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FLORIDA TROPICAL FRUIT CULTURE VIA MASTER GARDENER

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Abstract. **The Florida Master Gardener program was initiated in 3 counties in 1979. Six additional counties have been added since then. The basic objective of this program is to train volunteers to aid county Extension personnel in answering homeowner horticultural questions. Since tropical fruit culture is a subject which has never been previously addressed by a Master Gardener program, the material is summarized here for others to use elsewhere in similar programs. The complete package of slides and text will be available on loan locally through county Extension offices with Master Gardener programs.**

Effective methods of distributing educational information to a large audience has long been a problem for most Extension workers. This has become increasingly important to horticultural agents because of the rapid growth in the number of people interested in producing tropical fruits. Many gardening enthusiasts have moved from the north where they have been familiar only with growing temperate fruits. The rapid influx of new residents and an increased interest in raising food in the dooryard has created a demand for information from county Extension offices.

Dealing with an ever-increasing public audience is difficult because of a shortage of trained personnel. It was felt that volunteers trained to assist local Extension agents could provide additional personnel to work with the public. A volunteer with gardening experience and proper training could satisfactorily answer most homeowner questions, releasing Extension agents for working with commercial growers and programmatic efforts. In 1972, 2 Extension workers at Washington State University designed a program to train assistants to help alleviate the shortage of trained personnel. This was the genesis of the Master Gardener program and 25 states have since adopted this or similar programs (1).

The Master Gardener program recruits and trains volunteers to help meet increased demands being placed on county Extension personnel. Volunteers receive from 30-60 hours of training and then work an equivalent number of hours in local Extension efforts. A national survey showed that in states utilizing Master Gardeners, 2,516 volunteers provided 91,651 hours of service during the year (6), many of whom served more than the required hours.

The Florida Master Gardener program was initiated in 1976 when 3 Extension Horticulturists from the University of Florida visited Washington and Oregon to observe their programs. Planning for a pilot program began early in 1979. Brevard, Dade, and Manatee counties were selected for the first program because of their large urban populations and demand for horticultural information (3).

Approximately 48 hours of instruction are presented in 6 hour lessons 1 day each week for 8 weeks. Many areas of homeowner horticulture are discussed beginning with botany and soil science. Subsequent lessons are conducted on fruit, vegetable and ornamental plant culture, propagation, and pest diagnosis and control. State Extension specialists and local agents conduct the training and provide fact sheets and other pertinent literature to be placed into a reference notebook for each participant. Local horticultural agents plan field trips, tours, and hands-on training.

All participants take a final comprehensive examination designed to test not only their knowledge but also their ability to deal with situational problems. Those completing the course and passing the examination, become Master Gardeners. They are then ready to begin working with the local Extension offices. The program has been successful in 3 Florida counties and 6 more have been added in 1980-81 (3).

Tropical Fruit and the Master Gardener Program

Tropical fruit culture is one important area of instruction included for Master Gardener program participants in south Florida and warmer locations of central Florida. The following material is excerpted from lesson plans prepared for the Master Gardener program participants in areas where tropical fruits can be grown.

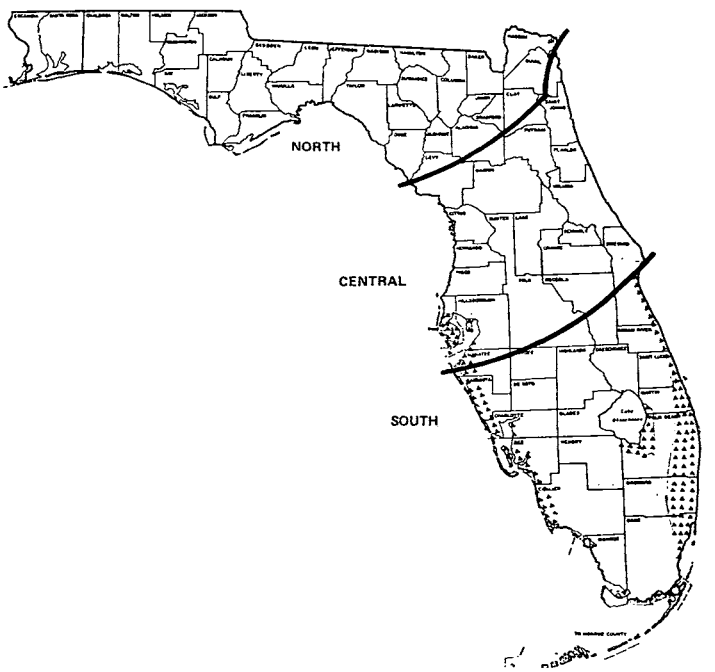

Fig. 1. Areas where tropical fruits may be grown in Florida is indicated by △.

Tropical fruits are grown in an area delineated by St. Petersburg on the west coast southward and then north to Merritt Island on the east coast (Fig. 1). Temperature, soil types, drainage, and small differences in elevation contribute to local microclimates. Areas such as large bodies of standing water, south side of buildings, protected elevated sites, and other such areas permit growing some of the cold-sensitive tropicals outside the general area previously discussed.

As a group, many species and some cultivars have wide-ranging ability to withstand cold. For example, the 3 races of avocado have markedly different cold tolerances.

Table 1. Master gardener tropical fruit recommendations.

Family	Scientific name	Common name	Fruit[z] season	Prop[y]	Plant[x] size	Tolerances[w] Salt	Cold	Flood	Drought	Problem	Recommended cultivars	FCFS[v]
Anacardiaceae	*Mangifera indica* L.	Mango	May-Oct	G	L-tree	P	P	F	F		Many	*
Annonaceae	*Annona muricata* L.	Soursop, guanabana	S, F	S, G	S-tree	P	P	P	F	Needs cold protection	'Geffner', 'Page' 'African pride', 'Bradley'	*
"	*A. squamosa* L.	Sugar apple	S, F	S, G	S-tree	P	P	P	P			*
"	*A. (squamosa* x *cherimola* Mill.)	Atemoya	F	G	S-tree	P	P	P	P			*
Apocynaceae	*Carissa macrocarpa* (Eckl.) A.D.C.	Natal plum, Carissa	Y	AL, C	Shrub	G	F	P	F	Thorns	Many Ornamentals	
Arecaceae (Palmae)	*Cocos nucifera* L.	Coconut	Y	S	Tall	G	P	F	G	L. yellow	'Maypan'	*
Bromeliaceae	*Ananas comosus* (L.) Merr.	Pineapple	Y	C	Herb	P	P	P	F	Poorly adapted to limestone soil	'Red Spanish' 'Natal queen' 'Smooth Cayenne'	
Cactaceae	*Opuntia ficus-indica* Mill.	Tuna, prickly pear	S	C S, P	L. shrub	F	G	P	G	humidity sensitive		*
Caricaceae	*Carica papaya* L.	Papaya	Y	S	L-herb	O	P	P	P	fruit-fly, virus disease		
Chrysobalanaceae	*Chrysobalanus icaco* L.	Cocoplum	S, F	S, C	Shrub	G	P	G	F		Purple, green	
Ebenaceae	*Diospyros digyna* Jacq.	Black sapote	W	S	M-tree	F	P	F	F			
"	*D. kaki* L.f.	Persimmon	F	G	S-tree	P	G	F	F	More fruit after cold winters	'Tanenashi'	*
Euphorbiaceae	*Antidesma bunius* (L.) Spreng	Bignay	S, F, W	AL, G, S	M-tree	F	P	P	F			
Fabaceae (Leguminosae)	*Tamarindus indica* L.	Tamarind	Sp, S	S, AL, G	L-tree	G	P	P	G			*
Lauraceae	*Persea americana* Mill.	Avocado	June-Mar	G	L-tree	P	F-G	O	F		Many	*
Malpighiaceae	*Malpighia glabra* L.	Barbados cherry	Apr-Oct	AL, C, S	shrub	P	P	P	F		'Fla Sweet'	*
Moraceae	*Artocarpus heterophyllus* Lam.	Jakfruit	Y		L-tree	F	P	P	P			
"	*Morus rubra* L.	Mulberry	S	C	L-tree	P	G	F	G			
Musaceae	*Musa* hybrid	Banana	Y	Sk	L-herb	O	O	F	F	Needs great deal of care	Many	*
Myrtaceae	*Eugenia uniflora* L.	Surinam cherry	Sp, S	S	shrub	F	G	F	G	Fruit fly		
"	*Myrciaria cauliflora* (Mart.) Berg.	Jaboticaba	Y	S	S-tree	P	F	P	P	Poorly adapted to limestone soil		*
"	*Pimenta dioica* (L.) Merr.	Allspice	S, F	S	S-tree	P	F	P	P			
"	*Psiduim cattleianum* Sabine	Cattley or strawberry guava	July-Oct	S	shrub	F	G	P	F	Fruit fly		
"	*P. guajava* L.	Guava	F, Sp	AL	M-tree	P	P	G	F	Fruit fly	'Ruby x Supreme' 'Webber x Supreme'	*

Family	Scientific name	Common name	Fruit[z] season	Prop[y]	Plant[x] size	Tolerances[w] Salt	Cold	Flood	Drought	Problem	Recommended cultivars	FCFS[v]
Oxalidaceae	*Averrhoa carambola* L.	Carambola, star fruit	Y	G, A	M-tree	P	F	P	P		'Golden Star' 'Newcomb', 'Thayer'	*
Polygonaceae	*Coccoloba uvifera* (L.) L.	Sea grape	Y	S, C	M-tree	G	P	F	G	Dioecious		*
Proteaceae	*Macadamia integrifolia Maiden and Betche*	Macadamia	Oct-Feb	S, G, AL	M-tree	P	F	P	F	Irregular bearing		*
Rhamnaceae	*Zizyphus mauritiana* Lam.	Indian jujube	Dec-Mar	S	M-tree	F	F	F	G	Thorns		
Rosaceae	*Prunus persica* (L.) Batsch	Peach	Sp	S, G	S-tree	P	G	P	P	Fruit fly	Red Ceylon'	
"	*Rubus albescens* Roxb.	Mysore black raspberry	Dec-June	S T	shrub	P	F	O	P		'Mysore'	
Rubiaceae	*Coffea arabica* L.	Coffee	Y	S	shrub, S-tree	P	O	O	P			
Rutaceae	*Casimiroa edulis* Llavae & Lex.	White sapote	Sp-S	G, S	M-tree	P	G	P	F		'Dade'	*
"	*Citrus* sp.	(See text)									(See text)	*
"	*Clausena lansium* (Lour.) Skeels	Wampi	June-Aug	S	S-tree	P	F	O	F			
Sapindaceae	*Blighia sapida* Koen.	Akee	F	S	M-tree	F	P	P	F	(Fruit poisonous before opening, also seeds)		
"	*Euphoria longana* Lam.	Longan	July-Aug	S, G	M-tree	F	F	F	F		'Kohala'	*
"	*Litchi chinensis* Sonn.	Lychee	June-July	AL	M-L-tree	O	F	F	P	More difficult to grow than longan	'Mauritius' 'Brewster', 'Bengal' 'Sweet Cliff'	*
"	*Meliococcus bijugatus* Jacq.	Spanish lime	July-Oct	S, AL	L-tree	F	O	P	G	Dioecious, cold sensitive	'Montgomery'	
Sapotaceae	*Calocarpum sapota* (Jacq) Merr.	Mamey sapote	May-July	G, S	L-tree	P	P	P	F	Cold sensitive	'Magana' 'Pantin'	*
"	*Chrysophyllum cainito* L.	Caimito, Star	Sp	S, G	L-tree	P	P	P	F		'Haitian'	
"	*Manilkara zapota* (L.) Van Royen.	Sapodilla	Feb-Nov	G	L-tree	F	F	P	G		'Prolific', 'Brown Sugar', 'Simmons'	*
Sapotaceae	*Pouteria campechiana (H.B.K) Baehni*	Canistel, Egg fruit	Irr., All year	S	M-tree	F	P	P	F			*
"	*Synsephalum dulcificum* Daniell ex S. Bill	Miracle fruit	Irr., All year	S	S-tree	P	O	P	P	Poorly adapted to limestone soil		

[z]W = Winter, Sp = Spring, S = Summer, F = Fall, Irr. = Irregular, Y = All year.
[y]Propagation under Florida conditions: G = Graft, S = Seed, AL = Air Layer, C = Cuttings, P = Pads, T = Tip layer, Sk = Suckers.
[x]S = Small, M = Medium, L = Large.
[w]O = None, P = Poor, F = Fair, G = Good.
[v]* = Fruit Crops Fact Sheet is available on this fruit.

A few feet in elevation might make a difference in the microclimate and the adaptability of the plant to survive winters in a specific location. Two to 5°F difference in the mean minimum temperature can make a considerable difference in which plants can be grown in a given location.

There are many tropical fruits that may be grown in tropical Florida. The fruits recommended in the Master Gardener program have all been known to fruit in Florida, can be grown without a great deal of cold protection and serious horticultural problems, and are generally available in nurseries or from plant sales of local chapters of the Rare Fruit Council (Table 1).

Species of *Citrus* fruits for sub-tropical areas are similar to the ones grown in more temperate areas. However, there are some cultivar differences and different rootstocks are often required. See Fruit Crops Fact Sheet #13 (4) and Fruit Crops Fact Sheet #23 (7) for specific recommendations. Mango and avocados have many cultivars recommended for specific areas and conditions and these are detailed in Fruit Crops Fact Sheet #2 (2) and Fruit Crops Fact Sheet #3 (5).

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REACTION OF NEMATODE-INFECTED CENTIPEDEGRASS TURF TO PESTICIDAL AND NON-PESTICIDAL TREATMENTS[1,2]

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Abstract. **Treatments were applied to centipedegrass infected with plant-parasitic nematodes, primarily** Hemicycliophora parvana **Tarjan, 1952 (sheath nematodes) and** Macroposthonia sphaerocephala **(Taylor, 1936) (ring nematodes) at the University of Florida Horticultural Unit in Gainesville. Materials used were Ekol Leaf Mold, Cytex cytokinins, bendiocarb, Seaborn kelp-extract, phenamiphos-fensulfothion mixture, phenamiphos, ethoprop and ethylene dibromide. Fresh weight of grass clippings from each plot was obtained six times during a ten-month period after treatment. Leaf Mold, phenamiphos-fensulfothion, and ethoprop consistently gave the three highest grass yields. Soil and root samples were obtained four times; nematode control varied with the chemical treatment, type of parasitic nematode, and time of year sampled.**

New pesticides for control of plant-parasitic nematodes on turfgrass have been unavailable for the past few years. With the withdrawal of DBCP (dibromochloropropane) from the market, only chemicals such as ethoprop (Mocap), phenamiphos (Nemacur), fensulfothion (Dasanit) and diazinon (Sarolex) are available for commercial application to nematode-infected turf. These chemicals have been available for more than a decade. At least two other novel materials under test as turf nematicides, bendiocarb and UC 21865, were withdrawn from further testing. The homeowner, or "do-it-yourselfer," has fared worse since there are no materials available to him which can be applied to nematode-infected turf.

The purpose of this test was to investigate the following non-pesticidal and novel pesticidal materials using currently available turf nematicides as standards. Kelp (seaweed) extracts have been reported to be mildly nematicidal and to improve yield when applied to citrus nematode-infested orange trees (2). Such materials also have provided beneficial results when applied to centipedegrass (1). Cytokinins (Cytex) are also derived from kelp and have been used on blight-infected citrus trees and as growth promoters on various other crops. Ekol leaf mold is a relatively new organic material prepared from waste cotton plants and supposedly without pesticidal properties, but with decided growth-stimulating properties. Bendiocarb (Ficam) is a commercial insecticide; ethylene dibromide (Soilbrom 90) is 93% active and a nematicidal fumigant. The three other materials used in this test—phenamiphos (Nemacur), fensulfothion (Dasanit) and ethoprop (Mocap)—are known turf nematicides.

Materials and Methods

Nematode-infected centipedegrass turf (*Eremochloa ophiuroides* [Munro] Hack.) at the University of Florida Horticultural Unit in Gainesville was found to contain mainly *Hemicycliophora parvana* Tarjan, 1952 (sheath nematodes) and *Macroposthonia sphaerocephala* (Taylor, 1936) (ring nematodes). Sting nematodes *Belonolaimus longicaudatus* Rau, 1958, and stubby root nematodes (*Trichodorus* sp.) were also present but in lower numbers. The test area was divided into 60 0.9 x 3.4 m (3 x 11 ft) plots with 0.6 m (2 ft) between each test plot. Each of 10 treatments were replicated six times in a randomized complete block design. Treatments were: 1. leaf mold (Ekol leaf Mold) at 4.9 kg/sq m (1 lb/sq ft); 2. Cytokinins (Cytex) at 562 l/ha (50 gal/acre); 3. & 4. Bendiocarb WP at 4.5 and 6.7 kg (ai)/ha (4 & 6 lbs/acre) respectively; 5. kelp extract (Seaborn) at 34 l/ha (3 gal/acre); 6. phenamiphos-fensulfothion (Nemacur-Dasanit) mixture 10 G - 5 G at 11.2 kg (ai)/ha (10 lbs/acre); 7. phenamiphos (Nemacur) 15 G at 11.2 kg (ai)/ha (10 lbs/acre); 8. ethoprop (Mocap) 10 G at 22.4 kg (ai)/ha (20 lbs/acre); 9. ethylene dibromide (Soilbrom 90) at 67 l (ai)/ha (6 gal/acre); and 10. untreated control. Each treatment material was applied initially at

[1]Florida Agricultural Experiment Stations Journal Series No. 3367.
[2]Mention of a trademark or proprietary product does not constitute a guarantee or warranty of the product and does not imply its approval to the exclusion of other products that may also be accepted.