

Sucrose Accumulation Maturity Curves for CP 89-2143¹

Robert A. Gilbert, James M. Shine, Jr., Jimmy D. Miller, Ronald W. Rice, and Curtis R. Rainbolt²

Introduction

Sugarcane (*Saccharum* spp.) is harvested during a 5-month period (October to March) in south Florida. “Early maturing” cultivars milled in October or November may not have reached their peak sucrose content, but may have higher sugar per ton (SPT, lbs sucrose/ton of sugarcane biomass) than other cultivars at the onset of milling operations (Miller and James, 1977). Under current industry milling capacities, harvesting the 450,000 acres of Florida sugarcane takes roughly 5 months. Unavoidably, sugarcane plants harvested during the early harvest period have not yet achieved maximum sugar content. Consequently, sugar content for any given cultivar will change over the course of the harvest season, which can impact the profitability of the harvest. Maturity curves of SPT vs. time have been developed for sugarcane cultivars in South Africa (Bond, 1982), Louisiana (Legendre and Fanguy, 1975; Legendre, 1985; Richard et al., 1981) and Mauritius (Mamet and Galwey, 1999). Although it is known that sucrose accumulation rates vary

between varieties, maturity curves for recently released “CP” sugarcane cultivars (those developed at the USDA-ARS Sugarcane Field Station in Canal Point, FL) have not been reported since 1977 (Rice, 1974; Miller and James, 1977). CP cultivars occupy > 70% of Florida sugarcane acreage, and are also economically important (Tew, 2003) in many countries including Argentina (25% of total acreage), Belize (16%), El Salvador (50%), Guatemala (65%), Honduras (47%), Mexico (15%), Morocco (54%), Nicaragua (75%), Senegal (9%) and Venezuela (9%). Since most sugarcane growers in Florida plant a diverse selection of cultivars, these maturity curves are needed as tools to help growers make informed choices regarding harvest scheduling decisions.

This fact sheet presents the sucrose accumulation maturity curves for different crop ages (plant cane, 1st ratoon, and 2nd ratoon) of CP 89-2143. CP 89-2143 harvest samples were collected at 2-week intervals at 5 locations over 4 harvest seasons in the Everglades Agricultural Area. Biomass and sugar yields were determined on all samples in order to

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1. This document is SS-AGR-220, one of a series of the Agronomy Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Published April 2004. Reviewed March 2009. This publication is also a part of the Florida Sugarcane Handbook, an electronic publication of the Agronomy Department. For more information you may contact the editor of the Sugarcane Handbook, R. A. Gilbert (ragilber@ufl.edu). Visit the EDIS Web site at <http://edis.ifas.ufl.edu>.
 2. R. A. Gilbert, assistant professor, Agronomy Department, Everglades REC-Belle Glade, FL; J. M. Shine, Jr., Sugar Cane Grower's Cooperative of Florida, 1500 W. Sugar House Rd, Belle Glade, FL 33430; J. D. Miller, courtesy professor, Agronomy Department (Retired), USDA-ARS, Sugarcane Field Station, 12990 US Hwy 441, Canal Point, FL 33438; R. W. Rice, Sugar Cane Grower's Cooperative of Florida, 1500 W. Sugar House Rd, Belle Glade, FL 33430; and C. R. Rainbolt, Palm Beach County Extension, 2976 SR-15, Belle Glade, FL 33430; Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL.

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generate SPT trends over time. A full comparison of CP 89-2143 SPT trends with 12 other CP cultivars may be found in EDIS publication SS-AGR-221 *Maturity Curves and Harvest Schedule Recommendations for CP Sugarcane Varieties* (<http://edis.ifas.ufl.edu/SC069>).

Cultivar Description

CP 89-2143 is grown on 3.5 % of the EAA sugarcane acreage (Glaz and Gilbert, 2003). This clone has shown remarkably high sugar content and better than average tonnage and freeze tolerance. Descriptive information and photographs of CP 89-2143 can be found at <http://edis.ifas.ufl.edu/AG137>.

Maturity Curves

Figure 1 presents the sugar per ton (SPT, lbs sugar/ton sugarcane biomass) for CP 89-2143 from mid-October to mid-March. Separate curves are presented for plant cane, 1st ratoon, 2nd ratoon, and the entire data set.

Research has shown that older ratoon crops generally have higher SPT values but lower tonnage (Glaz et al., 1989; MacColl, 1976). Thus, growers should generally expect the SPT of their sugarcane crop to increase with crop age (see Figure 1). However, the mean SPT of CP 89-2143 remained relatively stable across crop ages, averaging 283 lbs/ton in plant cane, 284 lbs/ton in 1st ratoon, and 277 lbs/ton in 2nd ratoon. The overall mean across crop ages ranked 1st out of 13 CP cultivars.

Grower recommendations are based on the entire data set across all crop ages. Early-season predicted SPT for CP 89-2143 at the onset of harvest on Oct. 14 was 223 lbs/ton (ranked 1st out of 13 cultivars), and maximum predicted SPT was 308 lbs/ton on Feb. 11 (ranked 1st out of 13 cultivars). In comparison to other CP cultivars, CP 89-2143 has excellent sucrose content throughout the harvest season. Due to its excellent post-freeze characteristics it should be reserved for harvest during the last 50 days of the harvest season (see <http://edis.ifas.ufl.edu/SC069>).

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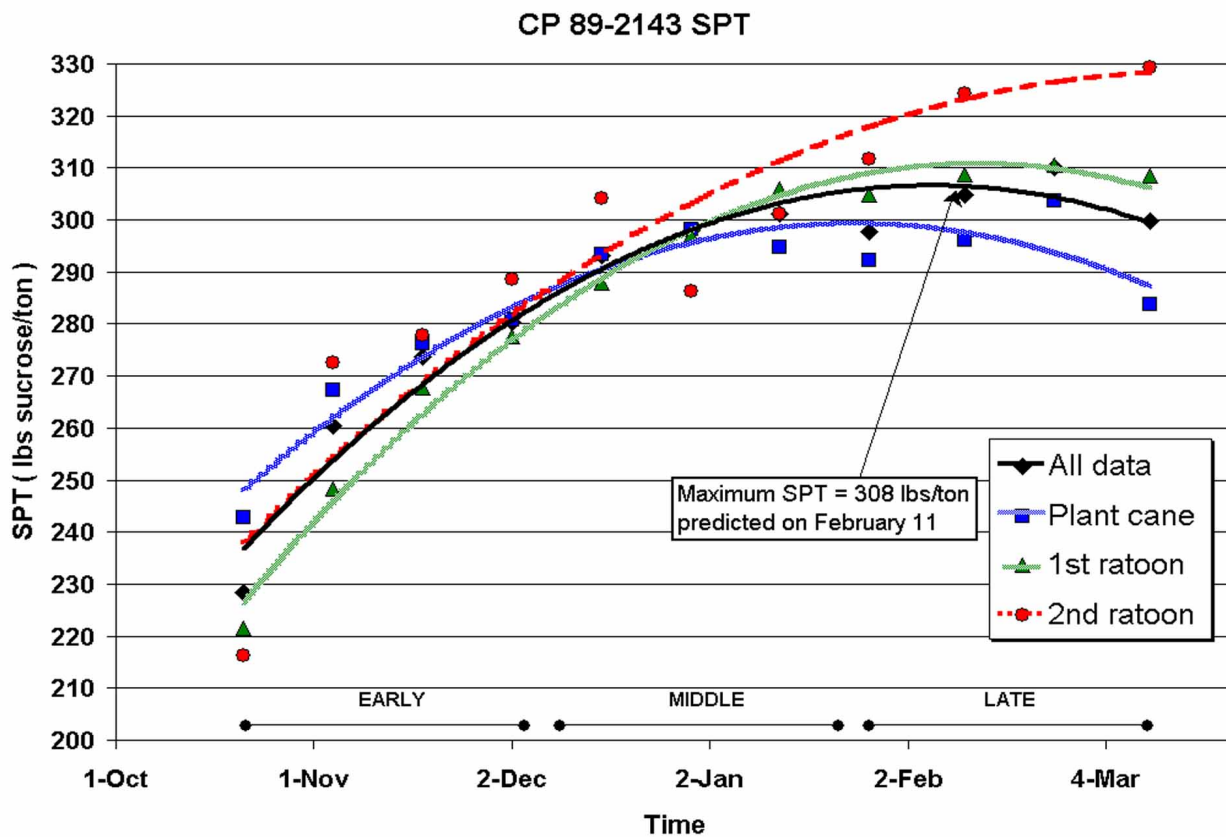


Figure 1. Sucrose Accumulation Maturity Curves for CP 89-2143.