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# Third-Year Banana Cultivar Trial in South Georgia

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Although the State of Georgia produces many fruits such as, apples, blueberries, strawberries, blackberries, grapes and peaches, bananas have never been considered an economic crop. This is probably because of marginal weather condition for bananas and massive imports from Central and South America. This study, which is in its third year, continually evaluates 32 banana cultivars and determines their suitability for production, marketing, and distribution in Georgia.

The development of the annual cropping production system (ACP) and more cold-tolerant cultivars has allowed commercial banana production outside the traditional production belt (Fonsah, Krewer, and Reiger 2004, 2005; Stover and Simmons 1987; Robinson 1993, 1996). Over the past three years, we evaluated 32 cultivars which have the greatest potential for fruit production and ornamental use under South Georgia conditions. Significant flowering and fruiting occurred in 2004. However, only a few fruit matured before frost. In 2005 we initiated a study with green-house-started plants which we hope will result in annual cropping. The United States is the largest importer and consumer of bananas in the entire world; demand is thus very strong (Fonsah, Krewer, and Reiger 2004, 2005). Several studies have demonstrated that quality bananas can be cultivated in subtropical regions of the world such as South Africa, Israel, and Taiwan and sold at both domestic and foreign markets.

## Material and Methods

This experiment has been in progress for the past three years at the University of Georgia Coastal Gardens near Savannah, latitude 32.1' N, elevation 14 meters. Fertilizers were applied at the rate of 1.07 lbs of 10-10-10 and 0.39 lbs of muriate of

potash per plant in April and May, while 2.14 lbs of 10-10-10 and 0.78 lbs of muriate were applied in August and September. Solid-set irrigation was also used in the study. Other operations conducted were described by Fonsah, Krewer, and Reiger (2003, 2004).

## Results and Discussion

### *Fertility Application*

In the third year of our study we encountered several problems that affected the results. First, the recommended dose of 2.14 lbs of 10-10-10 and 0.78 lbs of muriate of potash fertilizer per plant per month was not respected. As noted above, half of the recommended dose was applied in April and May. Nothing was applied in June and July and the full dose was applied only in August and September 2005.

### *Irrigation*

The recommended irrigation application was three times per week and as needed. Usually, based on the soil type, bananas require between 40–50 mm of water per week (Fonsah and Chidebelu 1995). We encountered irrigation irregularity, as the overhead sprinklers were removed from time to time to supply water to an adjacent strawberry plot. That too had an adverse effect on the results.

### *Sucker Pruning*

The recommended sucker-pruning exercise in a commercial tropical banana plantation is six times per year. In our research, sucker pruning was done only twice: in April and in July 2005. The delay after July was because we wanted to develop enough suckers to sell at the Bamboo Farm and Coastal Gardens Fall Festival in October 22, 2005. However, the delay in sucker pruning also had a negative impact

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on overall performance of the plants.

#### *Cultivars that Produced Bunches*

In the third year, only 15 plants actually had bunches, compared to 29 in the same time period of the second year (Table 1). The earliest bunch in the third year was produced in August, compared to May in the second year (Fonsah, Krewer, and Reiger 2005). The first bunches that emerged were two Musa 1780 in replications one and three and Sweet Heart in replication one, all on August 10, 2005.

Table 2 shows that 44 bunches emerged prior to December 2005. The delay in shooting time could be due to the irrigation, fertility, and pruning problems. Despite these problems, the Manzano and Raja Puri cultivars produced in all five replications. Other cultivars that performed well were

Sweet Heart, Gold finger, Musa 1780, and Dwarf Namwah.

#### *Quality and Marketability of Emerged Bunches*

Although the bunch emergence was delayed, none of the bunches was choked or malformed. The differences in pomological characteristics were based on the cultivars (Fig. 1). The bunch in Figure 1 was about five weeks old when the photograph was taken. As the bunch matured, it became heavier and tipped-over. Prior to that, the fingers were well shaped and the bunch had seven hands.

#### **Conclusions**

The development of the annual cropping production system (ACP) and more cold-tolerant cultivars has

**Table 1. Shot Cultivars From August–October 2005, by Replication.**

Rep #1	Rep #2	Rep #3	Rep #4	Rep #5
Sweet Heart	Manzano	Musa 1780	Belle	Dwarf Orinoco
Manzano	Dwf Orinoco	Saba	Raja Puri	Raja Puri
Musa 1780	Dwarf Namwah	Raja Puri	Frank Unknown	
	Raja Puri			

**Table 2. Shot Cultivars From August–December 2005, by Replication.**

Rep #1	Rep #1	Rep #3	Rep #4	Rep #5
Sweet Heart	Manzano	Manzano	Manzano	Sweet Heart
Manzano	Sweet Heart	Brazilian	Belle	Manzano
Belle	Gold finger	Gold finger	Gold finger	Kumunaba
Frank Unkown	Belle	Musa1780	Raja Puri	Pace
Musa1780	Pace	Pace	Ice Cream	Musa1780
Ice Cream	FHIA 18	Saba	Dwf Namwah	FHIA 18
Saba	Dwf Orinoco	FHIA 18 <sup>a</sup>	Kandarian	Dwf Orinoco
Dwf Namwah	Dwf Namwah	Kalela	Frank Unknown	Raja Puri
Raja Puri	Raja Puri	Dwf Orinoco		
		Dwf Namwah		
		Raja Puri		

<sup>a</sup> Fundacion Hondurena de Investigacion Agricola (FHIA) is a banana breeding program created in Honduras in 1959 by United Fruit Company and donated to the Honduran government in 1984.



**Figure 1. Pomological Characteristics of Emerged Bunch, 2005.**

allowed commercial banana production outside the traditional production belt (Fonsah, Krewer, and Reiger 2004, 2005). Over the past three years, we evaluated 32 cultivars which have the greatest potential for fruit production and ornamental use under South Georgia conditions. In the third year of our study we encountered several problems that affected the results. First, the recommended dose of 2.14 lbs of 10-10-10 and 0.78 lbs of muriate of potash fertilizer per plant per month was not respected. The recommended irrigation application and sucker-pruning operations were not respected. Consequently, in the third year only 15 plants ac-

tually produced bunches, compared to 29 in the same time period of the second year. Despite these problems, the Manzano and Raja Puri cultivars produced in all five replications. Other cultivars that performed well were Sweet Heart, Gold Finger, Musa 1780, and Dwarf Namwah. Although there is need for more research, we are beginning to see potential cultivars for ornamental landscape and nursery use. There is also a need to study the annual cropping aspect of this research when we receive plants from the INIBAP (The international Network for the Improvement of Banana and Plantain) lab in Belgium.

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