



Evaluation of Strawberry Cultivars in Florida: 2007–09

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Field studies were conducted over two seasons to examine the performance of strawberry (*Fragaria xananassa* Duch.) cultivars. During the 2007–08 season, the cultivars tested were 'Winter Dawn', 'Florida Elyana', 'Florida Radiance', 'Ruby Gem', 'Strawberry Festival', 'Treasure', and 'Camarosa', whereas in the 2008–09 season, 'Winter Dawn', 'Florida Elyana', 'Florida Radiance', 'Strawberry Festival', 'Treasure', 'FL 05-73', 'FL 05-107', and 'FL 05-151' were planted. The highest early fruit yield (first 10 harvests) during the first season was found in plots planted with 'Strawberry Festival' (3.1 ton/acre). The following season, 'Winter Dawn' and 'Strawberry Festival' had the highest early fruit yields. In 2007–08, 'Strawberry Festival', 'Treasure' and 'Florida Radiance' had the highest total fruit weights ranging between 9.1 and 10.5 ton/acre. In the 2008–09 season, 'FL 05-107' outperformed the rest of the cultivars (21.3 ton/acre), followed by 'Strawberry Festival' (15.4 ton/acre), 'Treasure' (13.0 ton/acre), and 'Florida Radiance' (13.4 ton/acre).

Strawberry production in Florida is the second largest in the U.S. after California, with about 8300 acres and gross sales over \$330 million (USDA, 2008). The goal of a breeding program is to develop cultivars to satisfy market and grower requirements. From the market point of view, among the most important strawberry fruit characteristics are uniform shape, size, firmness, flavor, color, and prolonged shelf life. Growers are interested in having cultivars with disease resistance, high yields under different weather conditions, and acceptable yield earliness, which allow growers to have fruit supply when premium prices are paid (Santos et al., 2007).

'Winter Dawn' is a cultivar with high early yields, large fruit in small plants, and fruit with resistance to botrytis [caused by *Botrytis cinerea* (de Bary) Whetzel] and anthracnose fruit rot (caused by *Colletotrichum acutatum* Simm.) (Chandler, 2005). 'Ruby Gem' is a cultivar with early fruit production (Herrington et al., 2007), whereas 'Treasure' is characterized for its earliness, high yield, firm fruit, and long shelf life (Chang, 2002). 'Strawberry Festival' is the most used cultivar in Florida with attractive and firm fruit, and long shelf life (Chandler et al., 2000). 'Camarosa' is a University of California's cultivar that produces firm fruit flesh and early season yields (Voth et al., 1994). The latest releases from the University of Florida's breeding program are 'Florida Radiance' and 'Florida Elyana'. The former is resistant to botrytis and anthracnose fruit rot and produces medium to large fruit (Chandler et al., 2009b), whereas the latter has large firm and very flavorful fruit (Chandler et al., 2009a).

There is current need for cultivars to complement the harvest peaks of 'Strawberry Festival', which is the most planted cultivar in Florida (Chandler et al., 2000). However, the performance of the strawberry cultivars need to be investigated in Florida to determine adaptability and performance among cultivars and advanced breeding lines. The objective of this study was to compare the performance of several strawberry cultivars in west-central Florida.

Materials and Methods

Two trials were conducted during the 2007–08 and 2008–09 strawberry seasons at the Gulf Coast Research and Education Center of the University of Florida. The soil was a Myakka fine sandy Spodosol with less than 1.5% organic matter and pH of 7.3. Planting beds were pre-formed with a standard bedder, 28 inches wide at the base, 24 inches wide on the top, and 10 inches high. The soil was fumigated with 350 lb/acre of methyl bromide + chloropicrin (67/33 v/v). Beds were covered with black high-density polyethylene mulch after fumigation. No preplant fertilizer was used. Fertilization and pest control were done according to the requirements of the crop (Peres et al., 2006). Fertigation was applied through a single-drip tape line (25 gal/acre per min) buried 2 inches, and the experimental area was equipped with 4 gal/min sprinklers for frost protection and crop establishment.

During the 2007–08 season, the cultivars tested were 'Winter Dawn', 'Florida Elyana', 'Florida Radiance', 'Ruby Gem', 'Strawberry Festival', 'Treasure', and 'Camarosa', whereas in the 2008–09 season, 'Winter Dawn', 'Florida Elyana', 'Florida Radiance', 'Strawberry Festival', 'Treasure', 'FL 05-73', 'FL 05-107', and 'FL 05-151' were planted. The experimental design was a randomized complete-block design with four replications. Bare-root strawberry transplants from nurseries in Canada were planted in 15 Oct. 2007 on double rows 15 inches apart, 20 plants per 25-ft plot. After transplanting, overhead irrigation was used for 8 h for the first 10 d to ensure plant establishment.

Strawberry marketable fruit weight and number were collected, two times per week. Early yield was considered as the yield from the first 10 harvests and the total yield included the 24 harvests throughout the season. Treatment means were separated using a Fisher's protected LSD test at the 5% significance level.

Results and Discussion

During the 2007–08 season, there were significant cultivar effects on early and total yields. For early yield, 'Strawberry Festival' had the highest fruit weight with 3.1 ton/acre. There were no early yield differences between 'Treasure' and 'Cama-

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Early Yields 2007-08 Season

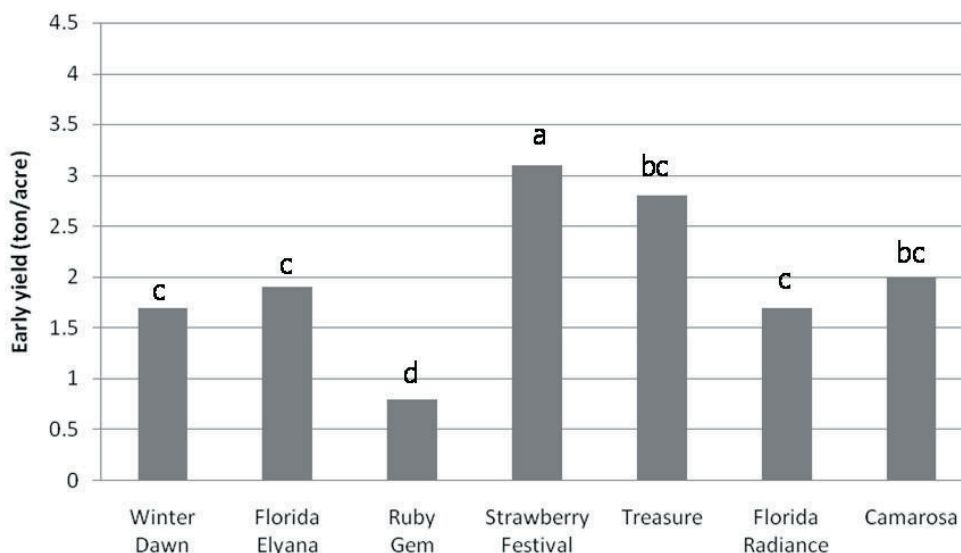


Fig. 1. Comparison of early yields of strawberry cultivars in Balm, FL, 2007–08 season. Cultivars with the same letter do not significantly differ at the 5% level according to Fisher's protected LSD test.

Total Yields 2007-08 Season

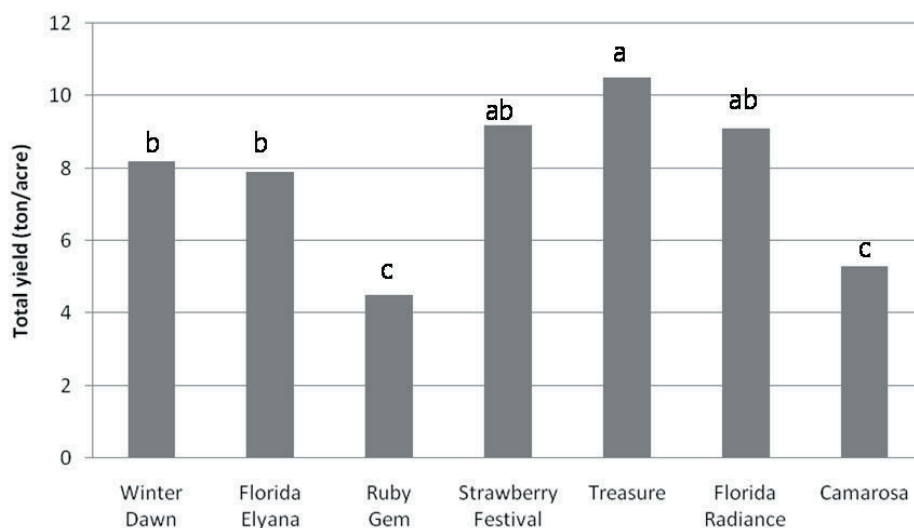


Fig. 2. Comparison of total marketable yields of strawberry cultivars in Balm, FL, 2007–08 season. Cultivars with the same letter do not significantly differ at the 5% level according to Fisher's protected LSD test.

rosa' with 2.8 and 2.0 ton/acre, respectively (Fig. 1). In the same season, the cultivars with the highest total marketable yields were 'Treasure', 'Strawberry Festival', and 'Florida Radiance' with of 10.5, 9.2, and 9.1 ton/acre, respectively (Fig. 2). The lowest total yields were found on plots planted with 'Ruby Gem' and 'Camarosa' with 4.5 and 5.3 ton/acre.

The following season, strawberry cultivars had significant effects on early and total yields. 'Winter Dawn' and 'Strawberry Festival' had the highest early yields with 3.7 and 3.9 ton/acre, followed by 'Florida Elyana', 'Florida Radiance', 'Treasure', 'FL 05-73', 'FL 05-107', and 'FL 05-151' with values ranging from 1.9 to 2.8 ton/acre (Fig. 3). The highest total marketable yield during this season was found in plots planted with 'FL 05-107',

which produced 21.3 ton/acre, followed by 'Strawberry Festival', 'Florida Radiance', and 'Treasure' with total yields of 15.4, 13.4, and 13.0 ton/acre. The lowest total yields were found on 'Winter Dawn' and 'FL 05-151' (Fig. 4).

Among the cultivars tested during both seasons, plots planted with 'Strawberry Festival' had consistently the highest early yields, ranging between 3.1 and 3.9 ton/acre. For season total yields, 'Strawberry Festival', 'Treasure', and 'Florida Radiance' outperformed all other cultivars, with the exception of the advanced line 'FL 05-107' in the 2008–09 season. More research is needed to confirm the season-long performance of 'FL 05-107' in comparison to 'Strawberry Festival'. Additionally, cultivar characteristics, such as disease resistance, flavor components (i.e.,

Early Yields 2008-09 Season

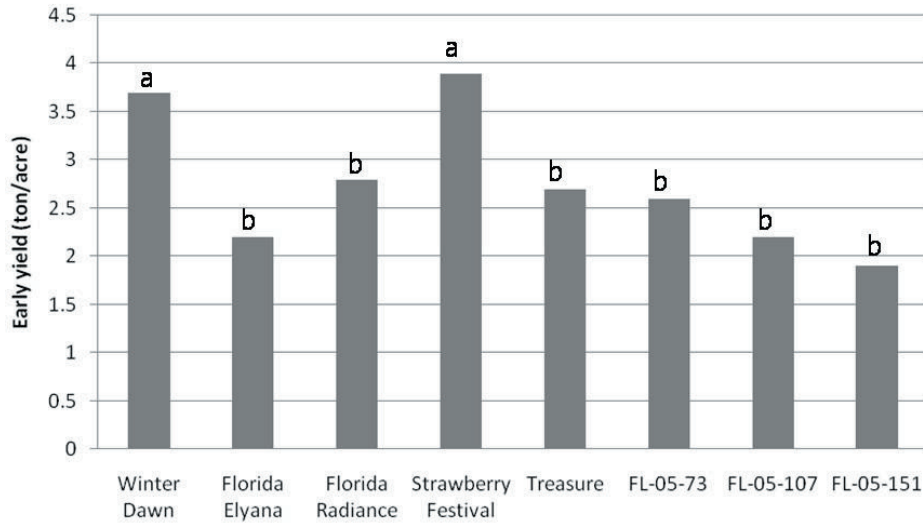


Fig. 3. Comparison of early yields of strawberry cultivars in Balm, FL, 2008–09 season. Cultivars with the same letter do not significantly differ at the 5% level according to Fisher’s protected LSD test.

Total Yields 2008-09 Season

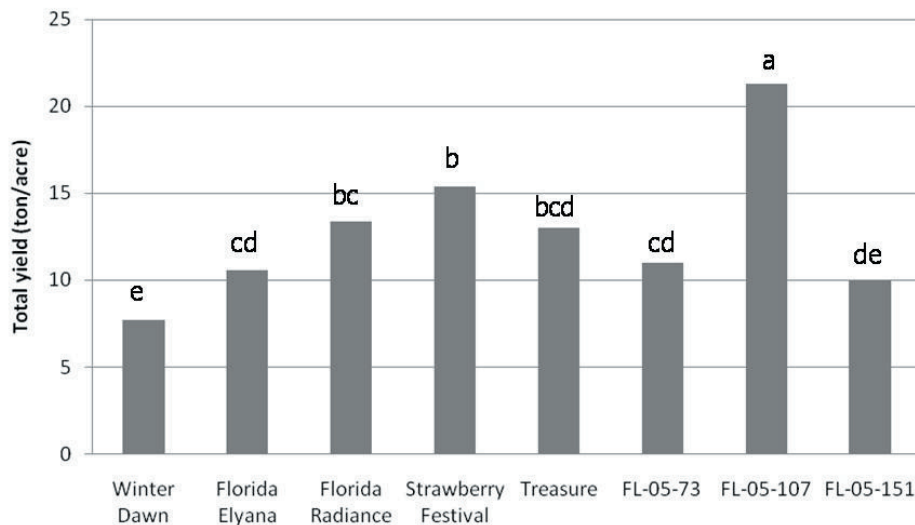


Fig. 4. Comparison of total marketable yields of strawberry cultivars in Balm, FL, 2008–09 season. Cultivars with the same letter do not significantly differ at the 5% level according to Fisher’s protected LSD test.

soluble solids), and postharvest quality should be determined for the high-yielding cultivars.

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