

USDA, ARS, Sugarcane Research Unit

Sugarcane Disease Update: Orange Rust and Mosaic

**Louisiana Agricultural Technology &
Management Conference**

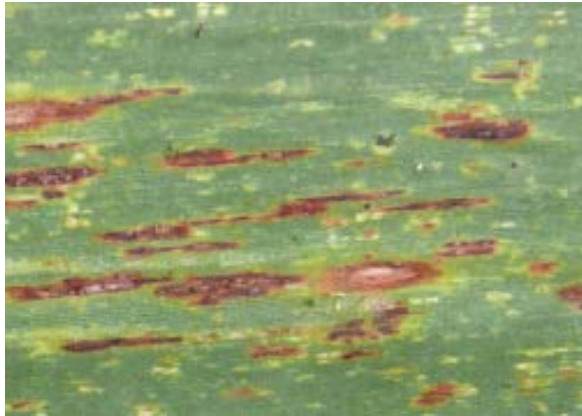




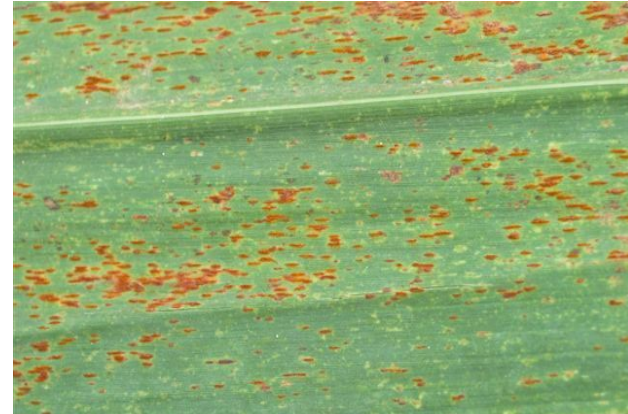


Comparison of Sugarcane Rusts

Puccinia melancephala
(brown rust)



Puccinia kuehnii
(orange rust)



Orange rust epidemics

- ❖ Hot, humid conditions favored OR development in 2016 and 2017
- ❖ Of 100 varieties in outfield introduction nursery: 24 varieties developed orange rust (16 in 2016 and 8 more in 2017)
- ❖ Ho05-961 developed orange rust in both years
- ❖ No orange rust was observed in HoCP96-540, L01-283, L01-299, L03-371, Ho07-613, or HoCP09-804



**Hard freezes during 2017-18 winter
even in southern portion of cane belt!**

Sugarcane Mosaic

Caused by Sugarcane Mosaic Virus (SCMV) or Sorghum Mosaic Virus (SrMV)

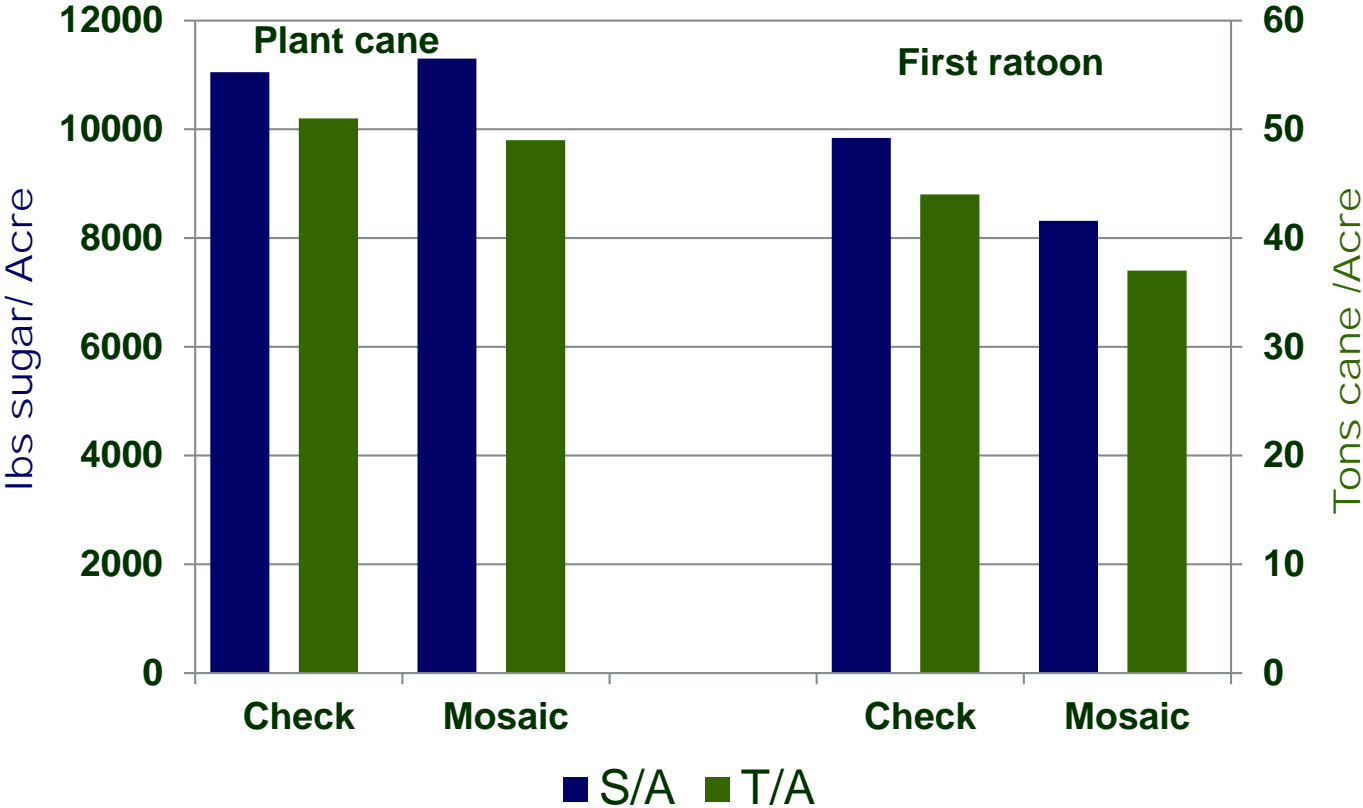




Introduction

- Early 1900s -- mosaic caused near-destruction of Louisiana sugarcane industry
- 1920s -- importation of tolerant hybrid P.O.J. varieties from Java
- 1920s -- breeding program established to develop mosaic-resistant varieties adapted to Louisiana and Florida
- Mid-1950s -- incidence of mosaic rare
- 1960s & 1970s -- new strains appeared
- 1980s to mid-1990s -- mosaic responsible for yield losses
- Era of LCP 85-384 – low levels of mosaic
- 2010s – increasing incidence of mosaic

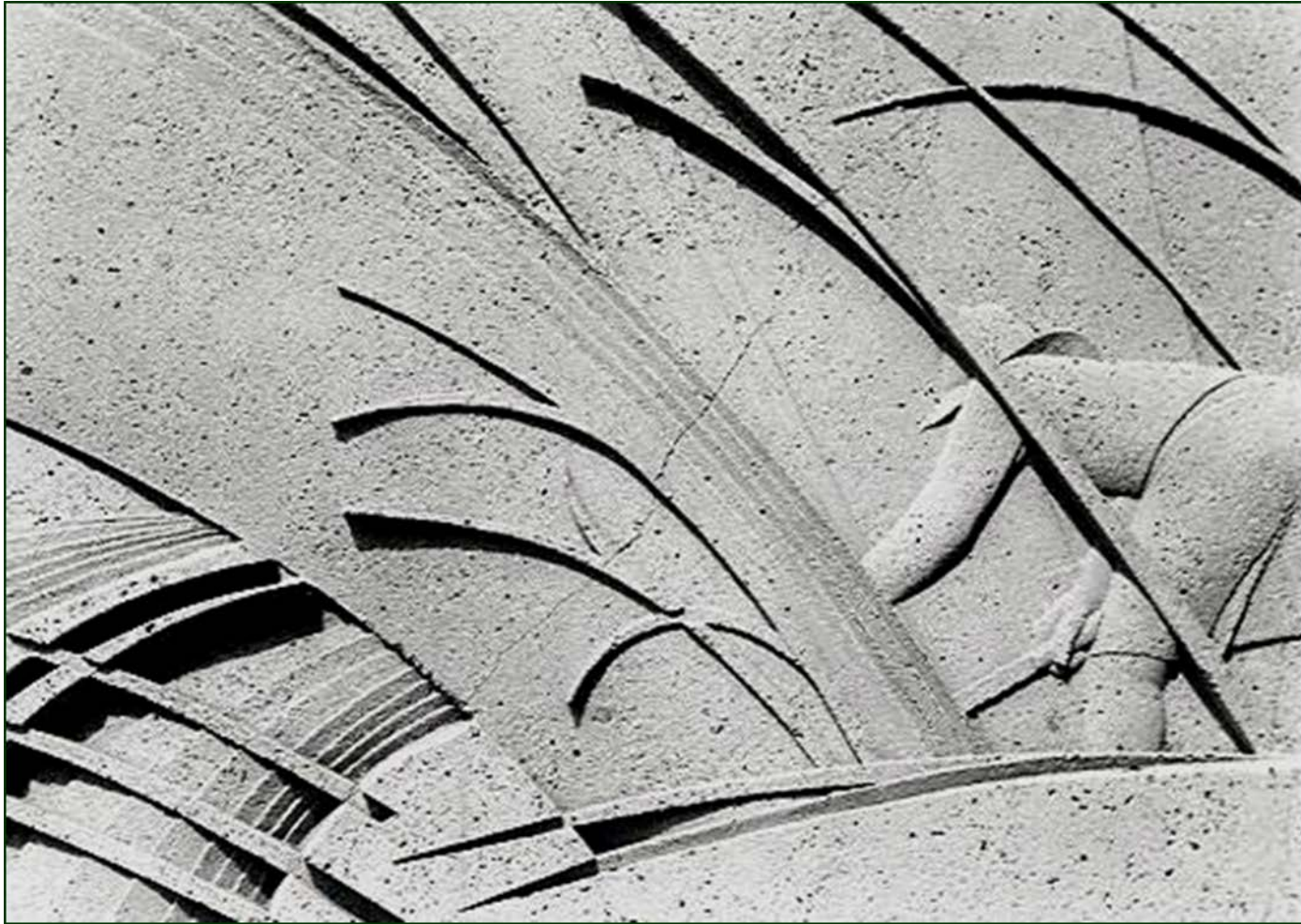
HoCP 09-804



Discussion

- Our surveys of SrMV isolates among different varieties indicates genetic diversity
- Yield losses in field studies reflect a comparison of low mosaic incidence to a moderate level of mosaic
- “Clean” seed cane should be used to control the effects of mosaic in susceptible varieties such as HoCP 09-804

Thank You



Colonized Vascular Bundles (%)

	% Diff. TSPA	CVB (%)
L 99-233	-21.7*	64
L 99-226	-7.5*	47
L 01-283	-23.1*	41
HoCP 00-950	-28.1*	34
HoCP 09-804	-2.0	24
Ho 07-613	-1.7	14
L 03-371	-4.9	2
L 01-299	-9.9*	1
HoCP 96-540	+0.5	1
HoCP 04-838	+0.9	0

Discussion

- The cultivars in this study grouped into three categories based on CVBs (%)
 - Low – HoCP 04-838 (0%), L 01-299 (1%), and L 03-371 (2%)
 - Intermediate – Ho 07-613 (14%) and HoCP 09-804 (24%)
 - High - HoCP 05-961 (30%), L 01-283 (41%), HoCP 00-950 (34%), L 99-226 (47%), and L 99-233 (64%)
- Percent CVBs reflected potential for yield loss for most varieties. The exceptions were L 99-226 (more tolerant to Lxx infection) and L 01-299 (more sensitive to Lxx infection). Variety HoCP 96-540 is also exception (14% CVB with no yield loss).