

Address \_\_\_\_\_ Director of Advanced Testing \_\_\_\_\_  
 City \_\_\_\_\_ Signature \_\_\_\_\_  
 Date \_\_\_\_\_ Date \_\_\_\_\_

**COOPERATOR DATA FORM**  
**UF/IFAS Strawberry Breeding Program**  
**December 1996**

Cooperator: \_\_\_\_\_  
 Selection number: \_\_\_\_\_  
 Plant source: \_\_\_\_\_  
 Location of plot: \_\_\_\_\_  
 Planting date: \_\_\_\_\_  
 Spacing: \_\_\_\_\_  
 Spray schedule: \_\_\_\_\_  
 \_\_\_\_\_  
 Fertilization and watering regime: \_\_\_\_\_  
 \_\_\_\_\_  
 Number of runners:    few    moderate    many  
 (Circle the most appropriate word.)

Plant vigor:    low    medium    high  
 Date of 1st harvest: \_\_\_\_\_  
 Severe pest or disease problems: \_\_\_\_\_  
 \_\_\_\_\_  
 Misshapen fruit:  
                   none    few    moderate    many  
 Color uniformity: (e.g. many green tips, green shoulders, or dark streaks)  
 \_\_\_\_\_  
 Albinism:  
                   none    slight    moderate    abundant  
 Fruit size uniformity:  
                   uniform    variable    highly variable  
 Water damage:  
                   none    slight    moderate    abundant  
 Productivity:  
                   low    medium    high  
 Severe weather conditions: (e.g., hail, flooding, freezes) \_\_\_\_\_  
 \_\_\_\_\_  
 Additional comments: \_\_\_\_\_  
 \_\_\_\_\_

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## DEMONSTRATION PLOTS OF ALTERNATE FRUIT AND NUT CROPS FOR CENTRAL FLORIDA

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**Abstract.** Central Florida fruit producers have observed many crops searching for one that can be produced and sold locally for a profit. A demonstration/research plot was established at Conserv II near Winter Garden in Orange County to evaluate cultivars of peaches, chestnuts, pecans, persimmons, figs, and grapes as possible alternative crops for that area. Each of these will be discussed as a potential crop for central Florida.

Florida farmers are currently exploring alternative crops that can be grown profitably in central and north-central Florida. In February, 1991, a demonstration planting was estab-

lished in central Florida to evaluate the potential for commercial production of several perennial fruit and nut crops. The planting is located at Conserv II in Orange County near Winter Garden, Fla. Crops included for testing were chestnuts, muscadine grapes, persimmons, figs, pecans, and peaches.

### Fruit and Nut Crops Evaluated

*Chestnuts.* Chestnuts were chosen because they are adapted to Florida's climate and there is a good possibility for export of Florida-grown chestnuts to northern markets (Wallace, 1995). Possible concerns regarding chestnut production in Florida are: (1) which cultivars are best adapted to Central Florida; (2) what is the best harvest method, and can chestnuts be mechanically harvested? (3) post-harvest care of nuts; (4) proper tree training and establishment; and (5) development of markets. The chestnut cultivars included in this trial were chosen for their resistance to chestnut blight and for their large nut size. They are 'Revival', 'Alachua', 'Carpenter', and 'Willamette' (American-Chinese hybrids) as well as 'AU Leader' and 'AU Cropper' (Chinese chestnut cultivars released from Auburn University). Grafted trees were purchased from local nurseries and planted in spring, 1991, at a

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40 ft. × 40 ft. spacing. Eight seedling Chinese chestnut trees were also planted for comparison purposes.

The trees were cut back to one third their original height immediately after planting. A complete fertilizer (10-10-10 plus minors) was applied according to Table 1. No pesticide sprays other than herbicides were applied to the chestnuts.

**Muscadine Grapes.** Muscadine grapes are well adapted to the southeastern United States. In Florida, muscadine grapes are grown for fresh market as well as for wines and juice. According to Florida Agricultural Statistics, Florida Department of Agriculture and Consumer Services, there were 580 acres of grapes planted in Florida in 1990 (Fla. Ag. Statistics, 1990). The following muscadine cultivars were planted for evaluation at the Central Florida test site; 'Alachua', 'Black Fry', 'Fry', FLAA 7-44, FLAA 10-9, FLAA 12-3, 'Grannyval', 'Jumbo', 'Nobel', 'Nesbitt', 'Summit' and 'Supreme'.

The muscadine grape plants were purchased from local nurseries and planted during the spring of 1991. They were spaced 15 feet apart within rows which were spaced 20 feet apart. Plants were trained to a single wire trellis system and fertilized according to Table 1. Except for herbicides, no pesticides were used on the muscadine grapes other than one malathion spray to control aphids during the first year after planting.

**Oriental Persimmon.** Oriental persimmons have been grown in north and north-central Florida for many years and appear to be well-adapted to the climate there (Miller and Crocker, 1991). Oriental persimmon cultivars are commonly classified as astringent and non-astringent based on the relationship between fruit softening and palatability during ripening. In this trial, only non-astringent cultivars were used. Six trees of each cultivar were planted in a 20 ft × 20 ft arrangement. They were 'Fuyu', 'Hana Fuyu', 'Izu', 'Ichikikel', 'Jiro', 'Matsumoto', 'Saijo', and 'Suruga'.

The trees were watered in at planting and a water ring was constructed around each tree. Fertilizer was applied according to Table 1. No pesticides, other than herbicides, were used.

**Fig.** While Florida lacks the climate to produce fig cultivars commonly grown for commercial markets, there are several cultivars adapted to Florida which can be quite useful to home gardeners and for local consumption. Figs generally acquire a bush-type growth habit in north and north-central Florida because of their susceptibility to cold injury during winter freezes. They are also susceptible to root knot nematode and usually require mulch for adequate root development. Five trees of each of the following cultivars were

planted at a 20 feet × 20 feet spacing: 'Celeste', 'Brown Turkey', 'Alma', 'Green Ischia' and 'Jelly'. No pesticides, other than herbicides, were used.

**Peach.** In the 1970's, more than 2000 acres of early-season peaches and nectarines were grown in Florida. Gradually, commercial acreage of peaches in Florida decreased to only a few hundred acres due to climatic and economic factors. Andersen, et. al. (1995) identified peaches and nectarines as one of the few deciduous fruit crops with very high potential for commercial expansion in Florida during the 1990's. Within the last 10 years, many excellent early-season low-chill cultivars have been released from the University of Florida *Prunus* breeding program which show promise for peninsular Florida and the lower Gulf Coast regions of the Southeastern United States. Five trees of each of the following cultivars were planted at a 20 feet × 20 feet spacing: 'Flordaprince', 'Earligrande', 'Flordaglo', 'Flordagold', 'Flordastar', 'Hermosilla', 'Rayon', 'Tropic Beauty', 'Tropic Snow', 'Tropic Sweet', 87-3 and 1-8. Chilling requirements for the above cultivars are between 150 and 300 chill units. All are yellow-fleshed cultivars except for 'Flordaglo' and 'Tropic Snow' which have white flesh. All are cling-stone types except for 'Rayon' which is semi-free stone. The peaches received five sprays annually. Three applications of Imidan and Captan were made during the spring, followed by Lorsban in the summer and a 3% dormant oil spray in the winter. Generally, this spray program has provided adequate control of most peach pests in Central Florida.

**Pecan.** Pecan is native to North America and ranks high in importance among the deciduous fruit and nut crops grown in Florida. A major advantage of pecan is that most of the cultural practices, including harvesting, cleaning cracking and packing can be done mechanically. Much of the equipment used for citrus production could be adapted for pecans. Trees of each of four pecan cultivars were planted at a 40 ft. × 40 ft spacing. They were 'Elliot' (15 trees), 'Candy' (16 trees), 'Sumner' (15 trees), and 'Curtis' (15 trees). Pecan trees were planted in a manner similar to that previously described for chestnuts.

## Culture and Management

**Nutrition.** During the first two years after planting, all crops were fertilized four times per year with a 10-10-10 analysis fertilizer containing micro-nutrients. Table 1 describes rates per application for the individual crops. Additionally, all plants were fertigated monthly from May through October with 0.043 lbs. of N and 0.043 lbs. of K<sub>2</sub>O (except for pecans which received twice the above rate of N and K<sub>2</sub>O). The yearly amount of fertilizer applied to each plant via fertigation was 0.30 lbs. N and 0.30 lbs. K<sub>2</sub>O (0.60 lbs. N and 0.60 lbs. K<sub>2</sub>O for pecans).

**Irrigation.** Reclaimed water was used for irrigation. Generally, irrigations were scheduled once or twice per week from October through leaf fall and again during February and March. From April through September, all crops were irrigated 2 to 3 times per week. Micro sprinkler emitters (17 gph) were operated for 2 to 3 hours at each irrigation event. One emitter per plant was used except for pecan trees which had two emitters per plant.

**Weed Control.** Roundup (glyphosate) was applied 3 to 4 times per year to provide weed-free areas around all crop plants. Solicam (norflurazon) was also used and resulted in

Table 1. Pounds of fertilizer (10-10-10) plus micro-nutrients applied per application for peaches, pecans, persimmons, and chestnuts at the Conserv II deciduous fruit demonstration planting.

Crop	Tree age and number of fertilizer applications per year				
	year 1 3	year 2 4	year 3 3	year 4 3	year 5 3
Peaches	0.5	0.5	1.5	2	2.5
Pecans	0.5	0.5	2	3	3.5
Persimmons	0.5	0.5	1.5	2	2.5
Chestnuts	0.5	0.5	1	1.5	2.0

Fertilizer was applied in May, July and September during year 1; in February, April, June, and September during year 2; and in February, May and August in years 3 through 5.

moderate damage to muscadine grapes and figs. Because of the sandy soils present at the site, minimal use of pre-emergence herbicides is anticipated for the future.

### Results and Discussion

Chestnuts have produced well in north Florida (Crocker, 1991). However, in the deep sandy soils of the test site (typical of the central Florida Ridge), tree establishment was poor. Most of the trees died during the first year after planting. Growth of the remaining trees was weak during the second through fourth years after planting. In 1996, it was determined that the potential for chestnuts as an alternative crop for central Florida was poor and all remaining chestnut trees were removed from the orchard.

Muscadine grapes performed well on the central Florida test site with quick establishment of most of the cultivars. 'Southern Home' appears to be very well adapted to central Florida. Two cultivars which did not perform well were 'Supreme' and the numbered selection, FAA-7-44. They will be replaced with other cultivars that have potential for central Florida.

Persimmon is well-adapted to the sandy soils and mild climate of central Florida. To date, they have been vigorous and productive and show high potential as an alternative crop for central Florida. Persimmons (non-astringent) have done well in the Alachua County area. In 1996, a Florida Persimmon Growers' Association was established which should help with the development of a commercial industry in Florida.

Pecans appear to be well-adapted to the central Florida test site with only two trees being lost during establishment. In 1996, a very light crop was produced, but several more years will be required before these trees will produce a large crop of nuts. Pecan orchards generally will not produce heavy crops until 10 to 15 years after planting. Nevertheless, these trees have done well with minimal disease control. Pecans appear to have potential as an alternative crop for central Florida provided growers can wait 10 to 15 years for commercial production.

Peaches have grown and produced very well at the central Florida test site. Tree establishment and vigor have been good

and they began cropping during the third year after planting. A good crop was produced in 1996 during a season when late spring freezes devastated the commercial peach industry throughout the southeastern United States. When planted on well-drained, frost-free sites, peaches appear to have very high potential as an alternative crop for central Florida because their early harvest season (late-April through May) results in high-value fruit. However, peaches require more skilled labor than do most other fruit crops. Trees must be pruned and the fruit must be thinned annually to obtain adequate fruit size and quality. Harvesting and handling is also critical for good fruit quality. Peaches are susceptible to a variety of pests and diseases and require a more rigorous spray program than do most other fruit crops. Currently, the cultivars which show the most promise for central Florida are: 'Flordaprince', 'TropicBeauty', 'TropicSweet', 'Flordastar', 'Flordaglo' (white flesh), and 'TropicSnow' (white flesh). The white-flesh cultivars are recommended for local, roadside, or u-pick sale because the fruit bruises easily when handled.

This demonstration/research planting in central Florida has allowed area growers to observe a variety of deciduous fruit and nut crops growing in their climatic region of the state. Field days which emphasized cultivar selection, fertilization, planting and young tree care, pruning, and insect/disease control have been conducted every 12 to 18 months since the establishment of the planting. Because interest in identifying alternative crops for central Florida remains high, additional field days will be held at this site as more information on these crops becomes available.

### Literature Cited

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