

# Commercial Production of Horticultural Crops in Florida

## I. Commercial Ornamental Horticulture

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Florida's ornamental horticulture industry, like the vegetable and fruit industries, has been shaped by Florida's long growing season, mild winters, and high light levels.

A major part of the state's ornamental commodities are grown for shipping out-of-state. Temperate woody ornamentals, including junipers, hollies, and azaleas, are produced in containers in northern Florida and shipped to the eastern half of the country. Foliage plants, including ficus, philodendron, palms, dieffenbachia, and aglaonema; and cut foliage, including leatherleaf fern, are shipped throughout the United States and Canada and exported to Europe. There are a large number of plant propagators who produce seedlings, cuttings, bulbs, and liners of various species for shipping to other growers. Field-grown cut flowers, such as chrysanthemums, gladiolus, and statice, are produced during the winter and shipped throughout the United States and Canada. Most of the flowering pot plants, bedding plants, turfgrass, and nursery crops are marketed within the state.

The ornamental horticulture industries have been dynamic with changes through the years. Their meager beginnings were in the early 1880s, with the establishment of the first ornamental nurseries, but they did not thrive until after World War II. Caladium tuber production on the organic soils in the center of southern Florida began in 1900 and, by 1920, Easter lilies and narcissus bulbs were being produced in quantity, but their demise came about 10 years later when diseases wiped out the crops. Gladiolus cut flower farms started in 1935, and chrysanthemum production came into being in 1949. Chrysanthemums enjoyed a heyday in the 1950s, 1960s, and early 1970s, with more than 30 producers, but have dwindled immensely due to competition from Latin America. Today, there are only five producers. Leatherleaf fern has become the most important cut foliage and out-produces all others 10-fold; however, in the 1950s, asparagus fern was the number-one cut foliage. Flowering pot plants (such

Table 1. Wholesales for Florida ornamental horticulture commodities.

Commodity	Value (\$1000)
Cut flowers	26,991 <sup>z</sup>
Cut foliage	63,698 <sup>z</sup>
Potted flowering plants	24,116 <sup>z</sup>
Foliage plants	275,924 <sup>z</sup>
Bedding plants	29,935 <sup>z</sup>
Sod production	44,703 <sup>y</sup>
Woody ornamental landscape plants	120,000 <sup>x</sup>
Total wholesale value	585,367

<sup>z</sup>Floriculture Crops, 1985 Summary, Intentions for 1986, USDA.

<sup>y</sup>1982 Census of Agriculture, Florida-State and County Data. U.S. Dept. of Commerce.

<sup>x</sup>Florida Agriculture in the '80s—Ornamental Horticulture, IFAS, Univ. of Florida.

as poinsettias and chrysanthemums) and bedding plants have not been major crops in Florida, but there have been sizeable increases in production in the past 15 years.

Foliage, both cut and potted, accounts for half of the state's ornamental production (Table 1). The foliage industry started around 1925. Apopka, just north of Orlando, is the center of the greenhouse-grown foliage produced in small containers, generally 15 cm and smaller. The large foliage (in containers up to 760 liters) is produced under shade structures along the coast in the southeastern corner of the state.

The 1949 census reported sales of ornamental crops of \$10 million and <185,000 m<sup>2</sup> of greenhouses in Florida, whereas today the industry's value is greater than \$600 million and there are >6,100,000 m<sup>2</sup> of greenhouses and >18,500,000 m<sup>2</sup> of shade cloth structures (Table 1).

Florida is undergoing rapid population growth. It is now the fifth most populous state and is projected to be third by the year 2000. This growth is having a profound effect on the ornamental industry. The industry is concentrated mainly in the lower two-thirds of the peninsula, where the population growth is heaviest, and along the coastline because of the mild winter temperatures. This is resulting in strong competition for land between the ornamentals industry and urban areas.

The increased population has meant an increase in the market for many of the ornamental commodities. An important benefactor has been the turf industry. A major industry that does not appear in production figures (Table 1) is turf and landscape maintenance. There are more than 800 golf courses in the state and numerous developments, including condominiums and resorts, that contract for landscape maintenance.

## II. Commercial Fruit Production in Florida

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Commercial citrus growing began more than 100 years ago in the northern part of Florida. Persistent freezes hampered the small industry until, from 1894 to 1899, severe freezes decimated the plantings. The industry then moved south, setting up the main acreage in the central Florida sandhills of Lake, Orange, Polk, and Highlands counties. A large expansion occurred in the 1970s, with peak land area reaching 381,300 ha (941,471 acres). Again, a series of freezes spanning the past 15 years severely injured the plantings, and reduced the citrus land to a current 252,900 ha (624,942 acres). Southward movement of the industry accelerated, and now most of the bearing trees and new plantings are south of a line drawn between Tampa Bay and Cape Canaveral.

Orange trees, the principal kind of citrus in Florida, are planted on 188,800 ha (466,252 acres) throughout the citrus district. Total production in 1985–86 was 4,877,000 t. Grapefruit plantings are concentrated in the Indian River area, running along the Atlantic Coast from Titusville to Stuart. There are 47,700 ha (117,845 acres) devoted to citrus in this area, with production in 1985–86 of 1,806,000 t. Tangerines and other citrus occupy 16,350 ha (40,395 acres) and produced 382,000 t last year. Small acreages of lemons and limes are located in the extreme south.

Production practices are similar for most kinds of fruit. The Cooperative Extension Service estimates the 1986 average cost of production for upland groves at about \$240/ha (\$600/acre) per year, not including land cost nor interest on the investment. Costs are distributed as follows: irrigation 30%, pest control by spraying and dusting 25%, herbicides and cultivation 15%, fertilization 15%, pruning 10%, and tree removal and replacement 5%.

Establishment of an orchard on hilly, well-drained sandhill land requires only clearing of the vegetation and installation of an irrigation system. On level, poorly-drained land (flatwoods), extensive networks of drainage ditches and graded beds also must be provided. After budded trees are planted, about 3 to 5 years elapse before worthwhile yields are obtained, and 7 to 10 years before returns equal expenditures.

Harvesting for fresh fruit from the March bloom begins in September and extends to the following June. Processing season is generally December through June. Tangerines and their hybrids have a shorter season—November through February.

Processors use more than 90% of oranges and more than 60% of grapefruit. Frozen concentrates and chilled juices are the major products, but dried citrus pulp cattle feed, cold pressed peel oils for flavors, and a long list of other products add substantial value to the crop. Fresh fruit volume has declined

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somewhat over the past 25 years.

The industry prospered greatly in the 30 years following the development of frozen concentrate in 1950, but the losses of acreage due to freezes of the past decade have dimmed its present status. Continuing problems (in addition to freezes) include Brazil's domination of world trade in frozen concentrate, competition with other local interests for land, water, and capital in a rapidly growing state; and an unremitting contest against a full complement of domestic and imported pests and diseases.

There are plantings of deciduous fruits in northern Florida consisting of 4400 ha (11,000 acres) of pecans, 1400 ha (3500 acres) of peaches, 200 ha (500 acres) of nectarines, 600 ha (1500 acres) of blueberries, and 400 ha (1000 acres) of grapes.

Pecan is a well-adapted profitable crop that has expanded slowly because of the long length of time required to attain profitable production. Peach and nectarine production is limited by an erratic winter climate, both from the standpoint of chilling requirements and late winter frosts. They are profitable only on the very early market. Blueberries have expanded from 4 to 1600 ha since 1961 and have a bright future, with profitable production from April to July. Grapes are limited by Pierce's disease and the hot, wet summers that preclude vinifera grape production. Muscadine and American-type grapes are limited to local markets and a small wine industry.

There is ample land to expand all of these crops, and, with the exception of pecans, expansion will depend to a large extent on the development of new cultivars with improved climatic adaptation, pest resistance, and quality.

Many tropical and subtropical species are grown in extreme southern Florida, much on the unique limestone rock soils. The primary crops are 5000 ha (12,500 acres) of avocado, 1160 ha (2900 acres) of mango, 140 ha (350 acres) of papaya, 140 ha (350 acres) of bananas and plantains, and small acreages of such crops as carambola, guava, lychee, passion fruit, atemoya, and Barbados cherry. Interestingly, 1000 ha (2500 acres) of pineapple have been recently developed for research and trial purposes by a large commercial pineapple producer with plans for major plantings.

Despite the relatively small area in tropical fruit, cultivars and technology developed by growers and research scientists of the USDA and the Univ. of Florida serve the entire Caribbean and parts of South America. Market demand for tropical fruits is strong, but land is limited unless land currently in vegetables is converted to fruit crops.

### III. Commercial Vegetable Production in Florida

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Florida is the major U.S. winter vegetable producing state and ranks second in the na-

Table 1. Production figures for the leading vegetable crops in Florida (1984-85).

Crop	Production area (ha)	Portion of total vegetable value (%)	Production costs per ha (\$)	Major production areas
Tomato	19,000	33	14,000	Homestead, Naples, Immokalee, Ruskin, Palmetto, Pompano-Palm Beach, Quincy
Potato	14,000	7	4,000	Hastings, Homestead
Peppers	8,500	7	10,000	Palm Beach, Immokalee
Sweet Corn	21,000	7	3,500	Belle Glade, Zellwood, Pompano-Palm Beach, Homestead
Strawberries	2,100	6	27,000	Plant City, Starke
Watermelons	22,000	5	5,000	Southwest and north central Florida

tion in fresh-market vegetable production. A major contribution to the success of our industry results from the continuing development by the Institute of Food and Agricultural Sciences (IFAS) at the Univ. of Florida of new cultivars and production technology for the unique climate and soil conditions of Florida.

The total farm-gate value of the 1984-85 Florida vegetable crop industry was \$1,020,000,000, the third consecutive year it has topped the billion dollar mark. This includes all vegetables, melons, potatoes, and strawberries.

Vegetables are grown on about 168,000 ha (415,000 acres) in Florida, with the majority of value resulting from production in the southern portion of the state (Orlando area and south). Many of the vegetables, especially tomatoes, pepper, watermelons, potatoes, strawberries, and cabbage, are grown on the sands. Most of the winter production of warm-season crops occurs in extreme southern Florida on the marl (potatoes) and the rockland soils (tomatoes, snapbeans, sweet corn, and squash). Marl and rockland soils are largely composed of calcium carbonate; the rockland soils are extremely shallow. Florida has several large areas of organic (muck) soils; the largest ones occur in the Belle Glade and Zellwood areas. Sweet corn, carrots, lettuces, celery, radishes, and a number of other cool-season crops are predominately grown on the muck soils.

Polyethylene mulch is used for vegetable production on about 40,000 ha. Nearly all of the tomato, pepper, strawberry, and eggplant crops are grown using full-bed polyethylene mulch. Mulch helps increase early yields, improves fumigant effectiveness, reduces weed competition, and reduces fertilizer leaching. Without mulch and fumigation, economic production of tomatoes, peppers, and strawberries would not be possible, especially where the land is in continuous production of the same crop.

Many of the vegetables, especially those grown on sandy Spodosols and organic Histosols, are subsurface irrigated. Overhead sprinkler irrigation is used on the deeper sandy Entisols and the rockland soils of southern Florida. Drip irrigation is gaining in popularity in Florida, especially near urban areas where water might be in short supply. About 2000 ha of vegetables are produced with drip

irrigation, with one-half as much water as with overhead irrigation and only one-sixth as much water as with subsurface irrigation.

The six most important vegetables (in value) grown in Florida are listed in Table 1. Other than those listed in the table, important vegetables grown in Florida include squash, radish, celery, carrots, cabbage, cucumbers, beans, escarole, and lettuce. Many other commercial vegetable crops are produced, including various tropical vegetables, muskmelon, eggplant, parsley, endive, okra, broccoli, cauliflower, onions, watercress, southern peas, collards, and turnips (to name a few) and many speciality crops (such as oriental vegetables, herbs and spices, miniature vegetables, and greenhouse tomatoes and cucumbers) are produced annually. In all, more than 40 vegetables are produced in some quantity in the state.

Vegetable producers in Florida face many obstacles to maintain profitable production. The warm, humid climate is very conducive to pest problems, and control of pests represents a large cost input for all vegetable producers. Water quantity and quality is becoming a problem in several production areas in the state. Urbanization is removing some of the prime agricultural land from production. Foreign competition also is placing pressure on the Florida vegetable grower. All of these problems force the Florida vegetable grower to be efficient, and technological advances have helped greatly to keep vegetable production in Florida strong and profitable.

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