

Table 8. Type containers in which Florida foliage plants, by area were sold, 1975.

Type container	Area		
	Central	South	State
	Percent		
Pots			
2 1/4"	8	z	5
2 1/2"	2	1	2
3"	29	3	19
3 1/2"	7	1	4
4"	7	7	7
5"	5	2	4
6"	11	37	21
8"	2	11	6
9" or larger	12	33	20
All pots	83	96	88
Bareroot	11	2	8
Totem poles	3	2	2
Other	3	2	2
Total	100	100	100

\*Less than 0.5%

Table 9. Type containers in which Florida foliage plants, by plants, by grower size groups and areas, were sold, 1975.

Type container	Area					
	Central		South		State	
	Large	Med.-small	Large	Med.-small	Large	Med.-small
	Percent					
Pots						
2 1/4"	8	5	z	z	5	3
2 1/2"	2	5	2	—	2	3
3"	31	24	4	—	20	16
3 1/2"	9	—	1	z	5	z
4"	7	6	5	20	6	11
5"	6	1	3	z	5	1
6"	1	12	36	40	21	21
8"	1	5	12	4	6	5
9" or larger	12	12	34	29	21	18
All pots	88	70	96	94	91	78
Bareroot	5	27	2	4	4	20
Totem poles	3	3	2	2	2	2
Other	4	—	—	—	3	—
Total	100	100	100	100	100	100

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## FLORIDA WHOLESALE FOLIAGE NURSERY SALES AND COSTS, 1971-75

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*Additional index words.* marketing ornamentals.

**Abstract.** Annual survey data from Florida foliage nurserymen participating in the nursery business analysis program show that nursery size, capital investment, labor force, and growing plant inventory value increased during the 1971-75 study period. Average income also grew steadily over the study period. Cash expenditures generally rose because of both higher prices and larger quantities. The non-cash costs of foliage production (building depreciation, equipment depreciation, and interest on capital investment) also increased, reflecting new investments, expansions, and modernization of production facilities.

### Introduction

Since the 1960's, the Food and Resource Economics Department has conducted an annual foliage nursery business analysis (NBA). Nurserymen can use the results to determine the efficiency of their nursery compared with others in the industry. Input suppliers can use the analysis to gain

some insight as to the types and quantities of inputs used in foliage plant production. Credit agencies may use it to analyze nursery loan applications. Finally, prospective investors may find information on input requirements and potential revenue from a foliage nursery.

### Procedure

Production and cost data are collected annually by personal visits to cooperating nurseries. The nurserymen participate in the program voluntarily and do not represent a statistically selected sample. In fact, the nurserymen participating in the program are thought to represent some of the more efficient nurseries in the state.

The data are taken from the nurserymen's production and accounting records. Each data set represents the individual nurseryman's tax year and may not correspond to the calendar year for which the data are summarized to represent.

This report presents annual averages for 11 nurseries which have participated in the NBA program since 1971. Cost data are analyzed both in terms of total annual expenditure and expenditure per square foot in production.

### Results

#### Foliage Nursery Characteristics

The average area in production expanded from 166,802 square feet in 1971 to 234,713 square feet in 1975 (Table 1). Most of this expansion occurred during 1975. The area in

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Table 1. Average production area, employees and capital investment of 11 Florida wholesale foliage nurseries, 1971-75.

Item	Unit	1971	1972	1973	1974	1975
Production area (bed and bench)	Sq. ft.	166,802	164,371	169,395	182,089	234,713
Employees*	Full-time equiv.	20	23	27	32	37
Capital investment:						
Growing plant inventory value <sup>†</sup>	\$	103,854	123,768	145,049	171,736	195,605
Land <sup>‡</sup>	\$	10,029	12,191	12,080	12,080	12,080
Building investment <sup>§</sup>	\$	37,117	43,507	67,549	123,263	142,674
Machinery & equipment <sup>§</sup>	\$	24,276	22,907	36,984	75,415	96,003
Supply inventory <sup>§</sup>	\$	8,485	11,155	24,338	44,711	50,652
Total	\$	183,761	213,528	286,000	427,205	497,014

\*2,080 man-hour equivalents.

†Estimated value.

‡Original cost—the value of rented land is not represented in this amount.

§Depreciated value.

production reflects actual growing space. Roads, aisles, and non-productive spaces are not counted in this area.

Average employment grew steadily from 20 employees in 1971 to 37 in 1975. The average employment represents full-time man-hour equivalents (annual payroll hours divided by 2,080 annual man-hours).

Average capital investment was up from \$183,761 in 1971 to \$497,014 in 1975. This reflected higher investment in plant inventory, buildings, machinery and equipment, and supplies. Expansion of the production area as well as replacement or modernization of the production facilities accounted for the change in building investment. Likewise, the purchase of more complex and sophisticated (higher priced) equipment for the expanded operation results in larger investments.

### Sales and Costs

The gross sales of the average foliage nursery increased by almost one-half million dollars from 1971 to 1975 for an average increase of almost \$125,000 per year (Table 2). Also annual additions were made to plant inventory values. The

sum of the two provide the value of plant production during the years, called adjusted sales.

Total cash costs were up almost 300% for an average of \$98,000 per year between 1971 and 1975. This reflected both a larger volume of inputs used and higher prices for some inputs. However, not all costs changed at the same rate. For instance, container costs climbed 330%, plants and seeds cost 236%, and the wages and salaries 271% during the five year period. However, on a per man-hour basis, labor costs were up only 147%.

The non-cash costs (depreciation and interest expense) increased by 363% during 1971 to 1975 for an annual average of over \$15,000. Depreciation costs represent the capital investment in working assets (buildings, machinery, and equipment) spread over the expected productive life. Interest cost is an estimate of the income the capital in the nursery could have earned if invested elsewhere (opportunity cost). This estimate was established at 8% and held constant during the 1971-75 period. Interest costs were up an average of \$6,265 per year because of higher levels of capital investment.

Table 2. Average sales and costs for 11 Florida wholesale foliage nurseries, 1971-75.

Item	1971	1972	1973	1974	1975
Dollars					
Income:					
Plant sales	220,974	284,850	410,468	561,774	719,569
Plant inventory increases	21,109	18,857	23,704	39,547	9,463
Adjusted sales (sales plus inventory increases)	242,083	303,707	434,172	601,321	729,032
Cash costs:					
Wages & salaries	96,629	108,567	153,208	207,386	262,152
Plants & seeds	29,302	33,656	33,312	50,938	69,291
Containers	13,049	16,374	22,600	39,761	43,032
Other prod. material*	23,763	29,251	63,338	82,639	105,866
Other cash costs <sup>†</sup>	34,902	46,994	67,216	99,315	109,550
Total cash costs	197,645	234,842	339,674	480,039	589,891
Non-cash costs:					
Depreciation cost	9,062	11,814	16,143	30,638	46,722
Interest cost @ 8% of capital investment	14,701	17,082	22,880	34,177	39,761
Total non-cash costs	23,763	28,896	39,023	64,815	86,483
Total costs	221,408	263,738	378,697	544,854	676,374

\*Includes cost of soil and peat, fertilizer and lime, pesticides and chemicals, and other production supplies.

†Includes cost of repairs and maintenance, equipment operating costs, travel, insurance, telephone, electricity, taxes, licenses, bonds, advertising, rent on land and buildings, and other cash expenses.

### Sales and Costs Per Square Foot in Foliage Nursery Production

The above data is more useful for nursery management decisions if compared on a common basis like square foot in production. This reduces the problems associated with comparing nurseries of different sizes. The value of plant sales per square foot in foliage plant production was \$1.32 in 1971 and \$3.07 in 1975 (Table 3). The greater value of plant sales resulted from both higher prices and more efficient utilization of production area.

Table 3. Average sales and costs per square foot in production for 11 Florida wholesale foliage nurseries, 1971-75.

Item	1971	1972	1973	1974	1975
Dollars					
Income:					
Plant sales	1.32	1.73	2.42	3.09	3.07
Plant inventory value increases	.13	.12	.14	.21	.04
Adjusted sales (sales plus inventory increases)	1.45	1.85	2.56	3.30	3.11
Cash costs:					
Wages & salaries	.58	.66	.90	1.14	1.12
Plants & seeds	.18	.20	.20	.28	.29
Containers	.08	.10	.13	.22	.18
Other prod. material*	.14	.18	.37	.45	.45
Other cash costs <sup>†</sup>	.21	.28	.40	.54	.47
Total cash costs	1.19	1.42	2.00	2.63	2.51
Non-cash costs					
Depreciation cost	.05	.08	.09	.17	.20
Interest cost @ 8% of capital investment	.09	.10	.14	.19	.17
Total non-cash costs	.14	.18	.23	.36	.37
Total costs	1.33	1.60	2.23	2.99	2.88

\*Includes cost of soil and peat, fertilizer and lime, pesticides and chemicals, and other production supplies.

<sup>†</sup>Includes cost of repairs and maintenance, equipment operating costs, travel, insurance, telephone, electricity, taxes, licenses, bonds, advertising, rent on buildings, and other cash expenses.

Cash costs per square foot ranged from \$1.19 in 1971 to \$2.63 in 1974. They were \$2.51 in 1975. The non-cash costs per square foot were 14¢ in 1971 and 37¢ in 1975. Summing these, total costs per square foot ranged from \$1.33 in 1971 to a high of \$2.99 in 1974, then back to \$2.88 in 1975.

### Management Implications

A nursery business analysis can provide managers guidance in evaluating their overall efficiency. It can also assist managers with specific management decisions.

### Overall Efficiency

A manager can make comparisons between his nursery and the average of all nurseries in the program for size of production area, number of employees, capital invested, and overall profitability. However, general comparisons such as these need to be reduced to a common denominator before they become useful for measuring efficiency because of variations in size between nurseries. Ratios are one way of doing this. Some of the more common efficiency measures are the operating, fixed, and gross cost ratios (Table 4).

The operating cost ratio indicates the percent of income from plant sales required for cash costs. The higher the ratio the less income left for fixed costs and profit. A decreasing ratio can mean improved production efficiency. However, it can also be the result of improved prices with no change or even a reduction in production efficiency.

Table 4. Efficiency and profitability ratios for Florida nurseries, 1971-75.

Item	1971	1972	1973	1974	1975
Percent					
Efficiency ratios:					
Operating cost*	89.4	82.4	82.8	85.5	82.0
Fixed cost <sup>†</sup>	4.1	4.1	3.9	5.1	6.5
Gross cost*	93.5	86.5	86.7	90.6	88.5
Profitability ratios:					
Return on investment <sup>‡</sup>	7.7	17.9	26.1	12.4	16.6
Capital turnover <sup>§</sup>	1.2	1.3	1.4	1.3	1.4

\*Cash cost divided by income from plant sales.

<sup>†</sup>Depreciation cost divided by income from plant sales.

<sup>‡</sup>Cash cost plus depreciation divided by income from plant sales.

<sup>§</sup>Income from plant sales less cash cost and depreciation cost divided by capital investment.

<sup>¶</sup>Income from plant sales divided by capital investment.

Average operating cost ratios for the 11 nurseries ranged between a high of 89.4% in 1971 and a low of 82.0% in 1975 (Table 4).

The fixed cost ratio indicates the percent of income from plant sales required to cover depreciation costs. The higher this ratio, the less income left for cash costs and profits. Generally, this ratio should remain fairly stable. However, it will rise during the periods when expansion in capital investment occurs faster than plant sales increase or in years when gross income from plant sales is declining. Average fixed cost ratios ran from 3.9 in 1973 to 6.5 in 1975.

The gross cost ratio indicates the percentage of income from plant sales required to cover all cost, both cash and non-cash. A decreasing ratio indicates an improved profit position. Ratios greater than 100% indicate losses. Average gross cost ratios for the last 5 years ranged between 86.5 in 1972 and 93.5 in 1971.

The return on the capital investment is a measure of capital earnings (net income ÷ capital investment). The higher the ratio, the greater the annual rate of return per dollar invested. This ratio ranged from 7.7% in 1971 to 26.1% in 1973 and was 16.6% in 1975. Thus, the average nurseryman earned 16.6¢ for every dollar invested in 1975.

The capital turnover is calculated as gross sales divided by the capital investment. This ratio indicates the number of times the capital investment was recovered in sales during the year. The higher the ratio, the more frequently sales equal the amount of capital invested. The capital turnover ratio has been fairly consistent over the last five years at 1.2 to 1.4. Thus, although sales have increased more than three-fold over the last five years, capital investment has increased likewise resulting in practically no increased capital turnover efficiency.

### Specific Management Decisions

When the manager distributes total costs on a square foot in production basis, it is possible to gain an indication of the average plant production cost. This may be used for pricing decisions as well as for guidance in choices of plants to produce. For example, the average foliage nursery had 234,713 square feet in production in 1975 and total costs of \$676,734 (Table 1 and Table 2). On a square foot in production basis, total costs amounted to \$2.88 annually. If six inch pots are being grown that mature every 26 weeks and require 3/4 of a square foot, the average cost would be \$1.08 per pot (\$2.88 per sq. ft. X 1/2 year X 3/4 sq. ft.). Prices below \$1.08 would result in a loss for this portion of the business.

Managers may use the cost per plant calculated from their nursery records to make decisions on the production

and marketing mix. By comparing the production cost with the market prices, managers can identify the plants providing the highest net returns.

Finally, the production cost information indicates the importance of coordinating production and marketing schedules. Ideally, these schedules are planned so that plants are sold as they mature. Holding the plant beyond the normal production period costs the grower money. Based on the above costs, each additional week it takes to sell the plant after the plant is grown to salable size costs the nursery about 5.5¢ per square foot required to grow the plant.

### Conclusions

Managers have the information presented on plant sales and production costs in their own nursery production and

accounting records. Calculating total costs per square foot is very straightforward and easily done by the nursery operator. By comparing their own nursery's production and cost information with production costs of like nurseries provided in the NBA, managers may be able to isolate inefficiencies in their own operation.

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## ORNAMENTAL HORTICULTURE— DADE COUNTY'S GROWTH INDUSTRY

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**Abstract.** The ornamental nursery industry has experienced a phenomenal rate of growth in the state in the past few years. This growth is very evident in Dade County where the value of nursery products has increased faster than any other segment of the agricultural industry. In order to determine the size and scope of this growing segment of Dade's economy, a survey was conducted to obtain the total value of the ornamental nursery business. This paper reports on the results of that survey.

The ornamental nursery industry has experienced unprecedented growth in the past few years and nowhere has this growth been more evident than in Dade County. This growth in the number of nurseries and the value of nursery products is of course attributable to the increased demand for green plants. There have been many reasons given for the tremendous expansion in demand. An increased awareness of the role of plants in the environment, which may have been directly related to the ecology movement that began a few years back, is one reason given for the rapid growth of the ornamental industry. Green plants are used more frequently in interior design due to their unique characteristics. The therapeutic value of plants, the recreational aspect of working with plants and the aesthetic values they inspire are also among the many reasons that have caused the ornamental nursery industry to be the fastest expanding segment of agriculture in Florida. The ornamental nursery industry has also been the most rapidly expanding segment of the agricultural industry in Dade County.

In 1958 there were approximately 500 certified and inspected nurseries in Dade County. These were nurseries, both large and small, that were inspected and certified by the Florida Department of Agriculture and Consumer Services as required by the nursery inspection law. Fig. 1 shows the number of certified nurseries in Dade County beginning in 1966 and continuing through September 30, 1976. As you

can see from this figure that from 1966 through 1973 there was the normal fluctuation as nurseries came into being or ceased to exist but there was very little, if any, discernible growth. In 1974 the boom began. The number of certified nurseries climbed to 648 in 1974 and eventually reached 1070 nurseries by September 30, 1976. This means that in the less than 3 year period from December 1973 until September 30, 1976 the number of nurseries in Dade County increased 97%. In almost any other agricultural endeavor, a doubling of the production potential in only 3 years would assure an economic disaster. Not only did the number of nurseries increase dramatically but the size and productivity of individual nurseries increased. Five acre nurseries became 10 acres, field nurseries added shade structures and even small nurseries created a better utilization of their production areas. All of these factors resulted in more than a doubling of nursery production. Instead of an economic disaster resulting from the increased production, the increased demand made entry into the ornamental nursery business very attractive from an investment standpoint. And enter they did; from 544 nurseries in 1973, 648 in 1974, 825

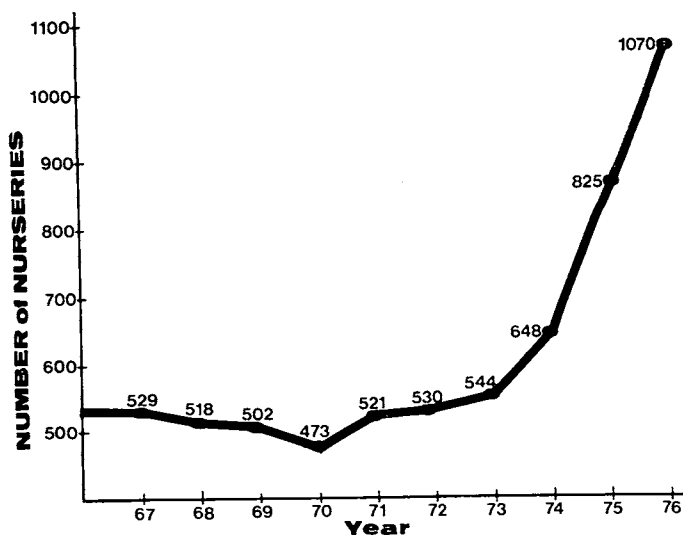


Fig. 1. Number of certified nurseries in Dade County from 1966 through 1976.

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