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Sugarcane

Examining sugarcane in the field

Sugarcane was first grown in Florida by the Spanish founders of St. Augustine in 1572. The pioneering sugarcane companies in south Florida in the early 1900s were bankrupted largely by devastating sugarcane mosaic virus (SCMV) outbreaks and low yields caused by micronutrient deficiencies on organic soils. In 1920, USDA established the sugarcane field station at Canal Point (CP), Florida to develop new cultivars primarily for the Louisiana sugarcane industry. Canal Point was chosen due to its proximity to Lake Okeechobee and its reduced risk of damaging freezes. In 1921, the Florida legislature established the University of Florida Everglades Research and Education Center (EREC) in Belle Glade in response to grower concerns regarding crop production in the organic "sawgrass muck" soils in the Everglades Agricultural Area (EAA).

Since 1930, a tripartite collaborative breeding agreement has existed among UF, USDA, and either the U.S. Sugar Corporation (1930-1966) or the Florida Sugar Cane League (1966-present). In the early years, clones bred at EREC ("F" prefix) and US Sugar at Clewiston ("CL" prefix) dominated the Florida industry. Since the onset of the second phase of the cooperative breeding agreement in the 1960s, the "CP" Canal Point clones produced by FSDA-ARS, UF and the FSCL have dominated. A total of 45 CP clones have been released to the industry from the program in the 73 years of its existence.

The first cultivar to be widely grown in the EAA was **P.O.J. 2725** (see Table of Sugarcane Varieties), of Javanese origin, which occupied 60% of all acreage in 1937. Its major attribute was resistance to SCMV, which had decimated the Louisiana and Florida sugarcane industries. Early breeding strategies in Florida consisted of crossing "noble" canes (*S. officinarum*) having desirable yield characteristics with other species (*S. barberi* and *S. spontaneum*) having high disease resistance. Efforts to breed sugarcane varieties for high-N organic soils by B. Bourne and T. Bregger at EREC paid off in the late 1930s with the introduction of **F31-962** (45% of all acreage by 1941) and **F31-436** (52% in 1948). **F31-962** was favored for its early maturity, which allowed the milling season to begin in late October. **F31-436** also had excellent milling characteristics and provided a 50% sugar yield increase compared to the earlier exotic cultivars. **CL41-223** dominated the industry in the 1960s (85% in 1962) due to its superior tonnage on "warmland" soils near Lake Okeechobee and good ratooning ability. However, its importance declined as the industry expanded to more "coldland" soils in the 1960s. Clones widely grown in coldland areas in the 1940s included **F36-819** and **CP34-79**.

CP63-588 (bred by E. Rice) replaced **CL41-223** as the predominant clone in the 1970s because of its wider adaptation in the EAA. Its decline in the early 1980s was caused by susceptibility to rust. **CP70-1133** (bred by N. James) rose to ascendancy in the 1980s thanks to its high tonnage and good ratooning ability, and it remained in the census of the top 10 cultivars in 2001. **CL61-620** was adopted in the late 1980s because of its high sucrose content and high tonnage in "warmland" areas. **CP72-2086** and **CP80-1827** (cultivars released collaboratively by J. Miller, C. Deren, P. Tai and M. Kang among others) were the highest ranked CP clones in the early to mid-1990s. **CP72-2086** was notable for its resistance to rust and remained the second-ranked cultivar in the census in 2001. **CP80-1827** was better suited to mechanical harvesting and had higher tonnage than **CP70-1133**, but its susceptibility to rust has reduced its acreage faster

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Sugarcane field tour

than that of **CP72-2086**. The most widely-grown clone at present is **CP80-1743**. It has excellent ratooning and mechanical harvesting characteristics combined with high sucrose content. Its only drawback is the recent onset of leaf scald disease. Recent promising releases include **CP88-1762** and **CP89-2143**, both of which possess both excellent tonnage and sucrose content.

The production of sugarcane in south Florida burgeoned from 50,000 acres in 1960 to more than 220,000 acres in 1964 due to the repeal of domestic production and acreage restrictions following political changes in Cuba.

In 2000, Florida produced 450,000 acres of sugarcane with an estimated value of $750 million. CP clones occupied 75% of Florida's sugarcane area, accounting for $560 million in farm income.

Sugarcane growers in the EAA remain an integral part of the participatory breeding process, voting on which clones are advanced at variety release committee meetings (see picture). The development of new germplasm is a high priority for the growers as disease pressures inevitably cause yield declines in existing clones. Average sugar yields in Florida have increased by 1.6 tons/acre in the last 34 years of the program. The historical impact and continued grower interest in sugarcane breeding guarantee that the Canal Point breeding program will remain a vital component of the Florida sugar industry for the foreseeable future.

Notable Sugarcane Varieties Grown in the Everglades Agricultural Area

(The first two numbers in the variety indicate the year it was named, which typically occurs 5 to 10 years before release to the industry.)

Variety	Date of Release	Variety	Date of Release
P.O.J. 2725	1920s	CL61-620	1976
F31-962	1936	CP70-1133	1977
F31-436	1937	CP72-2086	1981
F36-819	1942	CP80-1827	1988
CP34-79	1945	CP80-1743	1989
CL41-223	1947	CP88-1762	1995
CP50-28	1957	CP89-2143	1996
CP63-588	1968		