THE FLORIDA NURSERY INDUSTRY:
CURRENT ECONOMIC STATUS AND MARKET TRENDS
ABSTRACT

This study analyzed economic and market trends in four major portions of the Florida nursery industry: woody ornamentals, foliage, citrus and bedding plants. A total of 8,018 Florida nurseries produce these plants, with 1,882 classified as commercial firms. Owners or managers of a statistical sample of these firms were interviewed. Personnel from firms representative of all type of nursery plant buyers were also interviewed. Sales of Florida nursery plants increased from 1979 to 1981. Sales trends in categories of plants within the woody ornamental and foliage groups were identified. Divisions of sales among market outlets and among geographic regions were delineated. Marketing problems and needs in each sector were described, and recommendations made for industry programs.

Additional key words: Woody ornamentals, foliage, citrus nursery stock, bedding plants.
THE FLORIDA NURSERY INDUSTRY:
CURRENT ECONOMIC STATUS AND MARKET TRENDS

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THE R. ED BROWN HORTICULTURAL RESEARCH FOUNDATION

The R. Ed Brown Horticultural Research Foundation was established in June, 1979 through the foresight, dedication and concern of one of the nursery industry's long-time members and supporters of research activities, Mr. R. Ed Brown of Goochland Nurseries, Pembroke, Florida. It was created to stimulate interest in research as it pertains to horticulture in the State of Florida. Among the purposes of the Foundation are: to improve methods of production, storage, distribution and marketing of horticultural and nursery stock; to conduct educational and research conferences, seminars and symposiums and to improve production of garden tools, mechanical equipment, and other allied supplies pertaining to the construction and maintenance of landscape areas.

Nursery-related agricultural research, and its industry-wide dissemination is the foundation for progress and profit in the Florida horticultural industry. The nursery industry is highly technical, constantly changing, and subject to many variables, and it cannot survive without constant research.

This first research project was undertaken to establish the size, scope and market of Florida's nursery industry to be used in preparation for projected supply and demand trends of major nursery products and production categories. Specific objectives to be accomplished through this research study are: (1) to determine numbers, types and sizes of Florida firms growing and marketing woody ornamentals and foliage, (2) collect relevant information from selected Florida firms and
production volume, marketing and sales, (3) identify and describe major markets and marketing channels for Florida Nursery products, (4) identify and document "key indicators" for industry members' use in projecting supply and demand trends for major products or product categories.

It's never easy to predict what the demand for nursery products will be. We have to be able to anticipate what our future orders might be and what our needs may be for material. This research is a step toward helping the horticultural industry plan in advance for not only this year but future years as well. Knowing what economic trends we can expect in Florida can help us when we want to decide whether to risk our capital and invest in major material purchases. And most importantly, not only will the release of the research findings contained in this report be helpful to large horticultural operations, but any size firm should benefit from the analysis.

Research is our promise for tomorrow. Research takes the unknown, the unexpected, and turns them into knowledge for the future. The success of our industry may depend on these discoveries. Through knowledge comes understanding, through understanding comes progress. The R. Ed Brown Horticultural Foundation sincerely hopes that this research report will contribute significantly to the betterment of the horticultural industry in the State of Florida.
The Florida Agricultural Market Research Center

A Service of
The Food and Resource Economics Department
of the
Institute of Food and Agricultural Sciences

The purpose of this Center is to provide timely, applied research on current and emerging marketing problems affecting Florida's agricultural and marine industries. The Center seeks to provide research and information to production, marketing, and processing firms, groups and organizations concerned with improving and expanding markets for Florida agricultural and marine products.

The Center is staffed by a basic group of economists trained in agriculture and marketing. In addition, cooperating personnel from other IFAS units provide a wide range of expertise which can be applied as determined by the requirements of individual projects.
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in many aspects of computer programming with study data, and Ms. Judith King provided invaluable statistical assistance. Miss Paula Gigliotti conducted many of the interviews and summarized much of the information gathered. Typing and many other important jobs were completed by Ms. Patricia Beville, Mrs. Lois Schoen and Miss Stephanie Hill.
SUMMARY

This study focuses on the four major commercial components of the Florida nursery industry: firms producing woody ornamentals, foliage plants, citrus, and bedding plants.

Specific objectives were to: 1) Determine numbers, types and sizes of Florida firms growing and marketing nursery material; 2) Collect relevant information from selected Florida firms on production volume, marketing and sales; 3) Identify and describe markets and marketing channels for Florida nursery products and 4) Identify and document "key indicators" for industry members' use in projecting supply and demand trends for major products or product categories.

A listing of all nurseries inspected in 1980 was obtained from the Division of Plant Industry (DPI) of the Florida Department of Agriculture and Consumer Services. This listing of over 8,000 firms was analyzed to determine the geographic dispersion of commercially important firms within the state.

A statistical sample of 100 firms was selected from the DPI list to provide detailed information through structured, personal interviews conducted by FAMRC staff. The firms are selected so as to include larger proportions for large commercial nurseries. The sample of 100 firms was estimated to produce and market 53 percent of all woody ornamentals, one-third of the foliage plants, 45 percent of the citrus nursery stock and virtually all bedding plants in Florida.

Fifty-eight additional Florida nurseries provided information for the study.

Forty firms buying and using Florida plants were interviewed to determine buying policies and plant use and sales trends. Plant buyers were located in Florida, Georgia, Illinois, New York, Connecticut, and Massachusetts.

In 1979, Florida accounted for 11 percent of U.S. nursery sales. Greenhouse and nursery products accounted for nearly 8 percent of Florida's farm income.

Nursery product sales increased by more than three and onehalf times from 1970 through 1979.

DPI records show that 8,018 Florida firms grew woody ornamentals, foliage plants, citrus, or bedding plants. Of these, 1,882 were classified as commercial operations.
Many firms grow several categories of plant material. Of the commercial-scale nurseries, about 57 percent grow foliage, 49 percent produce woody ornamentals, 7 percent produce citrus stock, and only 7 firms grow bedding plants.

Florida has approximately 14,500 acres devoted to nursery production, according to DPI inspection records. About 80 percent of this acreage is operated by commercial-scale firms; slightly over 85 percent of the state's total nursery acreage and the commercial firm's acreage is used to grow "ornamentals."

Twenty-five Florida counties have 94 percent of all nursery acreage and 96 percent of the commercial acreage.

Wholesale sales of exterior landscape material (primarily woody ornamentals) increased by about 52 percent from 1979 to 1981. During the same period, wholesale foliage sales increased by 14 percent, and sales of citrus, and bedding plants increased by over 70 percent each.

Woody Ornamentals

Within the woody ornamental classification, proportionate sales of evergreen shrubs increased slightly from 1979-81, and azaleas declined. Most firms did not envision drastic changes in the next three to five years.

Florida growers and buyers of Florida-grown material reported increasing demand for hardy, low-maintenance plants and ground covers.

Florida growers noted increased demand for larger sizes for trees and stressed the need for more standardization of container sizes.

Many buyers for retail garden centers and mass market outlets requested greater use of labels and care tags which provide more information to consumers.

The major types of market outlets for woody ornamentals are landscape firms, retail garden centers, and mass market outlets. The first two types account for about 31 percent each, and the latter, 19 percent of all wholesale sales. Nursery wholesalers, other Florida growers, brokers, and government agencies account for ten, five, and two, and one percent, respectively. Most growers did not anticipate marked changes in the relative importance of the various types of outlets in the next three to five years.

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Over half of all woody ornamental sales were to buyers in Florida, and another one-third to buyers in other southern states. About 11 percent of all sales are made to buyers in the northeast, and four percent to buyers in the midwest. No sales were reported to buyers in the west. Many woody ornamental growers detected a long-term trend towards relatively greater sales within the state.

Few woody ornamental growers reported marketing problems. Some did cite transportation problems such as rapidly increasing costs and the need for improved handling and transportation equipment. Others mentioned the need for industry-wide market development activities.

Foliage

Of 1,882 commercial nurseries in the state, 1,066 produce foliage plants.

Sales of interior foliage plants increased about 14 percent from 1979 to 1981. Producers reported that sales had been stabilizing over the past several years after the rapid growth experienced in the 1970's. Most predicted stable to slightly increasing sales over the next three to five years.

Individual foliage plant groups showed little relative change in importance between 1979 and 1981. However, philodendrons and dracaenas declined as a percentage of total foliage sales while ficus and aglaonemas increased significantly.

Buyers stressed the need for high quality plants and appropriate container types. Mass market retailers generally preferred attractive containers to assist in merchandising the plants, but to interiorscape firms the appearance of the container was relatively unimportant.

Over one-third of Florida foliage growers' sales are made to retail garden centers and florists, about 31 percent to wholesale greenhouses and florists and 10 percent to mass market outlets such as grocery stores and discount department stores. Fifteen percent is sold through brokers, but the ultimate disposition of broker sales was not determined. Sales to other Florida growers amounted to eight percent, and to interiorscape and landscape firms only one percent.

Growers anticipate that a greater share of sales during the next three to five years will be made directly to retailers or wholesalers, and a decreasing proportion through brokers. Many growers expressed a desire to reduce the proportion of sales to mass market outlets as
well, due to slow payment practices and extreme price pressure. Some growers felt that sales to interiorscape firms would increase substantially.

Over 80 percent of Florida-grown foliage plants are sold outside of Florida. Growers reported that 24 to 26 percent of their sales went to each of three major regions of the U.S., the midwest, northeast, and the south. Four percent goes to western states and three percent to other countries. Of the 17 percent sold in Florida, it is probable that a large share was sold to brokers who in turn moved the material to out-of-state markets.

According to most growers and buyers as well, Florida has little competition from tropical foliage growers in other states or countries for the types of plant material currently grown. Some growers felt that tropical foliage production in Texas would likely provide increasing competition in the southwest in the next few years. Also, limited quantities of plant material from Puerto Rico are entering some U.S. markets, primarily in the northeast.

Transportation cost increases, physical handling problems and difficulty with "slow-pay" accounts were the major marketing problems mentioned by foliage growers.

Citrus

There were 135 specialized citrus nurseries registered by DPI in 1980.

Citrus tree sales by specialized citrus nurseries increased over 70 percent from 1979 to 1981.

Commercial citrus operations buy approximately 87 percent of the Florida nursery stock and retail garden centers the remaining 13 percent.

Seventy-one percent of all citrus stock remains in Florida, and virtually all of the remaining 29 percent goes to commercial growers outside the U.S., mainly in the Caribbean and Latin America. Very few trees are currently being shipped to other states.

Bedding Plants

DPI records list 39 nurseries as producers of bedding plants, and seven were judged to be of commercial importance. The seven firms accounted for 97 percent of the total bedding plant inventory. These firms produce flowering annuals or vegetable transplants for the nursery trade. Containerized transplants for commercial vegetable production or reforestation were not included.
The seven commercial firms estimated 1981 sales at $3.2 million, an increase of 73 percent over 1979.

Retail garden centers account for 51 percent of reported bedding plant sales, mass market firms for 34 percent, landscape contractors 11 percent, wholesalers two percent, and interiorscape firms and government agencies one percent each.

No major shifts in market outlets are expected over the next three to five years, but landscape designers and residential developers will probably increase their use of flowering annuals.

About 95 percent of Florida's bedding plant production remains in the state; two percent goes to other southern states, and the remainder is dispersed to western and northwestern states and to Canada.

Continued increases in bedding plant sales are anticipated, with almost all growth occurring in Florida.
THE FLORIDA NURSERY INDUSTRY:  
CURRENT ECONOMIC STATUS AND MARKET TRENDS 

Kary Mathis and Robert L. Degner 

INTRODUCTION 

The Florida nursery industry is one of the largest sectors in Florida agriculture and one of the two largest state nursery industries in the United States. The Florida nursery industry is really a collection of many important and highly specialized horticultural sectors located throughout the state and serving many and varied markets.

This study focuses on four major commercial components of the Florida nursery industry. The firms studied produced woody ornamental and foliage plants, citrus stock and bedding plants. Firms which specialized in bulbs, turf, exotic and tropical flowers and plants, cut greens, containerized transplants, and the collection of wild plants were not covered in this study.

Kary Mathis is professor and Robert L. Degner is associate professor of food and resource economics at the University of Florida.
Objectives

This study is part of a continuing effort by state nursery organizations to provide the Florida nursery and related industries with information and statistical data. Such information will help the industry formulate long run plans by looking beyond short run fluctuations.

A program of research, outlined below, addressed that goal.

Specific projects were:

1. Current state of the Florida nursery industry and its markets;
2. Competitive position of the Florida nursery industry compared with U.S. and foreign producing areas;
3. Market intelligence and information needs;
4. Market and demand trends at wholesale and consumer levels;
5. Contingency planning.

This report covers the first of these projects, the current state of the Florida nursery industry and its markets. Specific objectives for the project were:

1. Determine numbers, types and sizes of Florida firms growing and marketing woody ornamentals, foliage, citrus stock and bedding plants.
2. Collect relevant information from selected Florida firms on production volume, marketing and sales.
3. Identify and describe major markets and marketing channels for Florida nursery products.
4. Identify and document "key indicators" for industry members' use in projecting supply and demand trends for major products or product categories.
Procedures

Published information and previous studies relating to the nursery industry were assembled and reviewed (see reference list). Much of this information provided important insight into the organization and operation of the Florida nursery industry. Listings of Florida nursery firms provided by the Division of Plant Industry (DPI) of the Florida Department of Agriculture and Consumer Services and by trade associations helped identify numbers, types and sizes of Florida nursery firms.

Owners and managers of many Florida nursery firms and buyers and users of Florida plants provided essential information through structured, in-depth interviews during the spring and summer of 1981 (see Appendix for questionnaires used). These interviews, along with published reports, described Florida nursery production and sales, identified market outlets and market channels, and helped indicate supply and demand trends.

A statistical sample of Florida nursery firms was selected from the Division of Plant Industry (DPI) nursery inspection list. Florida nurseries that grow and sell live plants must be inspected periodically by the DPI; inspectors list the numbers of plants in the nursery by category. For this study nurseries were divided into four categories according to the primary kind of plants grown and sold: Woody ornamentals, foliage, citrus and bedding plants. Within each category, nurseries were grouped by size as determined by plant inventory. Firms to be interviewed were selected so that each firm within a size class in each plant category had an equal chance of being included in the sample.
A total of 158 Florida nursery firms provided information used in this study, though some of them were not part of the statistical sample. In addition, personnel of 40 firms buying and using Florida plants were interviewed and supplied valuable information.

Other Nursery Industry Surveys

The Florida nursery industry has experienced rapid growth and major change in the past 10 years. These developments, together with the relative scarcity of industry-wide statistics, have prompted several special surveys or other data-gathering efforts in the past two years. The Horticultural Census, scheduled every 10 years by the U.S. Bureau of the Census, was conducted in early 1980 for the 1979 business year.

Two IFAS surveys concerning nursery firm characteristics and information needs have been conducted recently. The first, during April and May of 1979, involved short questionnaires to all woody ornamental nurseries listed by DPI in 32 north Florida counties (Ingram and Gunter). A second survey covered the same topics with 1,000 nurseries growing woody ornamental and foliage firms\(^1\) in the remaining 35 counties of the state during August and September 1981. A trade magazine commissioned and published national surveys in 1980 and 1981 (Gammel).

\(^1\) Only five firms contacted in the FAMRC study reported here were also contacted in the second IFAS survey. Efforts were made to avoid contacting the same firms in both surveys, as far as possible.
Certain information is regularly collected and reported by two state-federal agencies charged with the responsibility of providing information to agricultural industries. The Florida Crop and Livestock Reporting Service, an arm of the U.S. Department of Agriculture, cooperates with the Florida Department of Agriculture and Consumer Services in gathering and reporting information on several nursery products. The Federal-State Market News Service is, as the name shows, a joint effort of the U.S. Department of Agriculture and the Florida Department of Agriculture and Consumer Services.

These agencies regularly report total volume, sales, production area, product movement, prices and much other information on the Florida nursery industry, and on that of other states, as well. The Horticultural Census reports total sales values of greenhouse and nursery products for each state every 10 years, and these values are used in calculating annual values in the USDA farm income reports for these same items.

The Gammel survey, begun in 1980 by a national nursery magazine, provides estimates of annual sales values for major sectors of each state wholesale nursery industry. All of these efforts are extremely useful to industry members and provide important information on many aspects of nursery production and marketing. Yet some figures, for example total sales values, for one nursery category in one state may differ substantially between sources because different product groups are included, because values may be strictly wholesale instead of retail, or for several other reasons. Moreover, most of the figures provided by either public agencies or private organizations depend on cooperation by individual growers.
Thus, estimates in this report should be evaluated on their sources and should be compared, as far as possible, with other data from the reports and surveys described above. Table 1 summarizes the products included in several reports and surveys, including this one. These should be kept in mind as estimates are presented here and compared with those from other sources.
Table 1.--Nursery products included in various reports and surveys.

<table>
<thead>
<tr>
<th>Item</th>
<th>Hort. Census(^a)</th>
<th>IFAS(^b)</th>
<th>FC&amp;LRS(^c)</th>
<th>F-S Mn(^d)</th>
<th>Gammel(^e)</th>
<th>FAMRC(^f)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woody ornamentals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woody ornamentals</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Decid. fruits, nuts</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Citrus</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Foliage</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Flowers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potted flowers</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Cut flowers</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cut greens</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Rooted cuttings</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hanging baskets</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Bedding plants</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Vegetables &amp; seeds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>under glass</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flower seeds</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^a\)Census of Horticultural Specialties, U.S. Bureau of the Census, every 10 years.

\(^b\)Surveys conducted by IFAS Extension Personnel (see reference list, Ingram and Gunter).

\(^c\)Florida Crop and Livestock Reporting Service, annual reports.

\(^d\)Federal-State Market News, annual and weekly reports.

\(^e\)Walter A. Gammel Sr. (see reference list), wholesale only.

\(^f\)Florida Agricultural Market Research Center (this study).
THE FLORIDA NURSERY INDUSTRY

Florida wholesale nursery sales ranked second in the nation and represented 11 percent of total U.S. nursery sales in 1979 (Table 2). Greenhouse and nursery products accounted for 7.7 percent of Florida farm income, a greater proportion than in any of the other top ten states in nursery sales.

These sales values have increased steadily since 1970, with the 1979 value more than three and one-half times that in 1970 (Table 3). Values of greenhouse and nursery sales accounted for 6.7 percent of Florida farm income over the three-year period, 1970-72. By 1977-79, these products represented 8.4 percent of the state's farm sales.

In certain categories of greenhouse and nursery products, Florida leads the nation. Florida foliage sales are considerably larger than those from California, the next closest state (Table 4). Total value of foliage, bedding plants and potted flowers was over $140 million in Florida, larger than the total of those same items from California and nearly three times the value from Texas, the third-ranking state. As mentioned earlier, USDA does not collect and report information on woody ornamentals, so no comparisons between states are possible for that plant category.

Sales values for Florida foliage, bedding plants and potted flowers have increased substantially since 1970. Foliage sales grew by over eight times from 1970 to 1980 (Table 5). While information on bedding
plants and a group of potted flowers is only available from 1976 to the present, growth in sales values of bedding plants has been impressive. Potted flower sales increased from 1976 to 1977 then dropped by 1980 (Table 5).

Table 2.--Leading states in cash receipts from greenhouse and nursery products, 1979.

<table>
<thead>
<tr>
<th>State</th>
<th>Cash receipts</th>
<th>Share of state farm income</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>784,625</td>
<td>6.2</td>
</tr>
<tr>
<td>Florida</td>
<td>298,235</td>
<td>7.7</td>
</tr>
<tr>
<td>Texas</td>
<td>160,000</td>
<td>1.6</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>136,992</td>
<td>5.3</td>
</tr>
<tr>
<td>Ohio</td>
<td>125,000</td>
<td>3.6</td>
</tr>
<tr>
<td>Michigan</td>
<td>105,067</td>
<td>4.2</td>
</tr>
<tr>
<td>Oregon</td>
<td>105,012</td>
<td>6.7</td>
</tr>
<tr>
<td>New York</td>
<td>101,177</td>
<td>4.6</td>
</tr>
<tr>
<td>North Carolina</td>
<td>75,000</td>
<td>2.2</td>
</tr>
<tr>
<td>Illinois</td>
<td>74,800</td>
<td>1.1</td>
</tr>
<tr>
<td>United States</td>
<td>2,831,837</td>
<td>2.2</td>
</tr>
</tbody>
</table>

\[\text{\textsuperscript{a}}\] Includes woody ornamentals, fruit and nut plants, foliage, potted and cut flowers, cut greens, rooted cuttings, floral hanging baskets, bedding plants, vegetables and vegetable seed under glass, and flower seeds.

Table 3.--Cash receipts from sales of all agricultural commodities and from greenhouse and nursery products, Florida, 1970-79.

<table>
<thead>
<tr>
<th>Year</th>
<th>All commodities</th>
<th>Greenhouse and nursery Value</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$1,000 Dollars</td>
<td></td>
<td>Percent</td>
</tr>
<tr>
<td>1970</td>
<td>1,284,224</td>
<td>84,013</td>
<td>6.5</td>
</tr>
<tr>
<td>1971</td>
<td>1,421,908</td>
<td>89,985</td>
<td>6.3</td>
</tr>
<tr>
<td>1972</td>
<td>1,686,770</td>
<td>117,405</td>
<td>7.0</td>
</tr>
<tr>
<td>1973</td>
<td>2,046,176</td>
<td>133,587</td>
<td>6.5</td>
</tr>
<tr>
<td>1974</td>
<td>2,153,740</td>
<td>143,814</td>
<td>6.7</td>
</tr>
<tr>
<td>1975</td>
<td>2,419,882</td>
<td>154,542</td>
<td>6.4</td>
</tr>
<tr>
<td>1976</td>
<td>2,525,270</td>
<td>241,213</td>
<td>9.6</td>
</tr>
<tr>
<td>1977</td>
<td>2,624,044</td>
<td>249,389</td>
<td>9.5</td>
</tr>
<tr>
<td>1978</td>
<td>3,273,416</td>
<td>271,123</td>
<td>8.3</td>
</tr>
<tr>
<td>1979</td>
<td>3,892,905</td>
<td>298,235</td>
<td>7.7</td>
</tr>
</tbody>
</table>

Source: State Farm Income Statistics, ERS, USDA.
Table 4.--Foliage plants, bedding plants, and potted flowers: gross wholesale value of sales, selected states, 1980.

<table>
<thead>
<tr>
<th>State</th>
<th>Foliage plants</th>
<th>Bedding plants</th>
<th>Potted flowers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,000 Dollars</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida</td>
<td>133,750</td>
<td>4,639</td>
<td>2,140</td>
<td>8,064</td>
</tr>
<tr>
<td>California</td>
<td>79,043</td>
<td>26,628</td>
<td>5,939</td>
<td>34,279</td>
</tr>
<tr>
<td>Texas</td>
<td>26,093</td>
<td>6,139</td>
<td>3,826</td>
<td>15,473</td>
</tr>
<tr>
<td>Ohio</td>
<td>13,037</td>
<td>13,321</td>
<td>5,6/5</td>
<td>12,088</td>
</tr>
<tr>
<td>Michigan</td>
<td>4,191</td>
<td>16,474</td>
<td>5,308</td>
<td>11,462</td>
</tr>
<tr>
<td>New York</td>
<td>6,326</td>
<td>7,674</td>
<td>3,334</td>
<td>14,078</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>2,818</td>
<td>5,217</td>
<td>1,370</td>
<td>9,509</td>
</tr>
<tr>
<td>Illinois</td>
<td>2,950</td>
<td>3,385</td>
<td>1,210</td>
<td>9,900</td>
</tr>
<tr>
<td>North Carolina</td>
<td>0</td>
<td>2,861</td>
<td>1,735</td>
<td>8,732</td>
</tr>
<tr>
<td>Oregon</td>
<td>2,082</td>
<td>1,760</td>
<td>752</td>
<td>3,089</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th></th>
<th>Foliage</th>
<th>Bedding plants</th>
<th>Potted flowers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Flower</td>
<td>Vegetable</td>
<td></td>
</tr>
<tr>
<td>1970</td>
<td>15,938</td>
<td></td>
<td></td>
<td>2,454</td>
</tr>
<tr>
<td>1971</td>
<td>23,077</td>
<td></td>
<td></td>
<td>2,372</td>
</tr>
<tr>
<td>1972</td>
<td>25,693</td>
<td></td>
<td></td>
<td>2,988</td>
</tr>
<tr>
<td>1973</td>
<td>33,410</td>
<td></td>
<td></td>
<td>2,901</td>
</tr>
<tr>
<td>1974</td>
<td>48,482</td>
<td></td>
<td></td>
<td>4,409</td>
</tr>
<tr>
<td>1975</td>
<td>87,312</td>
<td></td>
<td></td>
<td>5,325</td>
</tr>
<tr>
<td>1976</td>
<td>110,656</td>
<td>2,691</td>
<td>499</td>
<td>9,646</td>
</tr>
<tr>
<td>1977</td>
<td>119,956</td>
<td>4,075</td>
<td>843</td>
<td>10,300</td>
</tr>
<tr>
<td>1978</td>
<td>124,135</td>
<td>3,032</td>
<td>1,017</td>
<td>9,115</td>
</tr>
<tr>
<td>1979</td>
<td>139,867</td>
<td>4,835</td>
<td>2,033</td>
<td>8,197</td>
</tr>
<tr>
<td>1980</td>
<td>133,750</td>
<td>4,639</td>
<td>2,140</td>
<td>8,064</td>
</tr>
</tbody>
</table>

\(^a\)Not reported before 1976.

\(^b\)From 1970-1975, only chrysanthemums. From 1976 on, includes chrysanthemums, hydrangeas, lilies and poinsettias.

Source: *Floriculture Crops, Flowers and Foliage Plants*, SRS, USDA.
Florida Nursery Firms: Plant Material, Acreage, Location and Business Type

The Florida Division of Plant Industry registers and inspects locations where plants are grown for sale. For the 1979-80 year, DPI listed 8,018 firms growing foliage, woody ornamentals, citrus and bedding plants (Table 6). Of these, 1,882 are classed as commercial firms, as noted in Table 6.

Many firms grow more than one kind of plant material. About 83 percent of all firms and 57 percent of commercial firms grow foliage, and 54 and 49 percent, respectively, produce woody ornamentals (Table 6). Eighteen percent of all firms and seven percent of commercial firms produce citrus stock, and 39 and 7 firms, respectively, grow bedding plants.

Nursery firms' acreage in each of the plant material groups in Table 6 is not reported by the DPI. Acres in foliage, woody ornamentals and bedding plants is reported together as "ornamentals." Area in nuts and non-citrus fruits and native plants is shown separately. Thus, total numbers of individual firms are the same, at 8,018 for all firms and 1,882 for commercial enterprises, but numbers of firms and acreages by categories shown in Table 7 are not directly comparable with those in Table 6.

Nevertheless, acreage information by categories shown in Table 7 is useful in describing the state nursery industry. Of the nearly 14,500 acres reported by all firms, the "ornamentals" category has almost 12,600 or 87 percent. Over 10,000 acres of this is in commercial firms, which also have nearly all the citrus acreage and 89 percent of the area.
Table 6.--Florida nursery firms by primary plant material, for all firms and for commercial firms, 1980.

<table>
<thead>
<tr>
<th>Plant material</th>
<th>All</th>
<th>Commercial&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td>Foliage</td>
<td>6,629</td>
<td>83</td>
</tr>
<tr>
<td>Woody ornamentals&lt;sup&gt;b&lt;/sup&gt;</td>
<td>4,347</td>
<td>54</td>
</tr>
<tr>
<td>Citrus</td>
<td>1,478</td>
<td>18</td>
</tr>
<tr>
<td>Bedding plants</td>
<td>39</td>
<td>d</td>
</tr>
<tr>
<td>All firms&lt;sup&gt;c&lt;/sup&gt;</td>
<td>8,018</td>
<td>100</td>
</tr>
</tbody>
</table>

<sup>a</sup>Nursery classified as commercial on the basis of plant numbers in inventory listed by Florida Division of Plant Industry:

- Foliage, 10,000 plants or more;
- Woody ornamentals and citrus, 5,000 plants or more;
- Bedding plants, 30,000 plants or more.

<sup>b</sup>Includes firms producing trees and shrubs, native plants and nut and fruit (non-citrus) plants.

<sup>c</sup>Total of individual firms. Many nurseries produce more than one category of plants, and, therefore, are listed more than once.

<sup>d</sup>Less than one percent.

Source: Florida Division of Plant Industry.
Table 7.--Florida nursery acreage and numbers of firms by plant category, 1980.

<table>
<thead>
<tr>
<th>Plant category</th>
<th>Total</th>
<th>Commercial</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Firms</td>
<td>Acres</td>
<td>Firms</td>
</tr>
<tr>
<td>Ornamentals(^b)</td>
<td>7,558</td>
<td>12,597</td>
<td>1,783</td>
</tr>
<tr>
<td>Citrus</td>
<td>1,204</td>
<td>1,133</td>
<td>445</td>
</tr>
<tr>
<td>Nuts and fruits</td>
<td>1,002</td>
<td>724</td>
<td>296</td>
</tr>
<tr>
<td>Native plants</td>
<td>25</td>
<td>37</td>
<td>3</td>
</tr>
<tr>
<td>All(^c)</td>
<td>8,018</td>
<td>14,491</td>
<td>1,882</td>
</tr>
</tbody>
</table>

\(^a^\) Nursery classified as commercial on the basis of plant numbers in inventory listed by Florida Division of Plant Industry:

- Foliage, 10,000 plants or more;
- Woodyornamentals and citrus, 5,000 plants or more;
- Bedding plants, 30,000 plants or more.

\(^b^\) Includes foliage, woody ornamentals and bedding plants.

\(^c^\) Total of individual firms. Many nurseries produce more than one category of plants, and, therefore, are listed more than once.

Source: Florida Division of Plant Industry.
in nuts and fruits. Acreage in native plants in nurseries is mostly in
other than commercial firms (Table 7).

The DPI also asks firm operators to note if they are strictly
wholesale nurseries, only retail firms or operate as both. Nearly half,
46 percent, of all firms are classed as retail, but only 18 percent of
commercial firms are in that type (Table 8). Half of the commercial
nurseries are wholesale only, while 23 percent of all firms are in that
class. A similar share, 31 percent and 32 percent, respectively, are
both wholesale and retail in all firms and commercial firms.

All 8,018 firms can also be classified by plant category by busi-
ness type. The DPI list shows 3,719 retail firms with 2,627 acres
(Table 9). Wholesale nurseries number 1,820 and have 7,814 acres in
total, while 2,479 wholesale-retail firms have 4,049 acres.

The major share of acreage in each business type is in the ornamentals
category, with 12,597 of the 14,491 acres (Table 9), as noted previously.
Wholesale nurseries have 6,991 acres or 55 percent of all ornamentals
acreage, while wholesale-retail firms have 27 percent and retail operations
17 percent of the state's ornamentals area. Other acreages and firm
numbers are shown in Table 9.

Caution must be exercised in interpreting the figures in Table 9,
as well as in several other tables throughout this report. It will be
recalled from an earlier section that DPI data included all firms that
produce a given category of plant, such as ornamentals. Some of the
7,558 nurseries in the state that produce ornamentals (foliage, bedding
plants and woody ornamentals) also grow citrus, nuts and fruits or native
Table 8.—Florida nursery firms by business type, for all firms and commercial firms.

<table>
<thead>
<tr>
<th>Plant material</th>
<th>All</th>
<th>Commercial(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td>Retail</td>
<td>3,719</td>
<td>46</td>
</tr>
<tr>
<td>Wholesale</td>
<td>1,820</td>
<td>23</td>
</tr>
<tr>
<td>Wholesale and retail</td>
<td>2,479</td>
<td>31</td>
</tr>
<tr>
<td>Total</td>
<td>8,018</td>
<td>100</td>
</tr>
</tbody>
</table>

\(^a\)Nursery classified as commercial on the basis of plant numbers in inventory listed by Florida Division of Plant Industry.

Foliage, 10,000 plants or more; Woody ornamentals and citrus, 5,000 plants or more; Bedding plants, 30,000 plants or more.

Source: Florida Division of Plant Industry.
Table 9.—Florida nursery firms, and acreage by plant category and by business type.

<table>
<thead>
<tr>
<th>Plant category</th>
<th>Retail Firms</th>
<th>Acres</th>
<th>Wholesale Firms</th>
<th>Acres</th>
<th>Both Firms</th>
<th>Acres</th>
<th>Total Firms</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oramentals&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3,479</td>
<td>2,190</td>
<td>1,733</td>
<td>6,991</td>
<td>2,351</td>
<td>3,416</td>
<td>7,558</td>
<td>12,597</td>
</tr>
<tr>
<td>Citrus</td>
<td>571</td>
<td>248</td>
<td>160</td>
<td>455</td>
<td>473</td>
<td>429</td>
<td>1,204</td>
<td>1,133</td>
</tr>
<tr>
<td>Nuts and fruits&lt;sup&gt;b&lt;/sup&gt;</td>
<td>503</td>
<td>165</td>
<td>95</td>
<td>363</td>
<td>404</td>
<td>196</td>
<td>1,002</td>
<td>724</td>
</tr>
<tr>
<td>Native plants</td>
<td>14</td>
<td>24</td>
<td>2</td>
<td>5</td>
<td>9</td>
<td>8</td>
<td>25</td>
<td>37</td>
</tr>
<tr>
<td>All&lt;sup&gt;c&lt;/sup&gt;</td>
<td>3,719</td>
<td>2,627</td>
<td>1,820</td>
<td>7,814</td>
<td>2,479</td>
<td>4,049</td>
<td>8,018</td>
<td>14,491</td>
</tr>
</tbody>
</table>

<sup>a</sup>Includes foliage, woody ornamentals and bedding plants.

<sup>b</sup>Non-citrus fruits.

<sup>c</sup>Total of individual firms. Many nurseries produce more than one category of plants and therefore, are listed more than once.
plants in varying combinations. Thus numbers of firms within a plant category are not additive. Acreages by plant category are additive, however, as are firm numbers and acres by business type.

Another characteristic of the data is that firms reporting acreages by plant category are not listed the same way by plant numbers. Different groupings are used by DPI for plant numbers as shown in Table 10. Again, firm numbers are additive within a plant material grouping across business types, but not across plant material groups. A total of 6,629 Florida nurseries produce foliage, 4,347 woody ornamentals, 1,478 citrus and 39 produce bedding plants (Table 10).

Major Nursery Counties

Nursery firms are fairly concentrated in 25 of Florida's 67 counties (Figure 1). The 25 counties shown in Figure 1 contain 84 percent of all nurseries and 90 percent of the commercial firms in the state, 85 and 86 percent, respectively, of woody ornamental and citrus nurseries and all the commercial bedding plant firms (Table 11).

The 25 counties also have 94 percent of all nursery acreage and 96 percent of commercial acreage in Florida (Table 12). From 96 to 100 percent of commercial acreage in the four plant categories for which acreage is reported are also in these leading counties.

Individual counties among these 25 have varying numbers of nursery firms, by type of plant material. For all nurseries, Dade County listed 1,001 firms, with 793 producing foliage, 393 woody ornamentals and 220 growing citrus (Table 13). Of the 858 nurseries in Orange County, 464 were classified as foliage firms, 239 woody ornamentals and 48 citrus. There were a total of 6,701 nursery firms in the 25 counties.
Table 10.--Florida nursery firms by type of plant material and by business type, 1980.

<table>
<thead>
<tr>
<th>Plant material</th>
<th>Retail</th>
<th>Wholesale</th>
<th>Both</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foliage</td>
<td>3,023</td>
<td>1,547</td>
<td>2,059</td>
<td>6,629</td>
</tr>
<tr>
<td>Woody ornamentals&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2,121</td>
<td>727</td>
<td>1,499</td>
<td>4,347</td>
</tr>
<tr>
<td>Citrus</td>
<td>709</td>
<td>189</td>
<td>580</td>
<td>1,478</td>
</tr>
<tr>
<td>Bedding plants</td>
<td>20</td>
<td>8</td>
<td>11</td>
<td>39</td>
</tr>
<tr>
<td>All&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3,719</td>
<td>1,820</td>
<td>2,479</td>
<td>8,018</td>
</tr>
</tbody>
</table>

<sup>a</sup>Includes firms producing trees and shrubs, native plants and nut and fruit (non-citrus) plants.

<sup>b</sup>Total of individual firms. Many nurseries produce more than one type of plant material and, therefore, are listed more than once.

Source: Florida Division of Plant Industry.
Figure 1.--Florida counties with major nursery acreage, 1980.
Table 11.--All nurseries and commercial nurseries in 25 Florida counties, and percent in state, by type of plant material, 1980.

<table>
<thead>
<tr>
<th>Plant material</th>
<th>Total</th>
<th>Commercial&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Firms</td>
<td>Percent of state</td>
</tr>
<tr>
<td>Foliage</td>
<td>5,568</td>
<td>84</td>
</tr>
<tr>
<td>Woody ornamentals&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3,577</td>
<td>82</td>
</tr>
<tr>
<td>Citrus</td>
<td>1,237</td>
<td>84</td>
</tr>
<tr>
<td>Bedding plants</td>
<td>35</td>
<td>90</td>
</tr>
<tr>
<td>Total&lt;sup&gt;c&lt;/sup&gt;</td>
<td>6,701</td>
<td>84</td>
</tr>
</tbody>
</table>

<sup>a</sup>Nursery classified as commercial on the basis of plant numbers in inventory listed by Florida Division of Plant Industry:

- Foliage, 10,000 plants or more;
- Woody ornamentals and citrus, 5,000 plants or more;
- Bedding plants, 30,000 plants or more.

<sup>b</sup>Includes firms producing trees and shrubs, native plants and nut and fruit (non-citrus) plants.

<sup>c</sup>Total of individual firms. Many nurseries produce more than one type of plant material, and, therefore, are listed more than once.

Source: Florida Division of Plant Industry.
Table 12.--Total and commercial nursery acreage in 25 Florida counties, and percentage of acreage in state by plant category, 1980.

<table>
<thead>
<tr>
<th>Plant category</th>
<th>Total</th>
<th></th>
<th>Commercial^a</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acres</td>
<td>Percent</td>
<td>Acres</td>
<td>Percent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>of state</td>
<td></td>
<td>of state</td>
</tr>
<tr>
<td>Ornamental^b</td>
<td>11,782</td>
<td>94</td>
<td>9,626</td>
<td>96</td>
</tr>
<tr>
<td>Citrus</td>
<td>1,053</td>
<td>93</td>
<td>991</td>
<td>96</td>
</tr>
<tr>
<td>Nuts, fruits^c</td>
<td>706</td>
<td>98</td>
<td>643</td>
<td>100</td>
</tr>
<tr>
<td>Native plants</td>
<td>20</td>
<td>54</td>
<td>2</td>
<td>100</td>
</tr>
<tr>
<td>Total^d</td>
<td>13,561</td>
<td>94</td>
<td>11,263</td>
<td>96</td>
</tr>
</tbody>
</table>

^a Nursery classified as commercial on the basis of plant numbers in inventory listed by Florida Division of Plant Industry:

- Foliage, 10,000 plants or more;
- Woody ornamentals and citrus, 5,000 plants or more;
- Bedding plants, 30,000 plants or more.

^b Includes foliage, woody ornamentals, and bedding plants.

^c Non-citrus fruits.

^d Totals may not add due to rounding.

Source: Florida Division of Plant Industry.
Table 13.--Numbers of nurseries by type of plant material\(^a\), 25 counties, 1980.

<table>
<thead>
<tr>
<th>County</th>
<th>Foliage</th>
<th>Woody ornamentals(^b)</th>
<th>Citrus</th>
<th>All(^c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dade</td>
<td>793</td>
<td>393</td>
<td>220</td>
<td>1,001</td>
</tr>
<tr>
<td>Orange</td>
<td>764</td>
<td>239</td>
<td>48</td>
<td>858</td>
</tr>
<tr>
<td>Hillsborough</td>
<td>461</td>
<td>380</td>
<td>99</td>
<td>521</td>
</tr>
<tr>
<td>Broward</td>
<td>376</td>
<td>333</td>
<td>71</td>
<td>478</td>
</tr>
<tr>
<td>Palm Beach</td>
<td>372</td>
<td>204</td>
<td>52</td>
<td>456</td>
</tr>
<tr>
<td>Pinellas</td>
<td>300</td>
<td>181</td>
<td>42</td>
<td>350</td>
</tr>
<tr>
<td>Volusia</td>
<td>316</td>
<td>246</td>
<td>65</td>
<td>329</td>
</tr>
<tr>
<td>Polk</td>
<td>245</td>
<td>208</td>
<td>91</td>
<td>320</td>
</tr>
<tr>
<td>Duval</td>
<td>276</td>
<td>166</td>
<td>50</td>
<td>306</td>
</tr>
<tr>
<td>Lake</td>
<td>238</td>
<td>90</td>
<td>49</td>
<td>291</td>
</tr>
<tr>
<td>Drevard</td>
<td>270</td>
<td>210</td>
<td>100</td>
<td>290</td>
</tr>
<tr>
<td>Lee</td>
<td>183</td>
<td>138</td>
<td>61</td>
<td>210</td>
</tr>
<tr>
<td>Pasco</td>
<td>144</td>
<td>118</td>
<td>52</td>
<td>209</td>
</tr>
<tr>
<td>Marion</td>
<td>113</td>
<td>108</td>
<td>28</td>
<td>168</td>
</tr>
<tr>
<td>Alachua</td>
<td>133</td>
<td>105</td>
<td>22</td>
<td>162</td>
</tr>
<tr>
<td>Seminole</td>
<td>123</td>
<td>73</td>
<td>10</td>
<td>156</td>
</tr>
<tr>
<td>Manatee</td>
<td>121</td>
<td>98</td>
<td>32</td>
<td>143</td>
</tr>
<tr>
<td>Highlands</td>
<td>64</td>
<td>65</td>
<td>45</td>
<td>94</td>
</tr>
<tr>
<td>St. Lucie</td>
<td>58</td>
<td>37</td>
<td>17</td>
<td>92</td>
</tr>
<tr>
<td>Collier</td>
<td>67</td>
<td>54</td>
<td>31</td>
<td>91</td>
</tr>
<tr>
<td>Martin</td>
<td>77</td>
<td>54</td>
<td>25</td>
<td>81</td>
</tr>
<tr>
<td>Baker</td>
<td>27</td>
<td>24</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>Jefferson</td>
<td>17</td>
<td>18</td>
<td>4</td>
<td>27</td>
</tr>
<tr>
<td>Hendry</td>
<td>18</td>
<td>16</td>
<td>9</td>
<td>21</td>
</tr>
<tr>
<td>Gadsden</td>
<td>12</td>
<td>11</td>
<td>2</td>
<td>17</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>5,568</td>
<td>3,577</td>
<td>1,237</td>
<td>6,701</td>
</tr>
</tbody>
</table>

\(^a\)Number of firms producing bedding plants not shown to avoid disclosure.

\(^b\)Includes firms producing trees and shrubs, native plants, and nut and fruit (non-citrus) plants.

\(^c\)Total of individual firms. Many nurseries produce more than one category of plants and, therefore, are listed more than once.

Source: Florida Division of Plant Industry.
These counties had 1,688 commercial nurseries, with 1,014 foliage firms, 778 woody ornamental nurseries and 116 citrus nurseries (Table 14). Orange County listed 439 commercial nurseries with 381 growing foliage. Dade, Palm Beach, Hillsborough, Lake and Broward Counties also had 100 or more commercial firms.

Acreage in all nurseries totaled 13,561 in the 25 counties, with 1,053 acres in citrus, 706 acres in noncitrus fruits and nuts and the remainder in ornamentals (woody ornamentals, foliage and bedding plants, Table 15). The DPI reported 2,675 acres in Dade County nurseries, and showed over 1,000 acres in three other counties, Palm Beach, Broward and Orange. Those same three counties had over 1,000 acres in ornamentals. Polk County had the most citrus nursery acreage, 288, with 220 acres in Highlands County and 181 acres in Lake County (Table 15). Jefferson County had 438 acres in nuts and non-citrus fruits, with Alachua County showing 99 acres and Dade County 74 acres.

Commercial nursery acreage in these 25 counties was largest in Dade County at 1,907 acres, with Palm Beach and Orange Counties having over 1,000 acres in commercial nurseries (Table 16). Largest ornamental acreages in commercial nurseries were in Dade, Palm Beach, Orange and Broward Counties, while Polk, Highland and Lake Counties had the greatest citrus acreage.

As shown in Table 14, Orange County had the most commercial nursery firms of the 25 counties, 439, and also had the most wholesale commercial nurseries (Table 17). Dade and Lake Counties had 95 and 101 wholesale nurseries, respectively, while Dade County had 43 retail firms. The largest number of commercial nurseries in the 25 counties, 893, were
Table 14.--Numbers of commercial nurseries\textsuperscript{a} by type of plant material\textsuperscript{b}, 25 Florida counties, 1980.

<table>
<thead>
<tr>
<th>County</th>
<th>Foliage</th>
<th>Woody ornaments\textsuperscript{c}</th>
<th>Citrus</th>
<th>All\textsuperscript{d}</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange</td>
<td>381</td>
<td>75</td>
<td>4</td>
<td>439</td>
</tr>
<tr>
<td>Dade</td>
<td>143</td>
<td>76</td>
<td>15</td>
<td>200</td>
</tr>
<tr>
<td>Palm Beach</td>
<td>97</td>
<td>65</td>
<td>6</td>
<td>145</td>
</tr>
<tr>
<td>Hillsborough</td>
<td>52</td>
<td>100</td>
<td>7</td>
<td>138</td>
</tr>
<tr>
<td>Lake</td>
<td>98</td>
<td>28</td>
<td>17</td>
<td>130</td>
</tr>
<tr>
<td>Broward</td>
<td>38</td>
<td>84</td>
<td>0</td>
<td>108</td>
</tr>
<tr>
<td>Polk</td>
<td>27</td>
<td>41</td>
<td>20</td>
<td>70</td>
</tr>
<tr>
<td>Manatee</td>
<td>30</td>
<td>30</td>
<td>5</td>
<td>46</td>
</tr>
<tr>
<td>Seminole</td>
<td>28</td>
<td>17</td>
<td>1</td>
<td>42</td>
</tr>
<tr>
<td>Pinellas</td>
<td>8</td>
<td>36</td>
<td>0</td>
<td>41</td>
</tr>
<tr>
<td>Brevard</td>
<td>21</td>
<td>22</td>
<td>4</td>
<td>38</td>
</tr>
<tr>
<td>Volusia</td>
<td>20</td>
<td>25</td>
<td>1</td>
<td>37</td>
</tr>
<tr>
<td>Highlands</td>
<td>6</td>
<td>17</td>
<td>14</td>
<td>31</td>
</tr>
<tr>
<td>Lee</td>
<td>18</td>
<td>23</td>
<td>1</td>
<td>31</td>
</tr>
<tr>
<td>Pasco</td>
<td>3</td>
<td>20</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>Marion</td>
<td>5</td>
<td>21</td>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>Alachua</td>
<td>5</td>
<td>18</td>
<td>1</td>
<td>23</td>
</tr>
<tr>
<td>Duval</td>
<td>2</td>
<td>21</td>
<td>0</td>
<td>22</td>
</tr>
<tr>
<td>Martin</td>
<td>11</td>
<td>10</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>Collier</td>
<td>4</td>
<td>12</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Jefferson</td>
<td>4</td>
<td>12</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Baker</td>
<td>6</td>
<td>10</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>St. Lucie</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Gadsden</td>
<td>3</td>
<td>9</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Hendry</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>1,014</td>
<td>778</td>
<td>116</td>
<td>1,688</td>
</tr>
</tbody>
</table>

\textsuperscript{a} Nursery classified as commercial on the basis of plant numbers in inventory listed by Florida Division of Plant Industry:

- Foliage, 10,000 plants or more;
- Woody ornamentals and citrus, 5,000 plants or more;
- Bedding plants, 30,000 plants or more.

\textsuperscript{b} Numbers of firms producing bedding plants not shown for counties to avoid disclosure.

\textsuperscript{c} Includes firms producing trees and shrubs, native plants and nut and fruit.

\textsuperscript{d} Total of individual firms. Many nurseries produce more than one of plant material, and, therefore, are listed more than once.

Source: Florida Division of Plant Industry.
Table 15.--Total nursery acreage by plant category, 25 Florida counties, 1980.

<table>
<thead>
<tr>
<th>County</th>
<th>Ornamentals&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Citrus</th>
<th>Nuts, fruits&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dade</td>
<td>2,565</td>
<td>35</td>
<td>74</td>
<td>2,675&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Palm Beach</td>
<td>1,854</td>
<td>28</td>
<td>12</td>
<td>1,894</td>
</tr>
<tr>
<td>Broward</td>
<td>1,105</td>
<td>5</td>
<td>5</td>
<td>1,121&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Orange</td>
<td>1,006</td>
<td>71</td>
<td>-d</td>
<td>1,077</td>
</tr>
<tr>
<td>Jefferson</td>
<td>427</td>
<td>9</td>
<td>438</td>
<td>874</td>
</tr>
<tr>
<td>Polk</td>
<td>436</td>
<td>283</td>
<td>1</td>
<td>725</td>
</tr>
<tr>
<td>Manatee</td>
<td>531</td>
<td>5</td>
<td>1</td>
<td>537</td>
</tr>
<tr>
<td>Hillsborough</td>
<td>490</td>
<td>28</td>
<td>13</td>
<td>531</td>
</tr>
<tr>
<td>Baker</td>
<td>515</td>
<td>-d</td>
<td>-d</td>
<td>515</td>
</tr>
<tr>
<td>Lee</td>
<td>404</td>
<td>6</td>
<td>3</td>
<td>414&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Highlands</td>
<td>160</td>
<td>220</td>
<td>-d</td>
<td>380</td>
</tr>
<tr>
<td>Gadsden</td>
<td>374</td>
<td>-d</td>
<td>-d</td>
<td>379&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Lake</td>
<td>84</td>
<td>181</td>
<td>18</td>
<td>283</td>
</tr>
<tr>
<td>Martin</td>
<td>255</td>
<td>1</td>
<td>2</td>
<td>258</td>
</tr>
<tr>
<td>Volusia</td>
<td>224</td>
<td>6</td>
<td>2</td>
<td>231</td>
</tr>
<tr>
<td>Pinellas</td>
<td>216</td>
<td>1</td>
<td>-d</td>
<td>218</td>
</tr>
<tr>
<td>Pasco</td>
<td>78</td>
<td>112</td>
<td>3</td>
<td>200&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Seminole</td>
<td>190</td>
<td>2</td>
<td>-d</td>
<td>192</td>
</tr>
<tr>
<td>Duval</td>
<td>182</td>
<td>3</td>
<td>6</td>
<td>191</td>
</tr>
<tr>
<td>Alachua</td>
<td>83</td>
<td>3</td>
<td>99</td>
<td>185</td>
</tr>
<tr>
<td>Marion</td>
<td>161</td>
<td>4</td>
<td>14</td>
<td>179</td>
</tr>
<tr>
<td>Collier</td>
<td>161</td>
<td>1</td>
<td>12</td>
<td>174&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Brevard</td>
<td>141</td>
<td>6</td>
<td>1</td>
<td>148&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>St. Lucie</td>
<td>71</td>
<td>22</td>
<td>0</td>
<td>94&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Hendry</td>
<td>69</td>
<td>16</td>
<td>1</td>
<td>86</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11,782</strong></td>
<td><strong>1,053</strong></td>
<td><strong>706</strong></td>
<td><strong>13,561&lt;sup&gt;c&lt;/sup&gt;</strong></td>
</tr>
</tbody>
</table>

<sup>a</sup>Includes foliage, woody ornamentals, and bedding plants.

<sup>b</sup>Non-citrus fruits.

<sup>c</sup>Includes small acreage in native plants.

<sup>d</sup>Less than one acre.

Source: Florida Division of Plant Industry.
Table 16.--Acreage in commercial nurseries\textsuperscript{a}, by plant category, 25 Florida counties, 1980.

<table>
<thead>
<tr>
<th>County</th>
<th>Ornaments\textsuperscript{b}</th>
<th>Citrus</th>
<th>Nuts, fruits\textsuperscript{c}</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dade</td>
<td>1,851</td>
<td>18</td>
<td>37</td>
<td>1,907\textsuperscript{f}</td>
</tr>
<tr>
<td>Palm Beach</td>
<td>1,637</td>
<td>27</td>
<td>11</td>
<td>1,676</td>
</tr>
<tr>
<td>Orange</td>
<td>951</td>
<td>68</td>
<td>-\textsuperscript{e}</td>
<td>1,019\textsuperscript{f}</td>
</tr>
<tr>
<td>Broward</td>
<td>864</td>
<td>3</td>
<td>2</td>
<td>870\textsuperscript{f}</td>
</tr>
<tr>
<td>Jefferson</td>
<td>379</td>
<td>8</td>
<td>438</td>
<td>826</td>
</tr>
<tr>
<td>Polk</td>
<td>386</td>
<td>273</td>
<td>-\textsuperscript{e}</td>
<td>660</td>
</tr>
<tr>
<td>Baker</td>
<td>512</td>
<td>-\textsuperscript{e}</td>
<td>-\textsuperscript{e}</td>
<td>512</td>
</tr>
<tr>
<td>Manatee</td>
<td>479</td>
<td>5</td>
<td>1</td>
<td>485</td>
</tr>
<tr>
<td>Hillsborough</td>
<td>395</td>
<td>27</td>
<td>11</td>
<td>433</td>
</tr>
<tr>
<td>Gadsden</td>
<td>374</td>
<td>-\textsuperscript{e}</td>
<td>-\textsuperscript{e}</td>
<td>374</td>
</tr>
<tr>
<td>Highlands</td>
<td>155</td>
<td>220</td>
<td>-\textsuperscript{e}</td>
<td>374</td>
</tr>
<tr>
<td>Lee</td>
<td>304</td>
<td>1</td>
<td>1</td>
<td>307</td>
</tr>
<tr>
<td>Lake</td>
<td>71</td>
<td>180</td>
<td>17</td>
<td>268</td>
</tr>
<tr>
<td>Martin</td>
<td>210</td>
<td>-\textsuperscript{e}</td>
<td>1</td>
<td>211</td>
</tr>
<tr>
<td>Seminole</td>
<td>167</td>
<td>2</td>
<td>-\textsuperscript{e}</td>
<td>169</td>
</tr>
<tr>
<td>Pasco</td>
<td>47</td>
<td>108</td>
<td>2</td>
<td>156</td>
</tr>
<tr>
<td>Volusia</td>
<td>147</td>
<td>4</td>
<td>1</td>
<td>153</td>
</tr>
<tr>
<td>Alachua</td>
<td>39</td>
<td>2</td>
<td>96</td>
<td>137</td>
</tr>
<tr>
<td>Pinellas</td>
<td>135</td>
<td>-\textsuperscript{e}</td>
<td>-\textsuperscript{e}</td>
<td>135</td>
</tr>
<tr>
<td>Marion</td>
<td>112</td>
<td>1</td>
<td>14</td>
<td>127</td>
</tr>
<tr>
<td>Collier</td>
<td>115</td>
<td>-\textsuperscript{e}</td>
<td>6</td>
<td>121</td>
</tr>
<tr>
<td>Duval</td>
<td>94</td>
<td>2</td>
<td>-\textsuperscript{e}</td>
<td>97</td>
</tr>
<tr>
<td>Brevard</td>
<td>85</td>
<td>4</td>
<td>-\textsuperscript{e}</td>
<td>89</td>
</tr>
<tr>
<td>St. Lucie</td>
<td>59</td>
<td>20</td>
<td>-\textsuperscript{e}</td>
<td>80</td>
</tr>
<tr>
<td>Hendry</td>
<td>62</td>
<td>16</td>
<td>1</td>
<td>78</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9,626</strong></td>
<td><strong>991</strong></td>
<td><strong>643</strong></td>
<td><strong>11,263</strong></td>
</tr>
</tbody>
</table>

\textsuperscript{a}Nursery classified as commercial on the basis of plant numbers in inventory listed by Florida Division of Plant Industry:

- Foliage, 10,000 plants or more;
- Woody ornamentals and citrus, 5,000 plants or more;
- Bedding plants, 30,000 plants or more.

\textsuperscript{b}Include firms producing foliage, woody ornamentals and bedding plants.

\textsuperscript{c}Non-citrus fruits.

\textsuperscript{d}Totals may not add due to rounding of decimal figures in DPI data.

\textsuperscript{e}Less than one acre.

Source: Florida Division of Plant Industry.
Table 17.--Numbers of commercial nurseries\textsuperscript{a} by business type, 25 Florida counties, 1980.

<table>
<thead>
<tr>
<th>County</th>
<th>Retail</th>
<th>Wholesale</th>
<th>Both</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange</td>
<td>39</td>
<td>328</td>
<td>72</td>
<td>439</td>
</tr>
<tr>
<td>Dade</td>
<td>43</td>
<td>95</td>
<td>62</td>
<td>200</td>
</tr>
<tr>
<td>Palm Beach</td>
<td>25</td>
<td>75</td>
<td>45</td>
<td>145</td>
</tr>
<tr>
<td>Hillsborough</td>
<td>24</td>
<td>49</td>
<td>65</td>
<td>138</td>
</tr>
<tr>
<td>Lake</td>
<td>11</td>
<td>101</td>
<td>26</td>
<td>130</td>
</tr>
<tr>
<td>Broward</td>
<td>13</td>
<td>50</td>
<td>45</td>
<td>108</td>
</tr>
<tr>
<td>Polk</td>
<td>12</td>
<td>16</td>
<td>42</td>
<td>70</td>
</tr>
<tr>
<td>Manatee</td>
<td>7</td>
<td>22</td>
<td>17</td>
<td>46</td>
</tr>
<tr>
<td>Seminole</td>
<td>8</td>
<td>30</td>
<td>4</td>
<td>42</td>
</tr>
<tr>
<td>Pinellas</td>
<td>15</td>
<td>12</td>
<td>4</td>
<td>41</td>
</tr>
<tr>
<td>Brevard</td>
<td>13</td>
<td>13</td>
<td>12</td>
<td>38</td>
</tr>
<tr>
<td>Volusia</td>
<td>9</td>
<td>17</td>
<td>11</td>
<td>37</td>
</tr>
<tr>
<td>Highlands</td>
<td>4</td>
<td>14</td>
<td>13</td>
<td>31</td>
</tr>
<tr>
<td>Lee</td>
<td>4</td>
<td>12</td>
<td>15</td>
<td>31</td>
</tr>
<tr>
<td>Pasco</td>
<td>18</td>
<td>3</td>
<td>9</td>
<td>30</td>
</tr>
<tr>
<td>Marion</td>
<td>7</td>
<td>10</td>
<td>8</td>
<td>25</td>
</tr>
<tr>
<td>Alachua</td>
<td>9</td>
<td>2</td>
<td>12</td>
<td>23</td>
</tr>
<tr>
<td>Duval</td>
<td>2</td>
<td>4</td>
<td>16</td>
<td>22</td>
</tr>
<tr>
<td>Martin</td>
<td>3</td>
<td>10</td>
<td>6</td>
<td>19</td>
</tr>
<tr>
<td>Collier</td>
<td>0</td>
<td>3</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Jefferson</td>
<td>5</td>
<td>8</td>
<td>1</td>
<td>14</td>
</tr>
<tr>
<td>Baker</td>
<td>1</td>
<td>7</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>St. Lucie</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Gadsden</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Hendry</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

Total 277 893 518 1,688

\textsuperscript{a}Nursery classified as commercial on the basis of plant numbers in listed by Florida Division of Plant Industry:

Foliage, 10,000 plants or more;
Woody ornamentals and citrus, 5,000 plants or more;
Bedding plants, 30,000 plants or more.

Source: Florida Division of Plant Industry.
wholesale firms, with 519 both wholesale and retail and 277 nurseries retail only (Table 17). Appendix Table 1 lists all nursery firms by business type and total nursery acreage for each Florida county, and Appendix Table 2 shows the same information for commercial nurseries.
FLORIDA NURSERY MARKETING

Florida nursery sales of exterior landscape material, interior foliage plants, citrus nursery stock and bedding plants increased from 1979 to 1981. According to Florida growers interviewed, wholesale sales of exterior landscape material grew by about 52 percent, foliage sales by 14 percent, and citrus and bedding plant sales by over 70 percent each (Table 18).

Explanations of kinds of plants and survey methods in the Introduction and Table 1 should be recalled when using these sales values for other purposes or if comparing them with values from other sources. The values reported here were provided by the sample of nursery growers interviewed. Representatives of all firms interviewed were asked to provide wholesale sales values. These values were aggregated and used to estimate total sales for each major plant category. Sample firms' sales were added, and totals expanded to estimate state commercial nursery sales. Sample firms had 53 percent of commercial inventory in exterior plants, one-third in foliage, 45 percent in citrus and 100 percent of commercial bedding plant inventory in the state (Appendix Table 3).

These figures differ from values reported in other sources. For example, foliage sales reported by Florida Crop and Livestock Reporting Service for 1980 are about 11 percent lower than the value shown in Table 18. The value for exterior and interior plants together for 1981, about $234 million, is about one-third lower than 1981 value of $350
Table 18.--Estimated wholesale values of Florida commercial nursery sales of exterior and interior plants, citrus nursery stock and bedding plants, 1979, 1980 and 1981, and percentage changes.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Exterior(^b)</td>
<td>49,721</td>
<td>63,238</td>
<td>75,358</td>
<td>27</td>
<td>19</td>
<td>52</td>
</tr>
<tr>
<td>Interior</td>
<td>155,435</td>
<td>170,533</td>
<td>176,455</td>
<td>10</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>Citrus</td>
<td>9,618</td>
<td>12,984</td>
<td>16,434</td>
<td>35</td>
<td>27</td>
<td>71</td>
</tr>
<tr>
<td>Bedding plants(^c)</td>
<td>1,863</td>
<td>2,528</td>
<td>3,230</td>
<td>36</td>
<td>28</td>
<td>73</td>
</tr>
</tbody>
</table>

\(^a\)Values of wholesale sales reported by the sample of Florida growers interviewed, expanded to total state sales. Includes only commercial nurseries (see Table 1 for types of plants included and Table 6 for definitions of commercial nurseries).

\(^b\)Woody ornamentals and all other plants used for exterior landscaping.

\(^c\)Does not include containerized transplants for commercial vegetable, flower or tree production or other such uses.
million reported by Gammel.

Differences between sales values for what appears to be the same Florida nursery sector can probably be explained by different approaches used, different firms included in samples, different plant categories included, and by interviewed firms' differing methods of valuing or estimating sales.

Woody Ornamentals

Sales Trends

As stated earlier there were 920 commercial wholesale nurseries producing woody ornamentals in Florida in 1980 (Table 6). Sales of the major group of plants handled by these firms showed relatively few changes in the sales shares. Evergreen shrubs, as a plant group, made up 41 percent of firm sales in 1979 and increased to 43 percent by 1981 (Table 19). The share of sales accounted for by azaleas declined from 20 to 16 percent but it should be recalled that dollar volume for all nursery sales increased by 52 percent from 1979 to 1981 (Table 18). Thus, the actual dollar value of azalea sales increased, but not as rapidly as other plant groups. All other plant groups showed no or very little change in share of sales over the 1979-1981 period (Table 19).

Florida growers reported more calls from buyers for hardy, low maintenance plants. Native trees and shrubs, low-growing plants and ground covers were also in demand. Larger sizes in trees and shrubs and containers were also preferred by buyers, along with requests for fewer
Table 19.--Percentage shares of Florida woody ornamental nursery sales, selected plant groups 1979-1981.

<table>
<thead>
<tr>
<th>Plant group</th>
<th>1979</th>
<th>1980</th>
<th>1981</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evergreen shrubs</td>
<td>41</td>
<td>42</td>
<td>43</td>
</tr>
<tr>
<td>Azaleas</td>
<td>20</td>
<td>18</td>
<td>16</td>
</tr>
<tr>
<td>Deciduous fruits and nuts</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Deciduous shrubs</td>
<td>6</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Ground covers and vines</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Evergreen trees</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Palms</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Deciduous trees</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Flowering trees</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Bedding plants</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Citrus</td>
<td>0.5</td>
<td>0.2</td>
<td>0.5</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

\[a\] Totals do not sum to 100.0 due to rounding.
different container sizes.

Buyers and users of Florida-grown woody ornamentals, both in the state and in other regions, repeated the call for more hardy materials. Landscape personnel in Florida particularly stressed the need for more resistance to cold, drought and salt in landscape plants.

Both larger trees and shrubs, and rapidly growing ground covers were needed, according to buyers. Larger sized containers and fewer sizes were needs repeated, along with a need for standardizing containers. Several buyers stated that a particular size designation is applied to containers of several different dimensions and capacities. Retail garden center and mass market buyers suggested that Florida growers provide labels or pot tags with plant names, and planting and care instructions for consumers.

Market Outlets

Woody ornamentals and other plants from Florida nurseries used for exterior landscape plantings (see Table 1) go to several kinds of market outlets (Figure 2). Of Florida grower sales, 5 percent go to other Florida growers, 2 percent go to brokers, 10 percent to nursery wholesalers, 31 percent each to retail garden centers and to landscape contracting firms, 19 percent to mass market outlets and one percent to government agencies and other users.

Growers interviewed did not report any marked sales trends to any of these types of outlets. As stated earlier, sales to all types of market outlets have increased substantially since 1979. A few of the larger Florida growers had decreased sales to wholesalers and increased
Figure 2.—Marketing channels, woody ornamentals.
movement to retail garden centers and mass market outlets. However, some smaller firms were increasing sales to wholesalers who would pick up material at the nursery, saving the grower the expense of delivering to mass market outlets.

Several other growers felt that the mass market share of their sales was increasing, particularly for smaller, lower-priced plants that could be featured in promotions by the mass merchandising chain. Other growers, mainly those producing larger trees and shrubs, were increasing sales to landscape contractors and brokers, and reducing sales percentages to garden centers. It should be noted, however, that the shifts just described were not reported by a majority of growers in the state or an area in the state, nor by any particular size of firm. They were particular trends that some Florida wholesale growers had experienced and expected to continue.

Several Florida nurserymen who market much of their material out of state pointed out that large-scale wholesalers were entering nursery distribution in major market areas, such as Atlanta, Houston, or Baltimore-Washington. These wholesalers, some of which were subsidiaries of large conglomerates, are able to purchase extremely large quantities of landscape plants from growers throughout the U.S., and achieve cost savings in both volume purchases and shipping charges. More discussion on this point is found in the section dealing with competing production areas.

**Market Regions**

Florida growers were asked to indicate how their sales were distributed among the regions shown in Figure 3. These values were aggregated and used to estimate the distribution of Florida woody ornamentals sales, in
the same way that total nursery category sales were estimated earlier.

Over half of woody ornamental and exterior plant sales were in Florida with southern states receiving nearly one-third (Table 20). About 4 percent of Florida exterior plants went to the midwest and 11 percent to the northeast.

About one-third of the growers interviewed provided an estimate of sales trends in their market regions. Of these, nearly all believed landscape plant sales in Florida were increasing. A few reported they were shipping larger shares to other southern states while reducing the sales percentage in Florida. Relatively few growers ship woody ornamentals to the northeast or midwest, and no particular trends were noted.

Competing Production Areas

Florida growers interviewed were asked if they saw significant competition in out-of-state market regions from growers in areas outside Florida. Georgia and Alabama were the most-frequently mentioned states with nursery firms supplying the same market areas as Florida growers. Texas and Oklahoma nurseries were also mentioned as being relatively new entrants in regional markets, while a few growers mentioned production areas in other southeastern states as sources for some competing materials.

The large wholesalers mentioned earlier were becoming significant in some markets, according to Florida growers. These wholesalers, who often are only distributors and not nursery growers, are moving rather aggressively to supply retail garden centers, landscape contractors and other woody ornamental outlets in certain markets.
Table 20.--Florida sales of woody ornamentals, foliage, citrus stock and bedding plants by region, 1981.

<table>
<thead>
<tr>
<th>Region</th>
<th>Woody ornamentals</th>
<th>Foliage</th>
<th>Citrus</th>
<th>Bedding plants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida</td>
<td>52</td>
<td>17(^b)</td>
<td>71</td>
<td>95</td>
</tr>
<tr>
<td>South</td>
<td>32</td>
<td>26</td>
<td>-(^c)</td>
<td>2</td>
</tr>
<tr>
<td>Midwest</td>
<td>4</td>
<td>24</td>
<td>-(^c)</td>
<td>0</td>
</tr>
<tr>
<td>West</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Northeast</td>
<td>11</td>
<td>26</td>
<td>-(^c)</td>
<td>1</td>
</tr>
<tr>
<td>Canada</td>
<td>-(^c)</td>
<td>3</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Other foreign</td>
<td>-(^c)</td>
<td>-(^c)</td>
<td>29</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

\(^a\) See Figure 3.

\(^b\) Includes sales to Florida brokers. Those plants may then be sold into other regions but no data are available to estimate shares.

\(^c\) Less than one percent.
Marketing Problems and Needs

Nearly half of the Florida growers interviewed said they had no marketing problems, and several mentioned that they could sell plants more rapidly than the plants could reach suitable sizes. About one-sixth of the sample did report some marketing problems or needs, however.

These problems fell into two general areas - increased costs or unsatisfactory service for plant transportation, and the need for more market information and coordination. Transportation needs included improved equipment and loading and handling for plants shipped longer distances in hot spring and summer months. Some nurserymen also mentioned the need to be as efficient as possible in the use of trucks and transportation services, both for contact or independent truckers and with their own delivery vehicles.

Market information and coordination suggestions included efforts such as plant availability listings for Florida growers and coordinated or cooperative marketing efforts to expand markets. Some growers felt that industry marketing activities could also assist in offering new items, different packaging, or in market development and market expansion programs.

Foliage

Sales Trends

Of the 1,882 commercial nurseries in the state, 1,066 produce foliage plants (Table 6). Sales of interior foliage plants by these firms increased about 14 percent from 1979 to 1981 (Table 18).
Individual plant groups showed relatively little change in shares of Florida foliage firm sales during that period. However, some groups showed significant changes from 1975. A study with data from that year (Smith and Strain) shows that philodendrons and dracaenas declined as a percentage of firm sales from 1975 to 1981, while ficus and aglaonemas increased significantly (Table 21). The other groups showed relatively little change in shares of sales. It should be recalled, however, that Florida foliage sales were estimated at $87 million in 1975 (Smith and Strain) and $176 million in 1981 (Table 18). Thus, philodendron sales, at 20 percent of 1975 volume, were $17.4 million and grew to $22.9 million by 1981 though making up 13 percent of sales in the latter year.

Findings from the survey of Florida growers confirmed the data reported above. Producers generally reported that foliage sales were stabilizing over the past two to three years, after substantial growth through most of the 1970's. Specific trends growers reported included sales for larger indoor plants and for more hardy material adapted to low light conditions and also to cooler greenhouse temperatures, to help keep down production costs. Growers noted more buyer interest in colorful plants, as well.

Buyers interviewed stated the same desires and emphasized their interest in new and different plants. Representatives of retail firms added that new, different and colorful plants appealed to impulse buyers and to consumers looking for variety. Larger plants are steadily gaining in popularity, and buyers are stressing plant quality.
Table 21.--Percentage shares of Florida foliage nursery sales, selected plant groups, 1975, 1979-81.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Philodendron spp.</strong></td>
<td>20</td>
<td>15</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td><em>Ficus spp.</em></td>
<td>6</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Palms</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td><em>Dracaena spp.</em></td>
<td>11</td>
<td>7</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td><em>Braesia actinohylla schefflera</em></td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td><em>Aglaonema spp.</em></td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Combinations</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><em>Cacti and succulents</em></td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td><em>Spathiphyllum spp.</em></td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td><em>Dieffenbachia spp.</em></td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><em>Scindapss spp. pothos</em></td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Hanging baskets</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Totem poles</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><em>Aralias</em></td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Ferns</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><em>Sansevieria spp.</em></td>
<td>3</td>
<td><em>b</em></td>
<td><em>b</em></td>
<td><em>b</em></td>
</tr>
<tr>
<td>Others</td>
<td>20</td>
<td>21</td>
<td>20</td>
<td>17</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

---


*Less than 0.5 percent.*
Representatives of buying firms also stressed the importance of having the most desirable container types and sizes for their markets, and the need for standardizing several aspects of their foliage purchases. Standardizing plants, containers, media and packing were all stated needs. Many buyer representatives recognized the variability that can occur in foliage plant production and the resulting differences in plant size and appearance. However, most buyers stressed the importance of communication with growers and shippers and of knowing what to expect with a given shipment of plants.

Having plants and pots arrive clean, with care tags and labels was also emphasized by retailers. Mass market firms are particularly interested in having plants ready for sale when they arrive at the store. Interiorscape designers, of course, have no need for care tags, or for expensive containers, but wish to have consistent sizes in both plants and pots, and consistent media mixes from one shipment to the next.

Trends to larger pot sizes are documented by sales data reported by the Federal-State Market News Service. Foliage plants in three-inch pots declined from 55 percent of plants shipped by large and medium sized Florida growers in 1977 to 49 percent by 1980 (Table 22). Six-, eight-, and ten-inch pots increased as a percentage of shipments over that period while the five-inch pot share declined. Interestingly enough, three and one-half to four-inch pots increased and two and one-half inch and smaller pots grew substantially as a share of sales (Table 22).
Market Outlets

Florida-grown foliage plants move to many kinds of market outlets (Figure 4). Florida growers interviewed in 1981 sold over one-third of their plants to retail garden centers and florists, and nearly as much, 31 percent, to wholesale foliage dealers (Table 23). Some 15 percent of sales went through brokers to the other types of outlets but it was not possible to determine that distribution in this study.

Comparing these current percentages shares with those in 1975 (Smith and Strain) shows that sales shares reported by Florida growers have increased to retail outlets and remained about the same to wholesalers of all types (Table 23). Shares to brokers and mass market outlets declined from 1975 to 1981. Again, it should be kept in mind that total foliage sales increased from $87 million to $176 million from 1975 to 1981, so that dollar value to all types of outlets except mass merchandisers increased. Even there, a substantial portion of the sales through brokers almost certainly goes to mass market outlets.

Comments by Florida growers generally reflect the shifts in foliage sales among types of outlets. Some of the growers interviewed stated they were planning to increase the share of their business direct to retailers or wholesalers, rather than going through brokers. The primary reason given was to increase the net plant price to the grower.

Other Florida producers were planning to shift sales away from all mass market outlets, or away from discount stores in particular. Primary reasons were the very long collection periods, 120 days or more, experienced
Table 22.--Foliage plants sold in pots by large and medium sized growers, and

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total sold(^a)</td>
<td>113,144</td>
<td>110,821</td>
<td>115,202</td>
<td>92,257</td>
</tr>
<tr>
<td>Percent</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2 1/2 inch and smaller</td>
<td>9.0</td>
<td>9.4</td>
<td>9.3</td>
<td>14.0</td>
</tr>
<tr>
<td>3 inch</td>
<td>55.6</td>
<td>52.4</td>
<td>52.2</td>
<td>44.3</td>
</tr>
<tr>
<td>3 1/2 - 4 inch</td>
<td>10.5</td>
<td>11.3</td>
<td>11.1</td>
<td>12.3</td>
</tr>
<tr>
<td>5 inch</td>
<td>1.6</td>
<td>2.7</td>
<td>2.3</td>
<td>1.9</td>
</tr>
<tr>
<td>6 inch</td>
<td>9.9</td>
<td>10.3</td>
<td>10.7</td>
<td>10.6</td>
</tr>
<tr>
<td>8 inch</td>
<td>1.7</td>
<td>1.7</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>10 inch</td>
<td>2.8</td>
<td>3.8</td>
<td>4.0</td>
<td>4.9</td>
</tr>
<tr>
<td>12 inch</td>
<td>0.4</td>
<td>0.2</td>
<td>0.2</td>
<td>0.1</td>
</tr>
<tr>
<td>14 - 16 inch</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.5</td>
</tr>
<tr>
<td>17 inch and larger</td>
<td>_(^b)</td>
<td>_(^b)</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Hanging baskets</td>
<td>_(^b)</td>
<td>_(^b)</td>
<td>_(^b)</td>
<td>2.1</td>
</tr>
<tr>
<td>Cordatum</td>
<td>6.3</td>
<td>5.9</td>
<td>5.6</td>
<td>4.6</td>
</tr>
<tr>
<td>Combinations</td>
<td>1.3</td>
<td>1.3</td>
<td>1.7</td>
<td>2.3</td>
</tr>
<tr>
<td>Totem poles</td>
<td>0.6</td>
<td>0.7</td>
<td>0.8</td>
<td>0.6</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

\(^a\) Plants sold in pots; does not include bare root plants sold.

\(^b\) Not reported.

\(^c\) Totals may not sum to 100.0 due to rounding.

Table 23.--Distribution of Florida foliage sales by market outlet, 1975 and 1981.

<table>
<thead>
<tr>
<th>Outlet</th>
<th>Share of sales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1975(^a)</td>
</tr>
<tr>
<td>Retail garden centers, florists</td>
<td>13</td>
</tr>
<tr>
<td>Wholesale greenhouses, florists</td>
<td>32</td>
</tr>
<tr>
<td>Brokers</td>
<td>21</td>
</tr>
<tr>
<td>Mass market(^b)</td>
<td>22</td>
</tr>
<tr>
<td>Other Florida growers</td>
<td>9</td>
</tr>
<tr>
<td>Interiorscape and landscape</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

\(^a\)See Smith and Strain.

\(^b\)Includes grocery and department stores.
Figure A.—Marketing channels, foliage.
with discount chains, and mass merchandisers' insistence on reducing grower prices. Some growers felt supermarkets were desirable outlets in the mass merchandising group, and intended to attempt to increase sales there. Other producers, who specialized in growing for discount stores and other mass market firms, felt sales would increase in these outlets.

Several Florida growers felt that foliage sales to interiorscape firms would increase substantially over the next three to five years. Owners and managers in these firms agreed with this trend, citing sales increases in the past three years and growing familiarity by architects, building and shopping centers owners and the general public with the benefits of indoor plants.

**Market Regions**

Over 80 percent, and possibly more of Florida foliage plants are sold in other states or countries. Growers reported that 24 to 26 percent of their sales went to each of three major regions of the U.S., the midwest, northeast and the south (Figure 3 and Table 20). Another four percent of sales went to western states, and three percent to Canada, with small amounts to other countries. Of the 17 percent of foliage reported sold in Florida, it is probable a large share was to brokers who moved the material into out-of-state markets. However, growers could not identify final destinations for this share of sales.

Several growers did state that Florida is an expanding market for foliage plants and that they expected to direct more sales activity in the state. Most producers, however, felt that other regions would continue to be primary markets for Florida foliage. The south and
southeast, often called the "Sunbelt," was mentioned by many growers as the most rapidly growing market area. The traditional Florida sales regions in the midwest and northeast were expected to remain stable.

Buyers in the Sunbelt states confirmed Florida growers' expectations for expanding foliage sales. Population growth and booming office and shopping center construction were among the reasons Sunbelt buyers expected foliage use to grow. Foliage buyers and users in the midwest and northeast saw steady growth in their foliage sales, though not at the same rate as in the Sunbelt states.

**Competing Production Areas**

Florida has very little competition from tropical foliage growers in any other region. Buyers throughout the U.S. stated that Florida was the dominant producing region and the only producing area where they normally purchased tropical foliage. Some wholesale growers in other states near major urban markets are increasing their foliage production. These increases are mainly in growing plants to larger sizes, and moving them into larger containers to supply the nearby market. Typically, these growers purchase smaller material from Florida producers. Transportation savings and more efficient use of existing greenhouses were the reasons most often given by these out-of-state growers for this trend.

Some Florida growers, mainly those selling large proportions of their material in the southwest, stated that tropical foliage expansion in the Rio Grande Valley of Texas would likely provide increasing competition in the future. Foliage from California is currently competitive with Florida material in many markets, even though much of the California material is not the same type as Florida-grown tropical plants. Other
Florida growers reported that foliage from Puerto Rico was entering some U.S. markets, mainly in the northeast.

**Marketing Problems and Needs**

Transportation and account collection were the most frequently mentioned problems by Florida foliage growers. Increasing costs for shipping plants to distant markets have reduced grower prices and made small shipments uneconomical. Buyers also were concerned over the effects of rising transportation costs, and noted other problems. Poor handling and loading by some truckers resulted in crushed containers and unsalable plants. Improper temperatures and unsuitable equipment were other transportation problems cited by buyers.

Florida growers were experiencing difficulty in collecting from some customers. High interest rates and depressed business conditions have caused some buyers to delay payments for plants, causing cash flow problems for producers.

Cooperatives or other forms of organized marketing were marketing improvements needed, according to several growers. These growers felt that standardization in plant and container sizes and shipping cartons was a major benefit possible through organization. Others mentioned advertising and merchandising programs, improving transportation services, and more orderly marketing and pricing as possible results from a cooperative or coordinated industry effort.

**Citrus**

Florida citrus nursery firms included in this study grew only citrus trees -- oranges, grapefruit, specialty varieties, lemons and limes.
As noted earlier, a number of woody ornamental growers also produce citrus trees but the total volume and value is not large. There were 135 citrus nurseries registered by DPI in 1980 (Table 6). Several of these are divisions of commercial citrus producing firms and grow trees for use only by that firm. However, the nursery divisions apply a sale value to trees planted by production divisions. Citrus tree sales by specialized citrus nurseries increased over 70 percent from 1979 to 1981 (Table 18).

These sales increases reflect both more trees sold and higher prices per tree, due to expanding citrus production and tree replacement after the 1977 and 1981 freezes in Florida citrus producing areas. Commercial citrus operations are the primary buyers for Florida citrus nursery stock, taking 87 percent of citrus sales, with retail garden centers buying the remaining 13 percent (Figure 5).

Florida is the primary market region for citrus nurseries, with 71 percent of sales remaining in the state. The other 29 percent of citrus nursery sales goes to commercial growers outside the U.S., mainly in the Caribbean and Latin American (Table 20).

The total number of orange trees in Florida commercial groves declined slightly from 1965 to 1980, while the number of grapefruit trees increased by more than 50 percent (Table 24). The Florida Crop and Livestock Reporting Service conducts and publishes a commercial citrus tree inventory every two years. The Economic Research Department of the Florida Department of Citrus analyzes the inventory data and publishes reports describing citrus planting changes and projecting citrus planting trends (Fairchild).
Table 24.--Number of round orange trees and grapefruit trees in Florida commercial citrus inventories, 1965-80

<table>
<thead>
<tr>
<th>Year of tree inventory</th>
<th>Round orange Change from previous inventory</th>
<th>Grapefruit Change from previous inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Trees Million</td>
<td>Percent</td>
</tr>
<tr>
<td>1965</td>
<td>53.8</td>
<td></td>
</tr>
<tr>
<td>1967</td>
<td>56.6</td>
<td>5.2</td>
</tr>
<tr>
<td>1969</td>
<td>57.8</td>
<td>2.1</td>
</tr>
<tr>
<td>1971</td>
<td>53.7</td>
<td>-7.1</td>
</tr>
<tr>
<td>1973</td>
<td>52.5</td>
<td>-2.2</td>
</tr>
<tr>
<td>1976</td>
<td>51.6</td>
<td>-1.7</td>
</tr>
<tr>
<td>1978</td>
<td>50.8</td>
<td>-1.6</td>
</tr>
<tr>
<td>1980</td>
<td>52.0</td>
<td>2.4</td>
</tr>
<tr>
<td>1965-80</td>
<td>-3.3</td>
<td></td>
</tr>
</tbody>
</table>

Source: Fairchild.
Figure 5.—Marketing channels, citrus nursery plants.
Selected data from the most recent analysis show that new plantings of oranges and grapefruit have generally been increasing each year since 1975. The major categories of orange trees, early and midseason and Valencias, have shown increases each year during that period, while pink seedless grapefruit plantings have increased, on the average, from 1975 to 1978 (Table 25).

The Department of Citrus analysis cited earlier (Fairchild) estimated future citrus plantings at three different levels: If growers should continue planting at the annual average of 1977-1979; at half that average, and at twice that figure. Total estimated orange plantings, at the 1977-79 average, would be over 1.25 million trees, ranging from 625,000 to 2.5 million. Grapefruit plants could range from 159,000 to more than 636,000 (Table 26).

Citrus nursery operators reported no marketing problems or needs. Several said their production was sold one to two years ahead, to fill orders from commercial growers in Florida. Some citrus nurserymen expected to resume sales to retail garden centers, both in and out of state, if their production was large enough to supply commercial grove needs and allow additional sales. Citrus tree sales to outlets other than citrus producing firms declined substantially after the 1977 freeze in Florida. Replacement and grove expansion demand has utilized the bulk of available citrus stock since.

**Bedding Plants**

The Florida Division of Plant Industry lists 39 nurseries as producers of bedding plants. Seven of these were classified as commercial-sized
Table 25.--Average annual plantings of new oranges and temples and grapefruits, Florida, 1975-1979.

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Oranges</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early and midseason</td>
<td>1049.2</td>
<td>813.4</td>
<td>706.2</td>
<td>640.7</td>
<td>603.8</td>
</tr>
<tr>
<td>Valencias</td>
<td>758.2</td>
<td>580.9</td>
<td>539.7</td>
<td>512.2</td>
<td>492.8</td>
</tr>
<tr>
<td>Temples</td>
<td>5.5</td>
<td>5.9</td>
<td>4.8</td>
<td>4.8</td>
<td>5.1</td>
</tr>
<tr>
<td><strong>Grapefruit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seedy</td>
<td>13.0</td>
<td>9.3</td>
<td>11.8</td>
<td>13.4</td>
<td>14.6</td>
</tr>
<tr>
<td>White seedless</td>
<td>83.2</td>
<td>57.2</td>
<td>45.7</td>
<td>48.0</td>
<td>67.4</td>
</tr>
<tr>
<td>Pink seedless</td>
<td>223.3</td>
<td>247.5</td>
<td>260.8</td>
<td>234.2</td>
<td>226.7</td>
</tr>
</tbody>
</table>

Source: Fairchild
Table 26.--Estimated future orange and grapefruit plantings, Florida, at 1977-79 average, half and double the average.

<table>
<thead>
<tr>
<th>Tree type</th>
<th>1977-79 average</th>
<th>Half of average</th>
<th>Double average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,000 trees per year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oranges</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early and midseason</td>
<td>706.2</td>
<td>353.1</td>
<td>1412.4</td>
</tr>
<tr>
<td>Valencias</td>
<td>539.7</td>
<td>269.8</td>
<td>1079.4</td>
</tr>
<tr>
<td>Temples</td>
<td>4.8</td>
<td>2.4</td>
<td>9.6</td>
</tr>
<tr>
<td>Total</td>
<td>1250.7</td>
<td>625.3</td>
<td>2,501.4</td>
</tr>
<tr>
<td>Grapefruit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seedy</td>
<td>11.8</td>
<td>5.9</td>
<td>23.6</td>
</tr>
<tr>
<td>White seedless</td>
<td>45.7</td>
<td>22.8</td>
<td>91.4</td>
</tr>
<tr>
<td>Pink seedless</td>
<td>260.8</td>
<td>130.4</td>
<td>521.6</td>
</tr>
<tr>
<td>Total</td>
<td>318.3</td>
<td>159.1</td>
<td>636.6</td>
</tr>
</tbody>
</table>

Source: Fairchild
firms for this study, with each of the seven firms having 30,000 or more plants in inventory (Table 6). These seven nurseries had 97 percent of all bedding plants in the DPI inventory list and thus represent the bulk of production in the state (Appendix Table 3).

These commercial firms had estimated sales of $3,230,000 in 1981, an increase of 73 percent over 1979 (Table 18). These figures are for sales of flowering annuals and vegetables, and do not include containerized transplants for commercial vegetable, flower or tree production. The latter class of plants is included in the USDA data for "bedding plants" shown earlier (Table 4).

Bedding plant nurseries, as classified by DPI and included in this study, sell in much the same channels as woody ornamental growers (Figure 6). Retail garden centers and similar outlets account for 51 percent of bedding plant sales and mass market firms for 34 percent. Landscape contractors take 11 percent, wholesalers two percent, and interiorscape firms and government agencies one percent each. A few bedding plant nurseries occasionally sell items to other growers or to brokers, but quantities are generally small.

Virtually all Florida grown bedding plants are sold in the state, as 95 percent remain in Florida. The south (Figure 3) takes about 2 percent, and the west, northeast and Canada one percent each (Table 20). Florida growers reported no sales to outlets in the midwest in 1981. Some of the largest bedding plant firms in the U.S. are in the midwest and supply the bulk of that region's needs, as well as shipping large
Figure 6.—Marketing channel’s, bedding plants.
quantities throughout the rest of the U.S. and Canada. Also, local bedding plant growers in each of the other regions supply nearby markets.

Florida growers expected continued increases in bedding plant sales in total, with nearly all sales in Florida. No major shifts were seen among types of outlets, though some increases were expected for landscape use of flowering annuals. Landscape designers and residential developers in Florida said colorful annuals added greatly to commercial and residential landscaping, and expected to use more of these.

Vegetables and herbs have increased considerably in dollar volume and as a share of total sales, according to Florida growers. Consumer vegetable gardening, particularly in urban areas, was the primary force behind this increase, according to both growers and retailers.

Some growers stated that organized industry effort for merchandising and market development was needed. These growers felt that even though bedding plant sales have increased substantially in recent years, programs to develop and expand markets and determine consumer preferences and purchase intentions would be valuable to the industry.

Nursery Inputs and Supplies

Florida growers of all types of plants were asked to outline problems and needs in production inputs or particular types of supplies used in growing. About half of the woody ornamental growers interviewed and 70 percent of the foliage growers stated they had no particular problems. Only one citrus nursery operator and one bedding plant grower noted a problem in supplies.

These problems and needs for all growers fell into five categories:
media or soil mix, pots and plant containers, pesticides, equipment, and labor. Several problems in each category were common to both woody ornamental and foliage nurseries.

Rising costs and alternate uses for traditional soil mix items were mentioned as problems by one-sixth of woody ornamental and foliage growers combined. Peat has risen in cost, partly due to reduced supplies in the face of increasing demand and to rising transportation costs. Most growers citing peat cost and scarcity preferred Canadian peat, so transportation is a significant part of delivered cost. This emphasis on peat costs and availability may have been due partly to the fact that many growers were interviewed in the spring when plant sales are seasonally high and peat supplies are seasonally low.

Increasing costs for pine bark and sawdust, especially cypress sawdust, were also noted by a sizeable number of both foliage and woody ornamental growers. Since wood by-products are now being more widely used as fuel or in wood products, nursery growers have experienced more difficulty in securing dependable supplies and have been faced with rising prices. Most growers expect this situation to worsen in the foreseeable future.

Growers asked for assistance in formulating media and soil mixes from lower cost materials. Buyers of both landscape and foliage plants also emphasized a need for standardizing media insofar as possible. Use of the same media throughout a year or a season improves landscape or interiorscape installation and care. It also improves plant care and handling by retailers and wholesalers.
About ten percent each of both woody ornamental and foliage growers related problems with plant containers. All these growers complained of rising costs for containers, though they realized increases must be expected under current economic conditions. Several felt that standardizing container sizes, and reducing the number of different types and sizes used could help hold down container cost increases. Most buyers of both interior and exterior plants were particularly vocal about the need for standardizing containers and for reducing the number of types and sizes.

Many buyers from interiorscape, wholesale and mass market firms stated they preferred white pots for foliage plants rather than black. Others from the same kinds of firms asked for more decorative containers, and for better hanging containers. Some Florida growers also noted needs for sturdier hanging baskets, with larger water trays. One woody ornamental grower and one bedding plant grower each said an important need was for containers that were more rapidly biodegradable than currently. They did recognize possible difficulties in providing such containers of suitable strength and durability at prices growers could afford to pay.

The same concerns of added costs for added features, color differences and other needs expressed above must be noted. Many of these factors may well be important in more efficient production as well as in more effective marketing. These needs relating to containers were voiced by significant numbers of both growers and buyers, so that container improvements would be well accepted in the industry.
Fewer Florida growers noted problems concerning pesticide regulations than either media or container problems just discussed. However, eight percent of landscape plant and foliage growers combined noted common problems in this area. With governmental regulations prohibiting sale or use of several previously important pesticides, growers are seeking substitute materials and methods. Several growers recognized that much information is currently available but not widely applied. However, they stressed the continuing need for improved materials and better methods for applying them. These growers also recognized the need for better overall management to deal with weeds, insects and diseases, rather than heavy reliance on expensive and tightly regulated chemicals.

Another eight percent of both exterior and interior plant growers mentioned equipment needs. Woody ornamental producers noted needs for improved herbicide application equipment and for high clearance tractors for use in field nurseries. Both woody ornamental and foliage growers stated that improved potting machines would be well accepted. One foliage grower commented that the electric carts, now widely used in many nurseries, were expensive to repair and that rising repair costs and downtime might force his firm to seek other kinds of vehicles.

Only two growers, of all those interviewed, mentioned problems with workers. One noted the difficulty in finding and retaining workers who were trained, motivated and dependable. This is, no doubt, a common problem throughout the nursery industry. The other comment was a suggestion that foliage nurseries could employ potting crews on a contract or
custom basis rather than attempting to hire their own potting labor. In areas with large numbers of foliage nurseries, a custom potting crew could undoubtedly find considerable employment. Such service may already be available in some areas, but if so, is not widely known among growers.
CONCLUSIONS AND RECOMMENDATIONS

This report covers the first of five projects outlined as part of an overall nursery industry research program. As stated earlier, that program was developed to help Florida nurserymen and the industry as a whole to formulate long run plans. Five project areas were outlined as part of that program: The current state of the Florida nursery industry and its markets; the competitive position of the Florida industry; market intelligence; market trends and contingency planning.

This study, covering the current economic state of the industry and its markets, has provided information on the numbers and characteristics of nursery firms and described conditions and trends in sales, markets and market channels. A final objective of the project was to develop "key indicators" for industry members' use in projecting supply and demand trends.

So little of the information necessary to develop key indicators is available that relatively little was done on that fourth objective. Less published data and other information is available to nursery industry members and analysts than for several agricultural sectors with smaller production or sales values. The growth and development of the Florida nursery industry in recent years has placed that sector as one of the two largest state nursery industries in the country and one of the major sectors in Florida agriculture.

The sales and market trends from 1979 to 1981 reported earlier indicate that growers producing woody ornamentals, citrus and bedding
plants can look for continued sales increases in the short run of two to five years. Foliage growers have experienced slowing in sales but still are part of the largest tropical foliage industry in the world with established markets and many marketing opportunities.

Realizing those opportunities will not be automatic or even easy. All growers recognize the problems and needs in meeting their individual sales goals. Achieving goals for the entire industry that would improve the marketing environment for all firms, will be even more difficult. Yet, the benefits from organized industry marketing efforts could be great, and the consequences of ignoring such efforts could be severe.

Major economic and market forces affect nursery products and nursery firm sales and profitability. The health of the Florida and U.S. economies, employment, interest rates, building activity, inflation, consumer preferences and many other such diverse factors influence demand, supply and marketing of nursery plants and profits of nursery growers.

Later portions of this section indicate some of these influences for woody ornamentals and for foliage. However, there is no information to use in measuring the effects of any of these variables on nursery markets.

If members of the Florida nursery industry, or of any one sector, wish to improve their long run planning, they should consider continuing with the research and information program outlined earlier. Specifically, this important industry could develop a system for collecting, analyzing and using relevant market information. Such an effort would provide
much of the data needed to assess the Florida competitive position, and to provide market intelligence to the industry. Additionally, supply and demand trends could be identified and analyzed, price behavior could be related to market developments, and key indicators developed to help forecast supply, demand and price trends.

The organized information and research activity could be conducted through a state, regional or national nursery organization. Much of the data collection and reporting could be conducted through the Florida Crop and Livestock Reporting Service and the Federal-State Market News Service, the two agencies currently providing much information. These agencies presently have relatively small numbers of people and relatively few funds allocated for nursery industry data collection and reporting. Federal agencies have historically placed few resources into nursery industry data handling, and recent federal budget trends do not seem likely to provide additional funds. Thus, the industry itself would have to provide the money for its information system.

Once an information base were developed, the supervising organization would need the analysts and market specialists to conduct the continuing marketing studies needed, and to provide the market intelligence and forecasts desired by industry members. The National Cattlemen's Association has a nationwide market information - intelligence system called Cattle Fax, for example, and other state or national commodity groups provide similar services.

Market study and intelligence could lead to additional activities, if industry members desired. Organized market expansion and market
development programs could be conducted, as well. The Florida Department of Citrus provides many of these kinds of programs for the Florida citrus industry, as do several other citrus organizations in the state.

As reported earlier, several Florida growers in each of the four groups studied stated their preferences for some organized marketing efforts. Other growers may not see the need for such programs. A brief note on the development of the Florida Citrus Commission (Florida Department of Citrus) provides a valuable perspective.

The Citrus Commission was founded in 1935, with the general objectives of establishing quality regulations for fresh fruit and of meeting competition from California citrus growers and shippers in national markets. The budget of $405,350 for the first year’s operation was provided by a grower assessment of one cent per box for oranges and three cents for grapefruit. A total of 32.8 million boxes of all types of citrus also was marketed in the 1934-35 season. Average on-tree prices that season were 86 cents per box for oranges and 35 cents for grapefruit. Grower assessments were thus about 1.2 percent of the value of a box of oranges and 8.6 percent of grapefruit value in 1935.

The present Florida Department of Citrus now has an annual budget of about $35 million. Grower assessment rates are 15 cents per box for oranges, or 3.4 percent of on-tree value in the 1980-81 season of $4.46, and 17 cents for grapefruit or 4.7 percent of season average on-tree price of $3.65 per box. Total production was 238.6 million boxes.

The only point to this is that citrus growers were able to organize a marketing group and develop a program in the depths of the Great
Depression. This organization has provided the citrus industry not only with marketing programs but with research results in production and handling, new product development and a host of other areas. Other agricultural commodity organizations can point to similar successes, though not perhaps of the size or scale of the Florida citrus industry. Specific conclusions and recommendations follow for each of the four plant categories discussed in this report, woody ornamentals, foliage, citrus and bedding plants.

**Woody Ornamentals**

Florida growers' sales of woody ornamental plants have increased 52 percent from 1979 to 1981, as described earlier (Table 18). These sales increases have called forth sizeable increases in production capacity in Florida. Growers interviewed reported that they had increased total growing area for woody ornamentals by 16 percent from 1979 to 1981 (Table 27). Field growing area, the largest category, grew by 18 percent, and open container area, the next largest type, increased by 11 percent. Both container area under shade and greenhouse space increased, also.

The sales increases that generated this expansion in growing area were due to increased landscape material demand for new construction, or for added landscaping to existing sites, according to Florida growers. Based on this general relationship, some observations can be made about building activity that can help indicate the likely demand for woody ornamentals. Since Florida-grown woody ornamentals are sold both in Florida and in other states (Table 20), increases of construction activity
Table 27.--Shares of Florida nursery growing area by type and percentage change in growing area, 1979-1981

<table>
<thead>
<tr>
<th>Type of growing area</th>
<th>Woody ornamentals</th>
<th>Foliage</th>
<th>Citrus</th>
<th>Edging plants</th>
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<tbody>
<tr>
<td>Field</td>
<td>63</td>
<td>65</td>
<td>18</td>
<td>26</td>
</tr>
<tr>
<td>Container</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No shade shade</td>
<td>28</td>
<td>27</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>8</td>
<td>14</td>
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<tr>
<td>Greenhouse</td>
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<td>9</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Totals(^c)</td>
<td>100</td>
<td>100</td>
<td>16</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

\(^a\)Change is percentage change in acres or square feet from 1979 to 1981. A given type of growing area could be a smaller share of the total in 1981 than in 1979 but still have increased. For example, woody ornamental container area not under shade went from 28 to 27 percent of total growing area but increased by 11 percent.

\(^b\)Less than one percent.

\(^c\)May not sum to 100 due to rounding.
in Florida and the U.S. as a whole can be useful indicators of likely
plant sales.

During the 1960's Florida and the U.S. experienced slow but steady
growth, with Florida growing faster than the rest of the U.S. Both
Florida and the U.S. experienced very mild year-to-year fluctuation
construction activity. During the 1970's construction activity in both
Florida and the rest of the country, as measured by dollar volume of
building permits, fluctuated considerably more than in the previous
decade. Rates of increase in Florida building were greater than the
U.S. average in "boom" times, and Florida decreases exceeded declines in
national construction activity during times of recession.

Residential construction was far more volatile, with fluctuations
in Florida residential permits even greater than those for the U.S. as a
whole. Nonresidential construction in both Florida and the U.S. was
relatively stable and took only a slight drop in the 1975-76 recession.
Florida still outpaced the rest of the U.S. in terms of growth of total
construction activity, but the gap between the two growth rates narrowed
as compared to the 1960's.

Recent declines in building activity did not appear as soon in
Florida as in national measures, and were less severe here than for the
U.S. as a whole. It is too early in the present down-turn to predict
how long the drop in construction activity is likely to continue or how
severe the decline will eventually be. Also, many growers reported that
major changes in landscape plant sales occurred from six to twelve
months after major changes in building activity. These cyclical changes
have affected the woody ornamentals sector for many years.
Other trends developing could change several aspects of woody ornamental production and marketing over the longer run. These trends are all related to energy costs and conservation efforts and to economic pressures. Landscaping for energy conservation is a growing trend in the architectural and building fields.

A partner in a major central Florida residential construction and development firm stated that their allocations for landscaping a home had quadrupled the past two years. Other contractors reported budgeting twice as much for landscaping compared with 1979. The builder cited just above also stated that dollar for dollar, landscaping provided the best energy conservation measure for homes.

Water conservation is also becoming an important consideration in Florida landscaping, along with reducing maintenance requirements for plants used. These characteristics combine to make native trees, shrubs and vines much more widely used in Florida landscaping than just a few years ago.

However, relatively few nurseries are growing many native Florida plants. Landscape architects interviewed felt that there was a substantial need for supplies of native plants which is not being met now. Also, many builders are still not aware of the energy-and water-saving possibilities from proper site selection and preparation and from appropriate landscape plant selection, placement and followup care.

Recommendations

1. Begin an industry-wide effort to review container sizes and
types, and develop a plan to standardize pots and plant containers.

2. Encourage and support research and development of alternate materials for plant media and soil mixes.

3. Encourage and support research and development of new and modified machinery and equipment for woody ornamental nurseries and for landscape installation and maintenance (see section, "Nursery Inputs and Supplies").

4. Develop materials and programs for educating users of woody ornamentals:
   a. Consumer-oriented information on plant selection and care for energy conservation, for use by retailers.
   b. Information for landscape installers and builders on proper and efficient site selection and preparation, and plant and landscaping use and care.

5. Develop a system of collecting information on woody ornamental plant sales to provide industry members with "key indicators" of market demand, price trends, changes in buyer preferences and other relevant market information.

6. Review industry needs and preferences for an electronic market information system. Such a system, currently used in several agricultural products, could provide plant availability, prices and trends, shipping costs, and other current market data vital to the industry.

7. Conduct market research on preferences, buying habits and characteristics of woody plant buyers, both consumers and retail and landscape trade.

Foliage

Sales of tropical foliage grew by about 14 percent from 1979 to 1981, Florida growers reported (Table 27). Published data from USDA support this evaluation of sales leveling from the rapid growth of the early 1970's. Data from 1966-1980 can be used to identify the major determinants of foliage sales increases and to indicate possible influences on future sales.
An analysis of sales of foliage produced in Florida and in the rest of the U.S. (see Appendix) identified four economic or demographic measures as important influences on foliage sales. These were: (1) The gross national product (GNP) or the dollar value of all goods and services produced in the U.S. in a given year; (2) The rate of inflation, or the rate of increase in the general price level; (3) The unemployment rate, or the proportion of the civilian labor force out of work, and (4) The proportion of the U.S. population 25 years of age and over. Effects of these factors are shown in Table 28.

Table 28.--Effects of one percent increase in four economic or demographic measures on foliage sales from Florida and from the rest of the U.S., 1966-80.

<table>
<thead>
<tr>
<th>One percent increase in:</th>
<th>Effect on foliage sales from:</th>
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<tr>
<td></td>
<td>Florida</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>GNP</td>
<td>3.8</td>
</tr>
<tr>
<td>Inflation rate</td>
<td>-7.5</td>
</tr>
<tr>
<td>Unemployment rate</td>
<td>1.5</td>
</tr>
<tr>
<td>Proportion of population 25 years and over</td>
<td>33.9</td>
</tr>
</tbody>
</table>

For each one percent increase in the GNP, Florida foliage sales increased 3.8 percent. However, foliage sales from other U.S. production areas increased 5.9 percent. Inflation seriously reduces foliage
sales: an increase of one percent in the rate of inflation reduced Florida foliage sales by 7.5 percent, and other U.S. sales by over twice that much (Table 28).

Another economic measure that indicates poor economic performance, rising unemployment, actually resulted in a small increase in foliage sales. An extremely large influence on foliage sales has been the share of population 25 years and over. These Americans, who are the primary age group for forming households, are the heaviest purchasers of foliage plants. An increase of one percent in this age group has resulted in nearly 34 percent increase in Florida foliage sales and almost 70 percent increase in other U.S. foliage sales (Table 28).

These limited aggregate data can be used to make some general observations about trends in foliage sales. It is unlikely that the U.S. economy will experience a higher rate of growth in the GNP in the 1980's than occurred in the past decade. Inflation is likely to be at least as high in the next ten years as in the past ten, and could possibly be higher. These two retarding forces will overbalance any small foliage sales increase that might occur due to relatively high unemployment rates likely in the 1980's. The influence of a maturing population will continue but probably not as strongly as in the 1970's.

These demand influences, coupled with the foliage supply increases experienced, have placed the Florida foliage industry under considerable pressure. Florida foliage production and marketing can now be characterized as a mature industry. The aggregate factors of demand leveling and slowing sales increases have been cited. Several findings from foliage grower and buyer interviews also support this characterization.
Indoor foliage plants are now viewed by consumers, interior designers and interiorscape professionals as essential elements in attractive interior space. Plants are no longer luxuries or exotic fads, but are used just as furniture, art and other decorative items. Just as with these items, purchasers in higher income groups are looking for improved quality and value, larger plants and plants that give the desired design effect. These observations by both Florida growers and by plant buyers and users apply to nearly all sizes and types of foliage material.

Recommendations

1. Begin an industry-wide effort to review container sizes and types, and develop a plan to standardize pots and plant containers and shipping cartons.

2. Encourage and support research and testing of improved transportation equipment and methods for shipping foliage plants.

3. Encourage and support research and development of alternate materials for plant media and soil mixes.

4. Encourage and support research and development of new and modified machinery and equipment for foliage nurseries.

5. Develop materials and programs for educating end users of foliage plants:
   a. Consumer oriented information on plant selection and care.
   b. Information for interior and interiorscape designers and retailers on plant selection, care and merchandising.

6. Develop a system of collecting information on foliage plant sales to provide industry members with "key indicators" of market demand, price trends, changes in buyer preferences and other relevant market information.
7. Review industry needs and preferences for an electronic market information system. (See Recommendation 6, Woody Ornamentals).

8. Conduct market research on preferences, buying habits and characteristics of foliage plant buyers, both consumers and the retail and wholesale trade.

9. Use this research and other relevant information to identify growing and declining market segments and plant types to enable the industry to adjust to its mature stage and enable firms to remain profitable.

**Citrus**

Conclusions and recommendations for Florida citrus nurseries are more difficult to draw than for woody ornamentals and foliage. Due to recent Florida freezes, and to expanding citrus production in Florida and Latin America, citrus nurseries find themselves in an enviable position now. Growers reported two major problem areas: increasing their supply of citrus stock and production management and technology.

Most Florida citrus nursery operators are preparing for the longer run, when numbers of trees in demand may not be so far ahead of available supply. These firms, particularly those who formerly sold citrus trees into the nursery and ornamental trade, are retaining their abilities to reenter those markets as conditions permit. This is certainly wise. To the extent that a citrus nursery enters or reenters the ornamentals market, many of the recommendations in the Woody Ornamentals section above could apply. Standardized containers and shipping methods, and improved production and handling materials, equipment and methods would be equally valuable to citrus nurseries. Improved market information would also be valuable.
Bedding Plants

This highly specialized portion of the Florida nursery industry has experienced extremely high rates of growth in recent years. The Florida bedding plant operators interviewed reported an increase of 73 percent in sales from 1979 to 1981. This remarkable rate of growth is not likely to continue, but the basic forces that helped generate such an increase are likely to operate in the future.

Consumers' desires for both flower and vegetable gardens, and wider uses of annual flowers in landscaping have been important forces in Florida bedding plant growth, along with the growing Florida population. This growth seems likely to continue, as Florida population could reach 15 million by the year 2000. The trends favoring greater bedding plant use also seem likely to continue.

Many of the same recommendations made earlier for woody ornamentals and foliage plants would apply to bedding plant needs. Improved media and soil mixes, and more efficient shipping methods and containers would be of interest. Educational information and programs for consumers and wholesale bedding plant users would also be valuable. Consumer and retailer information and merchandising programs for vegetables would be particularly useful in improving bedding plant movement. Market information, electronic marketing and market research would also be recommended for the bedding plant sector.
Appendix Table 1.--Florida nursery firms, retail, wholesale, combination and total, and total nursery acreage by county, 1980.

<table>
<thead>
<tr>
<th>Firms</th>
<th>Retail</th>
<th>Wholesale</th>
<th>Both</th>
<th>Total</th>
<th>Acres</th>
</tr>
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<td>76</td>
<td>162</td>
<td>185</td>
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<td>3</td>
<td>12</td>
<td>30</td>
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<tr>
<td>Bay</td>
<td>42</td>
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<td>50</td>
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<td>175</td>
<td>42</td>
<td>73</td>
<td>290</td>
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<td>191</td>
<td>114</td>
<td>173</td>
<td>478</td>
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Appendix Table 1.--Florida nursery firms, retail, wholesale, combination and total, and total nursery acreage by county, 1980. Continued.

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<th>Firms</th>
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State       | 3,719  | 1,820     | 1,479| 8,018| 14,491|

Source: Florida Division of Plant Industry.
Appendix Table 2.--Florida commercial nursery firms\textsuperscript{a}, retail, wholesale, combination and total, 1980.

<table>
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<th>Firms</th>
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Appendix Table 2.—Florida commercial nursery firms\textsuperscript{a}, retail, wholesale, combination and total, 1980.—Continued

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<th>Acres</th>
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<td>602</td>
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\textsuperscript{a}Nursery classified as commercial on the basis of plant numbers in inventory listed by Florida Division of Plant Industry:

- Foliage, 10,000 plants or more;
- Woody ornamentals and citrus, 5,000 plants or more;
- Bedding plants, 30,000 plants or more.

\textsuperscript{b}Less than one acre.

Source: Florida Division of Plant Industry.
Appendix Table 3.--Plant inventory numbers in Florida nurseries and in interview sample, and sample percent of state.

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<th>Plant inventory</th>
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<th>Bedding plants</th>
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<td>--------</td>
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<td>Percent of state</td>
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<td>Total</td>
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<td>32</td>
<td>43</td>
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\(^a\)Total may not add due to rounding.

Source: Florida Division of Plant Industry.
FACTORS AFFECTING DEMAND FOR WOODY ORNAMENTALS AND FOLIAGE

by

Emilio Pagoulatos

Woody Ornamentals

Construction activity influences the demand for plants for exterior landscaping. The following discussion provides information on construction activity in Florida and in the U.S. as a whole. During the 1960's, both Florida and the U.S. experienced slow but steady growth, with Florida growing faster than the rest of the U.S.. Both Florida and the U.S. experienced very mild year-to-year fluctuations in construction activity.

During the 1970's, however, the building construction environment changed considerably (Appendix Table 4). The following general trends can be observed:

a. Construction activity in both Florida and the rest of the U.S., as measured by dollar volume of building permits, has fluctuated considerably more than in the previous decade.

b. Rates of increase in Florida building have been greater than the U.S. average in "boom" times, and Florida decreases have exceeded declines in national construction activity during times of recession.

c. Residential construction was far more volatile, with fluctuations in Florida residential permits even greater than those for the U.S. as a whole (Appendix Table 5).

Emilio Pagoulatos is associate professor of food and resource economics at the University of Florida.
d. Nonresidential construction in both Florida and the U.S. was relatively stable and took only a slight drop in the 1975-76 recession.

e. Florida still outpaced the rest of the U.S. in terms of growth of total construction activity, but the gap between the two growth rates has narrowed as compared to the 1960's.

Appendix Table 4.--Construction contracts awarded, Florida and U.S., 1960-1978.

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Appendix Table 5.--Value of construction contracts and employment, Florida and U.S., 1968-1977

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<td>677</td>
<td>1,696</td>
<td>321</td>
<td>61,736</td>
<td>22,515</td>
<td>24,839</td>
<td>14,380</td>
<td>140.4</td>
</tr>
<tr>
<td>1969</td>
<td>peak</td>
<td>3,458</td>
<td>823</td>
<td>2,198</td>
<td>437</td>
<td>67,427</td>
<td>25,567</td>
<td>25,223</td>
<td>16,541</td>
<td>165.5</td>
</tr>
<tr>
<td>1970</td>
<td>trough</td>
<td>3,573</td>
<td>920</td>
<td>1,555</td>
<td>698</td>
<td>67,936</td>
<td>24,437</td>
<td>24,793</td>
<td>18,706</td>
<td>171.8</td>
</tr>
<tr>
<td>1971</td>
<td></td>
<td>4,245</td>
<td>1,088</td>
<td>2,557</td>
<td>600</td>
<td>79,644</td>
<td>25,568</td>
<td>34,849</td>
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</tr>
<tr>
<td>1972</td>
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<td>6,522</td>
<td>1,298</td>
<td>4,570</td>
<td>654</td>
<td>91,213</td>
<td>27,118</td>
<td>45,366</td>
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<td>peak</td>
<td>7,924</td>
<td>1,580</td>
<td>5,480</td>
<td>864</td>
<td>100,067</td>
<td>31,761</td>
<td>46,248</td>
<td>22,729</td>
<td>290.2</td>
</tr>
<tr>
<td>1974</td>
<td></td>
<td>5,585</td>
<td>1,599</td>
<td>3,090</td>
<td>896</td>
<td>93,076</td>
<td>33,860</td>
<td>34,171</td>
<td>25,045</td>
<td>276.1</td>
</tr>
<tr>
<td>1975</td>
<td>trough</td>
<td>3,622</td>
<td>1,450</td>
<td>1,450</td>
<td>722</td>
<td>90,022</td>
<td>30,337</td>
<td>31,272</td>
<td>28,415</td>
<td>182.5</td>
</tr>
<tr>
<td>1976</td>
<td></td>
<td>4,113</td>
<td>1,314</td>
<td>2,005</td>
<td>794</td>
<td>107,158</td>
<td>30,045</td>
<td>43,651</td>
<td>33,463</td>
<td>166.7</td>
</tr>
<tr>
<td>1977</td>
<td></td>
<td>6,946</td>
<td>1,604</td>
<td>3,514</td>
<td>535</td>
<td>139,213</td>
<td>35,299</td>
<td>61,433</td>
<td></td>
<td>172.4</td>
</tr>
</tbody>
</table>

*Not available.

Foliage

A large variety of foliage plants are produced commercially in the United States. The most important varieties on the basis of total sales are philodendrons, dracaenas, palms, and ferns. In 1980 the foliage plant industry was composed of 1,921 growers 386 of which were located in Florida (Appendix Table 6).

Appendix Table 6.—Foliage plants for indoor or patio use.

<table>
<thead>
<tr>
<th>Year</th>
<th>Numbers of producers U.S.</th>
<th>Numbers of producers Florida</th>
<th>Production area 1,000 sq. ft. U.S.</th>
<th>Production area 1,000 sq. ft. Florida</th>
<th>Net value of sales 1,000 dollars U.S.</th>
<th>Net value of sales 1,000 dollars Florida</th>
</tr>
</thead>
<tbody>
<tr>
<td>1966</td>
<td>1,039</td>
<td>142</td>
<td>32,381</td>
<td>25,760</td>
<td>23,988</td>
<td>11,678</td>
</tr>
<tr>
<td>1967</td>
<td>1,014</td>
<td>141</td>
<td>31,606</td>
<td>26,074</td>
<td>26,079</td>
<td>13,265</td>
</tr>
<tr>
<td>1968</td>
<td>939</td>
<td>153</td>
<td>29,995</td>
<td>25,034</td>
<td>25,928</td>
<td>13,757</td>
</tr>
<tr>
<td>1969</td>
<td>890</td>
<td>140</td>
<td>31,528</td>
<td>25,874</td>
<td>29,158</td>
<td>15,497</td>
</tr>
<tr>
<td>1970</td>
<td>927</td>
<td>134</td>
<td>32,624</td>
<td>27,086</td>
<td>27,692</td>
<td>15,938</td>
</tr>
<tr>
<td>1971</td>
<td>835</td>
<td>117</td>
<td>38,762</td>
<td>31,764</td>
<td>37,586</td>
<td>23,077</td>
</tr>
<tr>
<td>1972</td>
<td>899</td>
<td>117</td>
<td>38,699</td>
<td>30,956</td>
<td>48,428</td>
<td>25,693</td>
</tr>
<tr>
<td>1973</td>
<td>1,048</td>
<td>113</td>
<td>45,447</td>
<td>35,665</td>
<td>66,119</td>
<td>33,410</td>
</tr>
<tr>
<td>1974</td>
<td>1,128</td>
<td>163</td>
<td>87,728</td>
<td>47,509</td>
<td>113,503</td>
<td>48,482</td>
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<tr>
<td>1975</td>
<td>1,565</td>
<td>262</td>
<td>98,822</td>
<td>65,032</td>
<td>187,183</td>
<td>87,312</td>
</tr>
<tr>
<td>1976</td>
<td>1,736</td>
<td>354</td>
<td>119,531</td>
<td>88,376</td>
<td>243,427</td>
<td>110,656</td>
</tr>
<tr>
<td>1977</td>
<td>1,879</td>
<td>377</td>
<td>119,678</td>
<td>79,645</td>
<td>275,300</td>
<td>119,956</td>
</tr>
<tr>
<td>1978</td>
<td>1,944</td>
<td>359</td>
<td>118,077</td>
<td>79,031</td>
<td>281,919</td>
<td>124,135</td>
</tr>
<tr>
<td>1979</td>
<td>1,710</td>
<td>368</td>
<td>121,314</td>
<td>86,720</td>
<td>283,928</td>
<td>139,867</td>
</tr>
<tr>
<td>1980</td>
<td>1,921</td>
<td>386</td>
<td>135,169</td>
<td>94,346</td>
<td>295,943</td>
<td>133,750</td>
</tr>
</tbody>
</table>

*Gross value of sales less cost of plant materials purchased from other growers.

Source: USDA, ESCS, Floriculture Crops: Production, Area and Sales, (several issues).
Florida has been the most important foliage producing state in the nation over the past 20 years, in terms of production area and value of sales. Field and greenhouse areas devoted to producing foliage plants in Florida in 1980 totaled about 94 million square feet, 70 percent of the total foliage production area in the U.S. Florida accounted for about 47 percent of the net value of U.S. foliage sales during the last two decades.

The foliage plant industry experienced considerable growth over the past 15 years. Both the number of producers and the area in production increased substantially, as wholesale sales grew from $23 million in 1966 to $295 million in 1980. Florida foliage sales increased from $11 million in 1966 to over $133 million in 1980 (Appendix Table 6).

The growth in sales for both Florida and the U.S. was particularly rapid from 1971 to 1975, with a five-fold increase over this period. Some of the reasons for the rapid increase in foliage consumption during the early 1970's included: (1) Population increase in suburban areas; (2) an increase in leisure time and in money available for discretionary spending; (3) larger number of apartment dwellers; (4) heightened interest in plants and nature, and (5) improved transportation of live plants.

Beginning with 1976, however, sales for both Florida and the rest of the U.S. increased much more slowly. The average annual rate of growth in Florida foliage sales during the 1976-80 period was 5 percent, while sales from the rest of the U.S. grew 5.6 percent per year. It is
important to understand some of the factors that contributed to the growth in foliage sales over the 1966-80 period, before assessing the sales slowdown experienced during the late 80's.

While the foliage plant industry is an important component of the U.S. live ornamental plant sector, very limited information on production, consumption and prices is available. These limitations prevent the estimation of traditional demand equations. Instead the variable to be explained is the dollar expenditure on foliage plants in the U.S..

The relationship between the consumer's expenditure on a commodity and household income is known as an Engel expenditure curve. Engel curve analysis is particularly relevant where the amount a consumer spends on a good increases when his income increases, but the proportion of income spent on the good declines when income rises.

The double logarithmic form of the Engel function, which gives elasticity relations directly, was estimated statistically over the 1966-1980 time period. Three alternative dependent variables were utilized. The first of these was the total U.S. net value of foliage sales ($C^{US}$). In addition, two equations were estimated to explain the level of Florida net value of foliage sales ($C^{FL}$) and the level of the rest of the U.S. net value of foliage sales ($C^{rus}$), respectively. The estimated equations were of the following general form:

\[
\log C^{US} = \beta_0 + \beta_1 \log \text{GNP} + \beta_2 \log \text{GNPDefl} + \beta_3 \log \text{PopAge} + \beta_4 \log \text{UNEMPL} 
\]

\[
\log C^{FL} = \gamma_0 + \gamma_1 \log \text{GNP} + \gamma_2 \log \text{GNPDefl} + \gamma_3 \log \text{PopAge} + \gamma_4 \log \text{UNEMPL} 
\]

\[
\log C^{rus} = \delta_0 + \delta_1 \log \text{GNP} + \delta_2 \log \text{GNPDefl} + \delta_3 \log \text{PopAge} + \delta_4 \log \text{UNEMPL} 
\]
Where:

\[
\text{GNP} = \text{gross national product ( \$ billion)};
\]

\[
\text{GNPDefl} = \text{the implicit price deflator for GNP (1972=100)};
\]

\[
\text{PopAge} = \text{the percentage of U.S. population age 25 and over};
\]

\[
\text{UNEMPL} = \text{unemployment as a percent of the U.S. civilian labor force}.
\]

Since household income is one of the most important factors influencing consumption, the level of GNP was included as an explanatory variable with the expectation that it has a positive effect on consumption. A second factor expected to influence foliage plant purchases is the rate of inflation. As the rate of inflation increases rapidly consumers may tend to spend less for items such as ornamental plants. In order to capture the possible negative influence of inflation, the implicit price deflator for GNP was included in the model.

A variable representing the changing age composition of the population (PopAge) was also included. As the national population ages, i.e. the proportion of people 25 years or older increase, one would expect a larger expenditure on ornamental plants as a result of a larger number of homeowners and apartment dwellers. Finally, it has been suggested in the foliage industry that in times of economic recession people travel less and compensate by spending more time decorating their apartment or house. The rate of unemployment was included in the model to account for this possibility.

The results of the statistical analysis are presented in Appendix Table 7. The major findings are also summarized in Table 28 in the text.
It appears from these results that Florida sales would be stimulated less than sales of foliage plants from the rest of the U.S. as a result of an increase in consumer income, an increase in average population age, and an increase in unemployment. Florida, however, may find its sales of foliage plants reduced by less than sales from elsewhere due to an increase in inflation.

What do these results imply for future foliage sales over the next decade? Since it is unlikely that the U.S. will experience a much higher rate of growth in GNP during the 1980's than in the 1970's, as well as a higher growth in the unemployment rate and the rate of aging of the total U.S. population, these factors will contribute only modestly to sales of foliage plants. A continuation of current inflation rates over the next decade will tend to limit the growth of foliage plant sales even further.
Appendix Table 7.--Estimated equations explaining foliage plant sales, 1966-80.

<table>
<thead>
<tr>
<th>Independent variables and statistics</th>
<th>Total U.S. sales</th>
<th>Florida sales</th>
<th>Sales from rest of U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Logarithms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>-178.12&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-120.31&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-245.27&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>(3.28)</td>
<td>(2.71)</td>
<td>(3.61)</td>
</tr>
<tr>
<td>GNP</td>
<td>4.78&lt;sup&gt;c&lt;/sup&gt;</td>
<td>3.79&lt;sup&gt;c&lt;/sup&gt;</td>
<td>5.92&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>(1.87)</td>
<td>(1.90)</td>
<td>(1.85)</td>
</tr>
<tr>
<td>GNP deflator</td>
<td>-11.11&lt;sup&gt;c&lt;/sup&gt;</td>
<td>-7.53&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-15.21&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>(2.07)</td>
<td>(1.71)</td>
<td>(2.26)</td>
</tr>
<tr>
<td>Population age</td>
<td>50.82&lt;sup&gt;a&lt;/sup&gt;</td>
<td>33.98&lt;sup&gt;a&lt;/sup&gt;</td>
<td>69.96&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>(3.19)</td>
<td>(3.65)</td>
<td>(3.51)</td>
</tr>
<tr>
<td>Unemployment rate</td>
<td>1.91&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.55&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2.30&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>(3.69)</td>
<td>(3.65)</td>
<td>(3.54)</td>
</tr>
<tr>
<td>R&lt;sup&gt;2&lt;/sup&gt;</td>
<td>.973</td>
<td>.979</td>
<td>.964</td>
</tr>
<tr>
<td>D.W.</td>
<td>1.46</td>
<td>1.58</td>
<td>1.42</td>
</tr>
</tbody>
</table>

* t-values in parentheses
  
  <sup>a</sup> Indicates significance at the .01 level.
  
  <sup>b</sup> Indicates significance at the .05 level.
  
  <sup>c</sup> Indicates significance at the .10 level.
REFERENCES


U.S.D.A. Floriculture Crops: Production, Area and Sales.

U.S.D.A. Flowers and Foliage Plants: Production and Sales.