



# Sugarcane Genotype Selection for Sand Soils in Florida

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## Abstract

Selection of high yielding sugarcane (*Saccharum* spp.) genotypes in Florida has been more successful for organic soils than for sand soils. In a field test, 31 sugarcane genotypes were planted in a sand soil with or without mill mud. We assumed that genotype performance on sand with mill mud reflected genotype performance on muck soils. Selection decisions were similar for sand and sand with mill mud in 87% of cases. Of 4 genotypes known to yield well on sand soils, 3 were not identified as high yielding on sand without mill mud and 1 was not identified as high yielding on sand with mill mud.

## Issue

Sugarcane genotypes in Florida are field tested in 4 stages over 8 years before release. However, it is not until the 4<sup>th</sup> year that genotypes are evaluated on sand soils. Perhaps earlier testing on sand would improve the program's ability to identify high yielding cultivars for sand soils.

## Objective

Compare yields of 31 sugarcane genotypes on sand with and without mill mud to determine if adding an unreplicated early selection stage on a sand soil would improve genotype selection for sand soils.

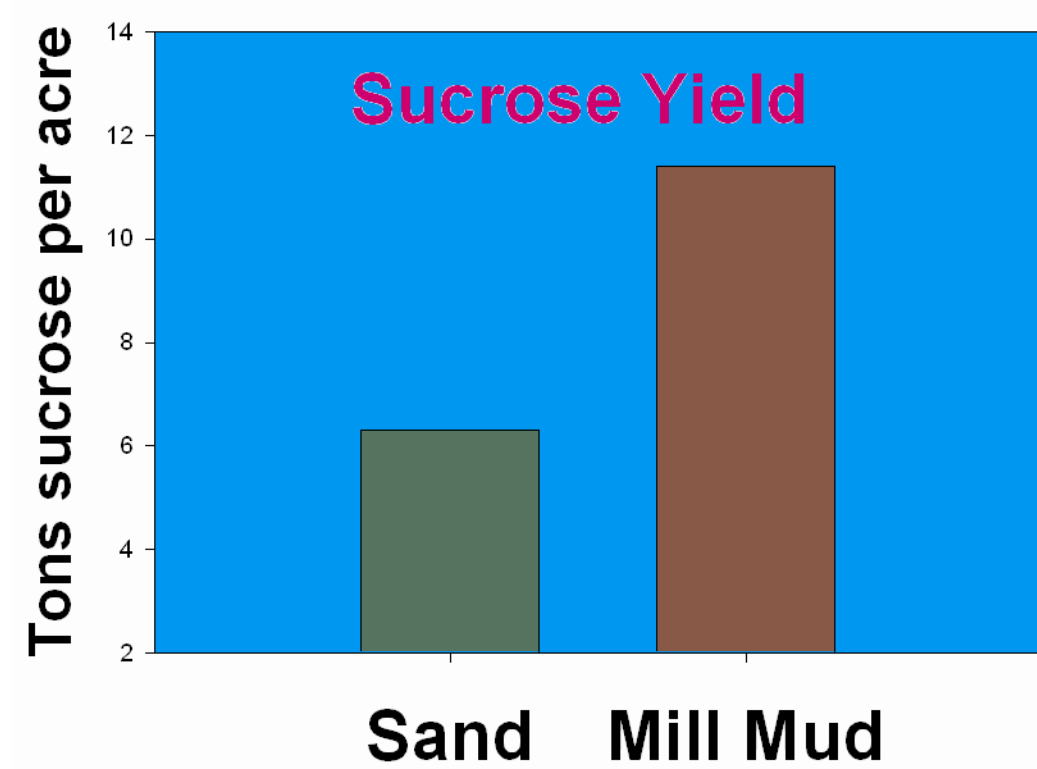
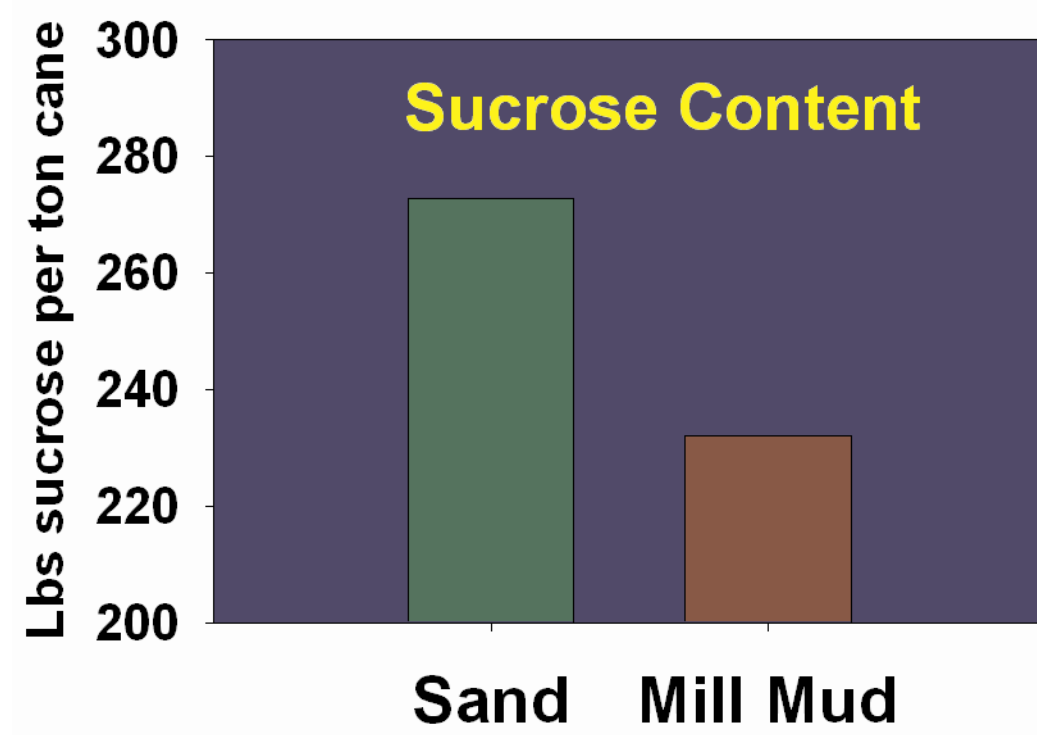
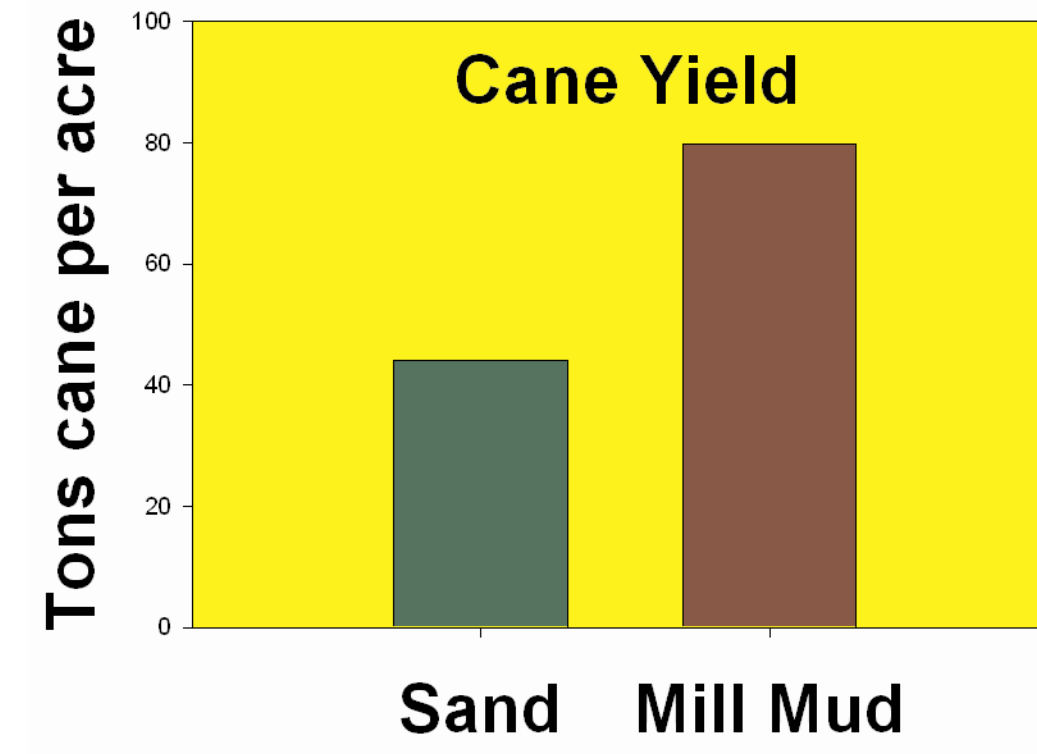
## Materials and Methods

Soil treatment (fixed effect) is main plot

Sand  
Sand + 800 cubic yards mill mud per acre

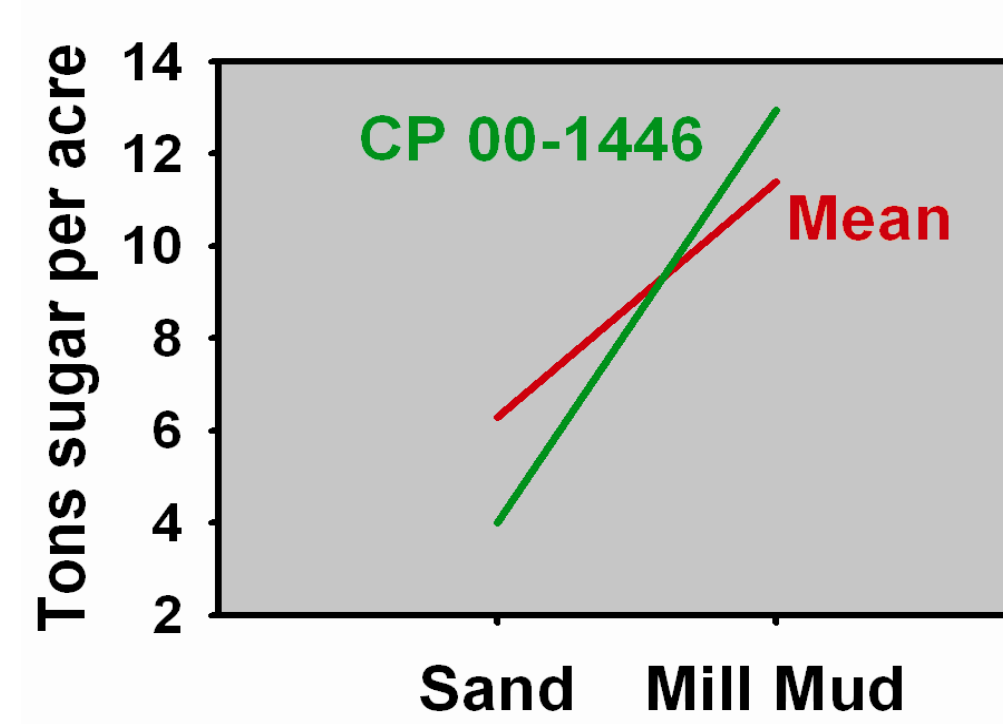
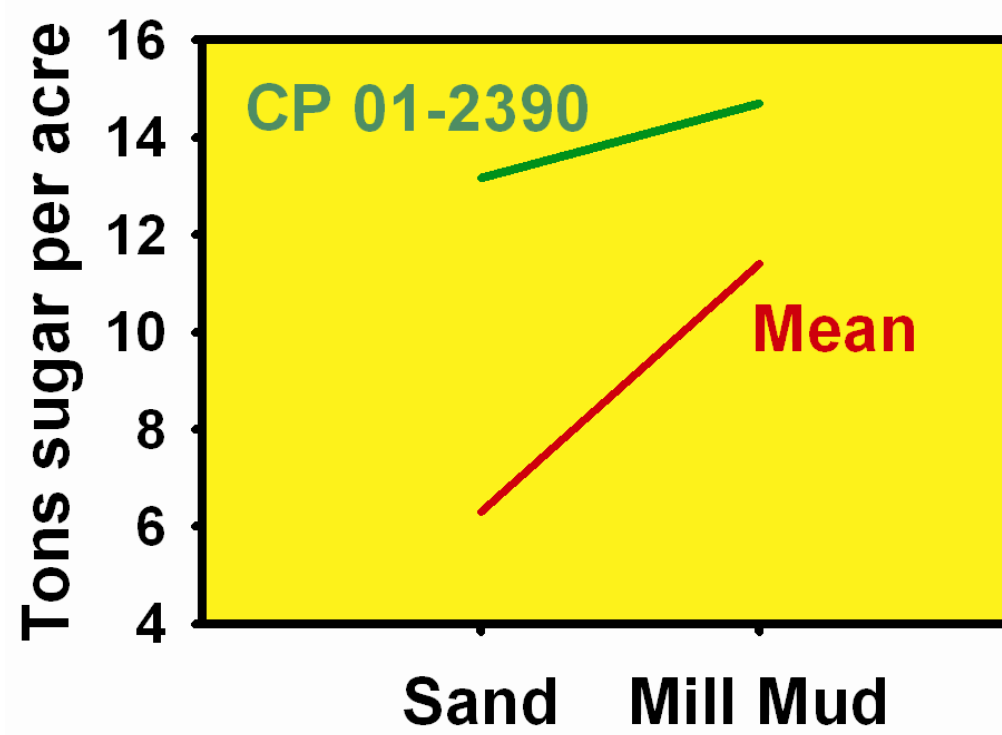
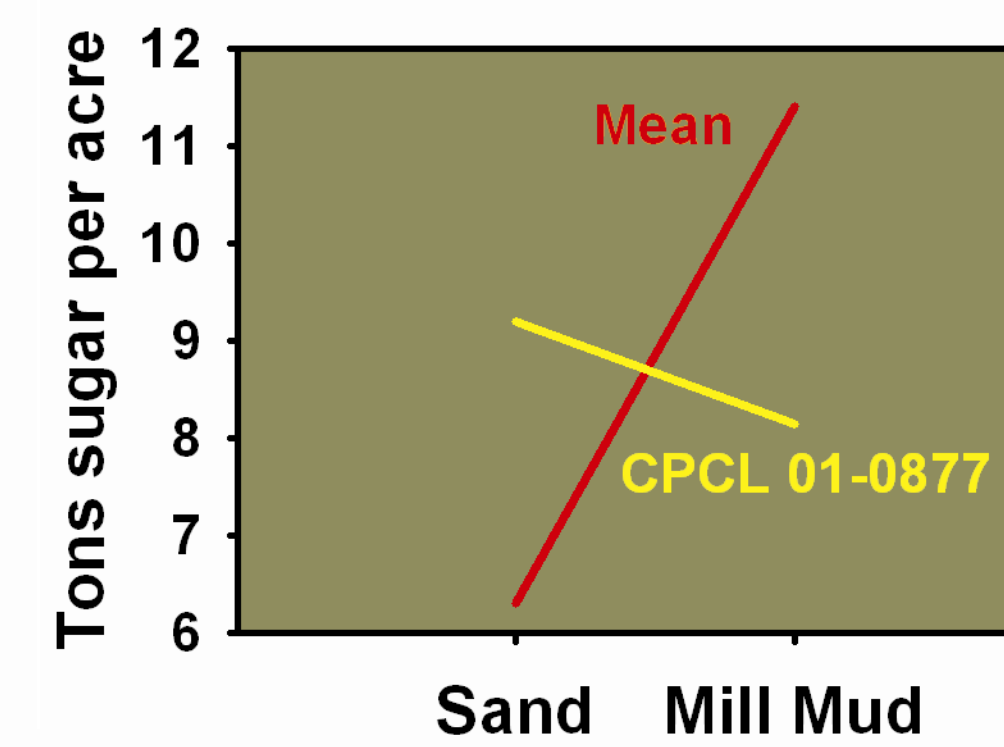
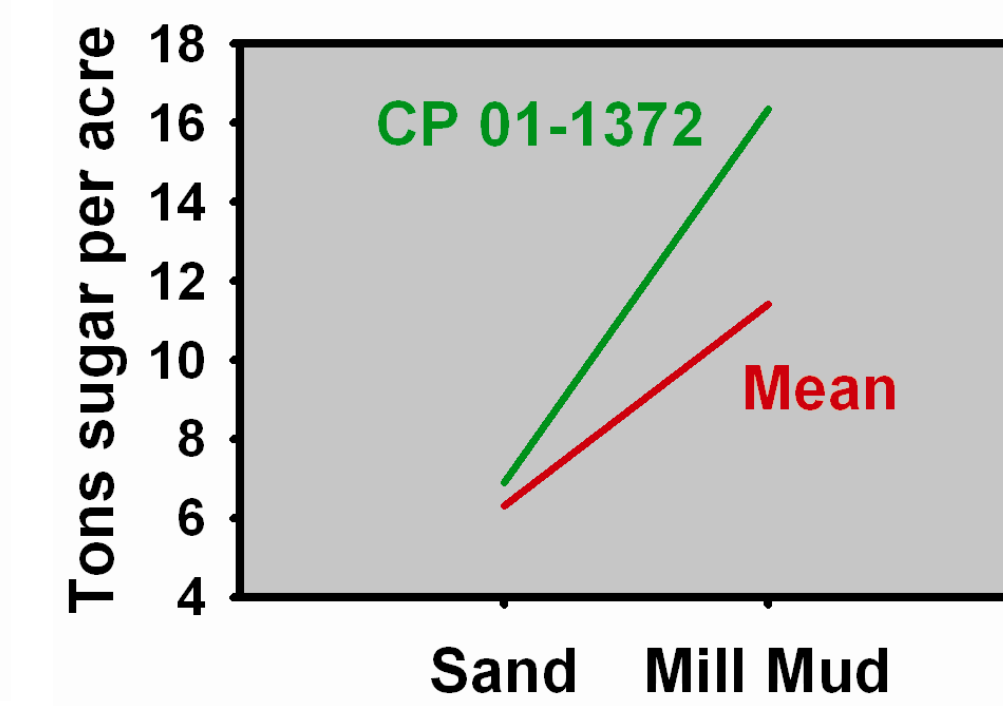
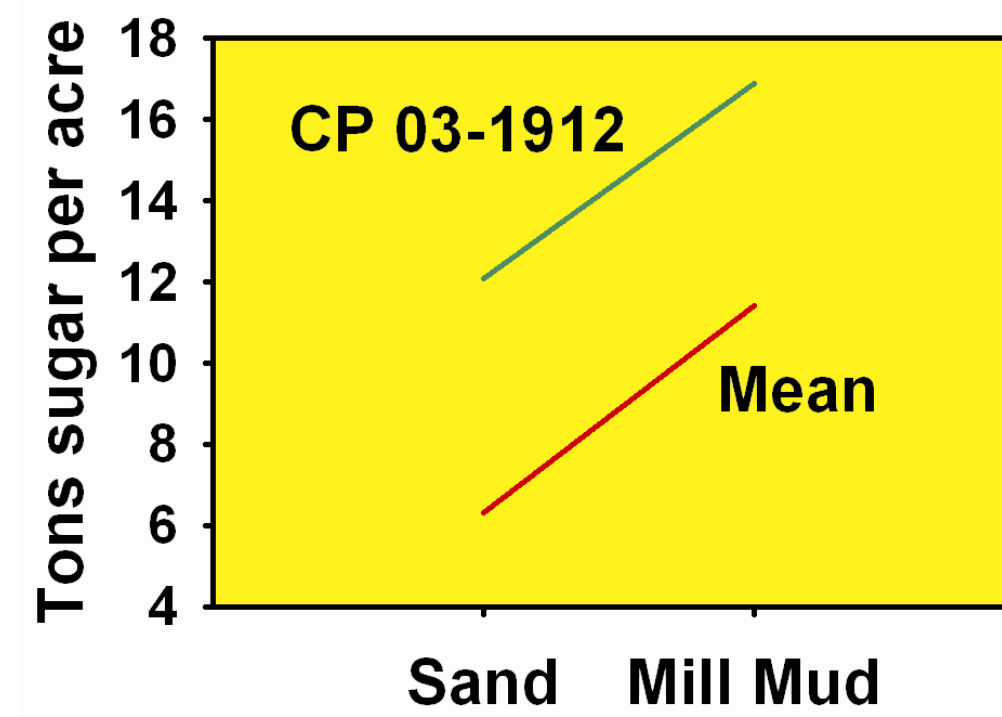
31 sugarcane genotypes (fixed effect) were sub plots

4 Replications



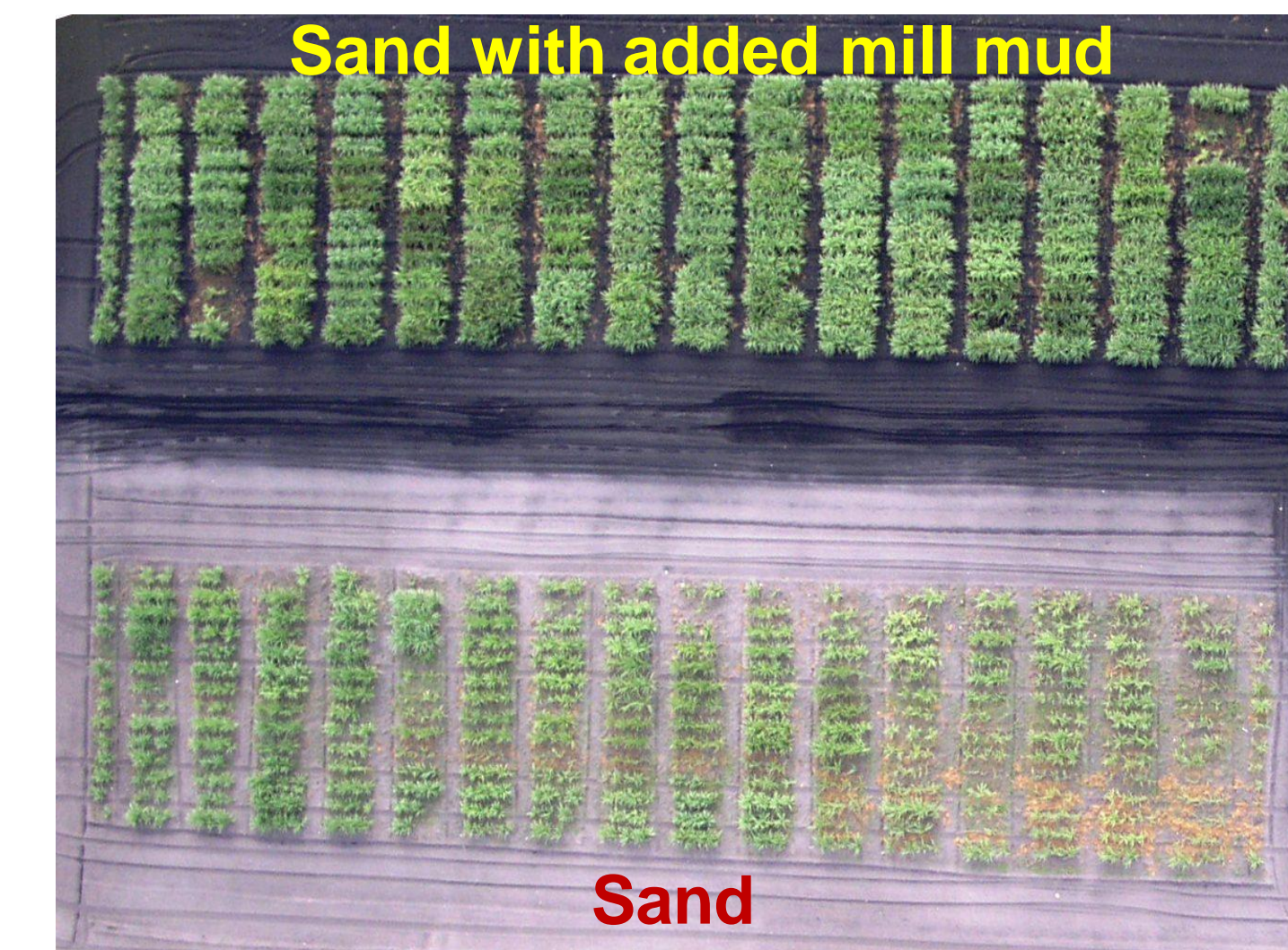
Genotype x Soil Interactions

No interaction or no effect on selection      Better on Mill Mud      Better on Sand



## Coefficients of Variation

Character	Mill mud	Sand
Stalk weight	15.43	15.89
Stalk number	15.28	30.68
Sugar content	9.89	7.82
Cane yield	22.81	37.92
Sugar yield	26.89	39.87



## Conclusions

- Mill mud reduced sucrose content.
- Mill mud increased cane and sucrose yields.
- Selection decisions were same for 27 of 31 genotypes (87%) on both soils.
- Two genotypes known to have high yields on muck and sand would not have been selected on sand soil.
- One genotype known to have high yields on sand would not have been selected on sand soil.
- One genotype known to have high yields on sand would not have been selected on sand with mill mud and was the only genotype with higher yields on sand without mill mud.
- High CVs for stalk number, cane yield, and sucrose yields on sand are a concern.
- Results did not support adding an early selection stage on a sand soil.