there is relatively little published information on production and handling for the consumer market (Campbell and Tayama, 1990). Trade journals and other industry publications provide some basic information on plant cultivation and fundamental marketing skills.

Association publications produced by organizations like the Perennial Plant Association also provide some production information. Owners and managers of perennial plant businesses could benefit from more specific business and cultural information that is collected, analyzed and reported frequently to reflect the changing industry.

This study was initiated to establish a base of information on the characteristics of the perennial plant industry in the United States. The first part of the study focused on the establishment of a profile for an average owner or active manager of a perennial plant business, defining characteristics of these people who make decisions on a daily basis for perennial plant firms. As disseminators of information, researchers are taught to consider their audience when presenting information. Knowledge of education level and work experience, for example, will help in understanding the needs of perennial plant producers and marketers. The more researchers know about the personal characteristics of those who operate the businesses, the better researchers will be able to anticipate and meet future needs of these clients.

The second part of this study focused on the characteristics of perennial plant businesses. Business practices, cultural practices, and plant types sold were examined in order to describe the size and the scope of the industry.

Results of this study should benefit both researchers and owners or active managers. Researchers will be provided with timely information and insight into areas that warrant further investigation. Owners or active managers will be provided with descriptive averages with which to compare their level of business activities.

Perennial plants: Plants are classified by botanists as annuals, biennials, or perennials according to their life cycles. Perennial plants are the category of ornamental plants that have an indeterminate life cycle. The root system survives winter temperatures, while above-ground growth is usually killed. In the spring, the plant reemerges from the root system (Reily and Shry, 1983). Perennials differ from annual plants in that they persist from season to season. Annual or bedding plants complete their full life cycle, seed to flower to seed production to death, in one year and do not persist. The dormant seed carries on the life cycle from one season to the next (Raven and Curtis, 1970).

Perennials may, however, function differently in various regions of the country. Extreme environmental conditions may make it impossible for a perennial to persist from season to season, making it function as an annual in that location. Perennials may also be used as annuals, planted for one season and removed. So while botanists may classify certain plants as perennials, growers and users of these plants may classify them differently, depending on hardiness zone or landscape use.



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There are indications that the perennial market has increased over the past ten years and should continue to increase in the future (Davis, 1986; Market Watch, 1990). The Trendomic Report, by The Garden Center Institute, indicated that landscape plants marketed in bloom were expected to have strong market growth in the future. Increased demand for perennials is partly due to the consumer's desire for colorful plants and perceived low maintenance required by perennials (Behe and Raudsep, 1984; Sallee, 1990).

While some information on broad crop groups is available, information on more specialized crops is difficult to obtain. This is especially true for herbaceous perennial crops. The Census of Agricultural Specialists, which is published once every 10 years, reports on some of the more specialized crops. This report categorized perennials as herbaceous plants. The 1978 value of herbaceous plants is reported to be \$8.3 million (USDC, 1978b). However, this figure may not be a true reflection of the value of perennial crops because perennial crops can also be categorized as bedding plants, nursery plants, unfinished nursery stock, and potted flowering plants (Campbell and Tayama, 1990). The 1988 report has not yet been published due to federal budget cutbacks. This ambiguous definition of perennials creates inaccurate reporting figures, and makes it difficult to ascertain the true value of those crops and their importance in the ornamental industry.

The Auburn University Horticulture Department, Alabama Agricultural Experimental Station, and The Perennial Plant Association (PPA) collaborated in a study of perennial plant growers in the United States. A preliminary questionnaire

was sent to selected board members of the PPA. Their suggestions for revision were considered in the formation of the final questionnaire. The final questionnaire was sent to 439 PPA members. Two surveys were sent to each member, one on 1 July and one on 23 July 1990, in order to increase the return rate.

The questionnaire was divided into four sections: characteristics of the business, personal characteristics of the owner or active manager, the number and value of plants sold, and the plant types sold. We requested that the person who made managerial decisions on a daily basis answer these questions. The questions which pertained to personal characteristics of the owners or active managers included: educational experience, work experience, former horticultural businesses owned or operated, family involvement in their current business, gender, and the importance of the income from this business to their household. Formal general education of the owner or active manager was determined in years. Education was categorized as follows: 12 years was considered equivalent to a high school diploma, 13 to 15 years to some college, 16 years to a college degree, 17 to 18 years as some graduate work, and 19 to 20 years as an advanced degree. Formal business and horticultural education was determined by years of study at a technical school or college. Respondents were requested to indicate a category for total sales in 1989. There were seven categories which ranged from \$0 to + \$5,000,000. Modes, medians, means, percentages, frequencies, and correlations were utilized to interpret the raw data, and were carried out with Statistical Analysis System (SAS).

Results and Discussion

Formal education: A majority of the respondents were college graduates. Seventy-three percent of the respondents had college degrees, 15% of those continuing with some graduate work, and 4% receiving advanced degrees. Twenty-five percent of the participants were high school graduates, and 15% of those high school graduates had some college experience. These statistics showed that the owners or active managers are a highly educated group, as only 23.3% of the general population in the United States have completed 4 years of college. The type of formal education can be important as well. Sixty-two percent of the respondents had no formal business education, while 43% had no formal horticultural education. Some managers had only one or two years of formal education in business (22%) or horticulture (24%). Twelve percent of the respondents had 3 to 4 years of business education, and 26% had 3 to 4 years of horticultural education. Assuming four years and more of formal business or horticultural education as equivalent to a college degree, we determined that while 73% of the respondents held college degrees, 13% held them in business and 31% held them in horticulture. Results indicate, however, that while the education level was high, many owners or active managers were educated in fields other than horticulture or business.



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Gender: Sixty-two percent of the respondents in this study were male. While the majority of respondents indicated that revenue generated by their business was the primary source of income for their households (60%), there were some differences between genders. The majority of female respondents indicated that this income was not the primary source of income for their households (78%). A smaller percentage of male respondents reported that this was not the primary source of income for their households (23%). While the causes and results of this finding are unclear, it may be explained by women managing smaller businesses, women receiving lower salaries than men, or women being married to men with a higher earning potential.

Previous businesses owned or operated: Twenty-four percent of the respondents had owned or operated at least one horticultural business prior to their current one. A majority of that 24% had owned only one previous business (58%), while a smaller percentage of that 24% had owned or operated two (18%) or three previous businesses (6%). This would indicate that average owners or active managers have been able to successfully manage their first business and are contented to stay with those businesses throughout their careers.

Work experience: Almost half (48%) of the respondents had between 10 and 20 years of work experience. Twenty-three percent of the respondents had over 20 years of work experience. The mean number of years of work experience for an owner or active manager in this study was 17 years.

Family members involvement in business: Many of the respondents employed at least one family member on a full-time basis in their business (63%), with about the same number of that 63% employing one family member full-time (42%) or two family members full-time (38%). A small percentage of the total respondents employed more than two family members full-time (12%).

Age of business: The mean age of a perennial plant business in the United States was 17 years. The years that these firms had been in business ranged from on year to 99 years. The median firm age was 9 years, the mode of the business ages reported was 5 years. These results show that while many members of the industry may think of perennial plants and the businesses that sell them as newcomers, these respondents were, generally, well-established businesses.

Total sales: The mean total sales in 1989 was in the category of \$100,000 to \$249,999. Total sales ranged from between \$0 and \$49,999 to over \$5,000,000. The median total sales was in the category of \$250,000 and \$499,999. The mode of the total sales was in the category of \$50,000 and \$99,999. Mean wholesale sales from each firm was \$63,585. These results show that many of the businesses selling perennial plants are relatively small.

Number of employees: Businesses employed a mean of 11 people full-time year round, 11 people seasonally, and 3 people part-time year round.

Legal structure of business: Fifty percent of the businesses were sole proprietorships, 13% were partnerships, and 34% were corporations. In this country, agriculture and retail trade are the only sectors of the economy where more than half the business done is by sole proprietorships and partnerships. This may be because riskier ventures usually require management to retain more control. Increased control, however, goes hand in hand with increased liability, and the unlimited liability of sole proprietorships and partnerships may have influenced some businesses to incorporate.

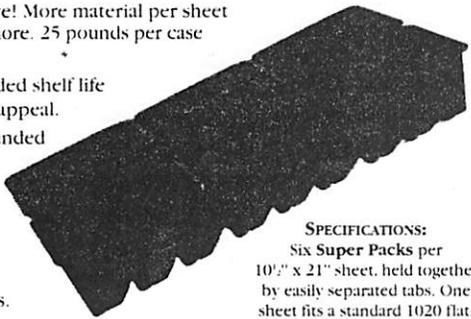
Primary income and product mix: Forty-six percent of the businesses reported the sale of perennials as their company's primary income, with 26% indicating that 100% of their total sales were generated by perennials. Fifty-four percent sold perennial plants secondarily to other product lines including annual plants and woody ornamentals. The mean percentage of total sales each category of product represented was as follows: perennial plants (58%), annual bedding plants (11%), woody ornamentals (16%), hard goods (2%), chemicals (1%), and florist crops (5%).

Market areas: Forty-three percent reported all of their sales were made within the state where the business was located. Twelve percent made some percentage of their sales out of the country. The mean percentage of total sales made in state was 77%, out of state was 21%, and out

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of the country was 1%. While over half the businesses made some sales out of state, the majority of businesses were relying on a local market to sell their product. This may indicate that the businesses were concentrating on plants suitable to their immediate area or they have not chosen to expand their market by way of catalog sales.

Wholesale versus retail: Twenty-two percent did not sell any plants wholesale, and 40% did not sell plants retail. The remainder had a combination of wholesale and retail sales.

Shipping methods: Ten percent reported they used common carriers exclusively to ship plants, 16% used only their company's truck, 11% had buyers pick up plants all of the time, and no businesses reported using air freight exclusively. The remaining businesses used a combination of these methods. The mean percentage of plants shipped by common carrier was 20%, by air freight, 2%, by the company's truck, 44%, and by the buyer's truck, 24%.

Method of sales: Four percent made all of their sales by phone, 18% made all their sales to walk-in customers, and 1% sold by mail only. The 77% remaining made sales by a combination of 2 or more methods. The mean percentage of total sales made by telephone was 30%, by mail was 14%, and by walk-in was 38%.

Method of propagation: Seventy-six percent propagated some plants from seed, 38% propagated some plants by plugs, 70% propagated some plants by stem cuttings, and 80% propagated some plants by division. The mean percentage each method of propagation represented was as follows: seed (33%), division (24%), stem cutting (21%), and plug (11%). Propagation by cuttings or division requires access to or maintenance of stock plants. Thus, the high percentage of plants propagated vegetatively increases the average cost of propagation for perennial plants.

Container sizes marketed: Sixteen percent wholesaled some part of their plants bareroot, 43% sold at least some percentage in 10 centimeter (4-inch) containers, and 60% sold some percentage in 15 centimeter (6-inch) containers. Eleven percent retailed some part of their plants bareroot, 39% sold at least some percentage in 10 centimeter (4-inch) containers, and 52% sold some percentage in 15 centimeter (6-inch) containers. The mean percentage of total plant sales accounted for by plants sold bareroot (wholesale--10%, retail--7%), as plugs (1%, less than 1%), in 10 centimeter (4-inch) containers (15%, 14%), and in 15 centimeter (6-inch) containers (33%, 27%), were similar for wholesale and retail sales.

Plant genera or type sold: Each of the 71 plant genera or types listed on the survey were grown by some percentage of the respondents. *Coreopsis* was grown by the largest percentage (66%) followed by *Aquilegia* (64%), *Achillea* (62%), *Chrysanthemum* (excluding garden mum) (62%), *Echinacea* (61%), *Hosta* (61%), and *Dianthus* (61%).

Correlations: Correlations were evaluated for personal characteristics of the owner or active managers, and for characteristics of perennial plant businesses. While correlations are valuable for discovering relationships between variables, they do not indicate a reason for these relationships. A significantly positive correlation between two variables indicates that as one variable increased, so did the other. Conversely, a significantly negative correlation between two variables indicates that as one variable increased, the other decreased. Variables evaluated in the first set included: previous horticulture businesses owned, years of experience, business size (determined by total sales) years of formal education, primary income for the respondent's household being generated by the business, and family members employed in the business. Positive correlations in this set included: years of experience with size of business, years of experience with primary income from business, size of business with primary income from business, and family members employed in business with primary income from the business. Negative correlations included previous businesses owned with primary income from business.

Variables evaluated in the second set included: total sales, years in business, primary income from perennials, percentage of total sales made by mail, percentage of total sales made in location state, and the number of genera or type of perennial sold by individual firms. Positive correlations in this set included: total sales with years in business, primary income from perennials with percentage total sales by mail, and primary income from perennials with number of genera or type of perennial sold. Negative correlations in this set included: total sales with primary income from perennials, years in business with primary income from perennials, total sales with percentage of total sales made in state, and percentage total sales by mail with percentage total sales made in state.

The results of this study indicate that the average owner or active manager of a perennial plant business in the United States is a well educated individual with several years of work experience. While the majority were college graduates, many were educated in fields other than horticulture or business. This relatively high level of education (college degree) would indicate that these owners or active managers are well prepared to deal with, and benefit from, business and technical information researchers provide. The owners or active manager's education level had no relationship to the business size, while years of work experience had a positive relationship; this probably demonstrates that experience is more important in the management of a relative large business than formal education. However, when comparing education and experience, it is important to note that over 73% of the respondents held college degrees, compared to a national figure in 1988 of 20.3% of the general population completing 4 or more years of college (USDC, 1990).

It may then be a combination of formal education, not necessarily formal horticultural education, and work experience that enables an individual to become an owner or active manager. Aspiring owners may also gain experience while acquiring the capital needed to start a new business. A correlation between business size and the importance of the income from that business to the owner's or active manager's household showed a positive relationship. As total sales increased, so did the likelihood that the income from the business was primary to the manager's household. A correlation between business size and the number of family members involved in the business also showed a positive relationship. As the business size increased, the importance of the income from that business to the owner's or active manager's household grew, and the probability that family members were directly involved in the business.

The number of previous businesses owned or operated did not increase with the years of experience. This indicated that respondent's businesses had experienced steady growth. Businesses grew to the point that they could primarily support the owner's or active manager's households and provide employment for other members of their families.

Most businesses in this study were sole proprietorships or partnerships, considered more traditional business structures than other legal forms of business, such as corporation. As the age of the firm increased, total sales increased. There was a strong negative correlation between the business size (defined by total sales) and the business's primary income being generated by perennial sales. There was also a negative correlation between the business age and the business' primary income being generated from perennials. These correlations indicate that the larger, older firms sell a broader product mix or are vertically integrated within the products they produce and sell. The positive correlation between the number of genera or types of perennials sold and the business' primary income being generated by the perennial sales suggests that the younger firms are horizontally integrated within the products they produce and sell. These correlations also suggest that young firms relying on perennial sales for their primary income source may consider broadening their product mix, or vertically integrating, in order to compete with more established firms and maintain steady growth.

There was a strong negative correlation between the percentage of total sales made in the state where the business was located and the percentage of total sales made by mail. As sales in the local market increased, the use of mail to make sales decreased.

The fact that 89% did not retail bare root may explain why 59% of the businesses did not sell by mail, as shipping prices may prohibit a small grower from shipping economically. There was, however, a positive correlation between

the percentage of total sales by mail and the business' primary income being generated by the perennial sales. This may indicate information commonly found in catalogs is a useful marketing aid for perennials, or that the market expanded to a large geographic area.

The mean value of plants an individual firm sold at retail in 1989 was \$63,585 and at wholesale the value was \$302,380. The mean value of plants each individual firm sold retail in 1989 was \$37,271, while at wholesale it was \$209,379.

Responses to the questions regarding the value and number of plants sold in 1989 were surprising. Ten percent of the firms did not provide figures for the total wholesale value of plants sold in 1989. The same percentage (10%) did not indicate an amount for the value of plants sold retail. Seventeen percent did not indicate the number of plants sold wholesale, and 21% did not indicate the number of plants sold retail. Since 96.6% indicated a total sales figure for 1989, it seems unlikely that the respondents were withholding information. Further studies into the record keeping practices and level of computerization of perennial plant businesses may clarify the problem.

In the 'plant types sold' section of the survey, there were 71 genera or types of perennials listed. Businesses from 39 states responded, so regional differences probably influenced the percentage of businesses selling each genus.



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However, the fact that some percentage sold each genus emphasized the diversity of the perennial plants that are produced.

The diversity of plant types, which includes a wide range in bloom times, presents special problems for the marketers of perennial plants. One problem involves targeting the market segment interested in color for the landscape. While perennials do provide color, they may not necessarily be flowering at the time they are offered for sale. A selection of annual bedding plants that are commonly sold in bloom will compete for the same market segment as perennials. The diversity of perennial plants being produced and sold indicates that the marketers are addressing the problem.

Perennial businesses face problems that other segments of the ornamental industry do not. Providing information to government census takers on the amount of plant material produced and sold is complicated by the confusion in the definition of perennial plants. This confusion makes it necessary for the grower to subjectively decide in which category crops should be reported.

In this study, we have defined the perennial plant market in the United States in terms of the people who make the daily decisions in the operation of their firms, and the business and plant cultivation techniques they practice. While the personal characteristics of perennial plant business owners or active managers and their business practices were well defined, estimating the size of the industry presented a problem. We relied on the businesses themselves to provide information on the numbers and value of the plants they sold, but a large percentage of the respondents were unwilling or unable to provide that information. Further studies of this type may include questions that more directly involve producers and marketers in the investigative process. Sections could be included that allow respondents to indicate what type of information would be the most beneficial to their business operations.

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Table 1. Percentage of perennial plant businesses selling selected genera or type of perennial

| Genera (type) | Percentage |
|----------------------|------------|
| Achillea | 61.9 |
| Aquilegia | 63.9 |
| Armeria | 47.6 |
| Artemisia | 49.0 |
| Asclepias | 44.2 |
| Aster | 55.1 |
| Astilbe | 58.5 |
| Campanula | 59.2 |
| Chrysanthemum | 61.9 |
| Coreopsis | 66.0 |
| Delphinium | 53.1 |
| Dianthus | 60.5 |
| Dicentra | 57.1 |
| Digitalis | 55.1 |
| Echinacea | 61.2 |
| (Fern) | 42.9 |
| Gaillardia | 55.8 |
| (Herbs) | 42.2 |
| Heuchera | 59.2 |
| Hemerocallis | 57.8 |
| Hosta | 61.2 |
| Iberis | 55.1 |
| Iris | 57.1 |
| Lavandula | 55.1 |
| Liatris | 58.5 |
| Linum | 44.9 |
| Lobelia | 44.2 |
| Lupinus | 51.0 |
| Lychnis | 42.9 |
| Lythrum | 44.2 |
| Monarda | 53.7 |
| Oenothera | 46.3 |
| (Ornamental Grasses) | 56.5 |
| Paeonia | 42.2 |
| Papaver | 47.6 |
| Phlox | 58.5 |
| Platycodon | 51.0 |
| Rudbeckia | 57.8 |
| Salvia | 55.8 |
| Sedum | 57.1 |
| Stachys | 47.6 |
| Veronica | 56.0 |

The mean number of genera handled by each firm was 30.