

## Parental Selection based on historical series of experiments

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# Introduction

- Parental Selection is critical to the success of the sugarcane breeding program
- Several criteria can be considered:
  - ① Genetic Divergence (Pedigree Information and/or Molecular Markers)
  - ② Breeding values estimated by progeny test (Family Selection)
  - ③ *Per se* performance along multi-environmental trials (MET)
- Information about performance in MET is usually found in databases of well-established breeding programs
- Mixed models: allows the analysis of historical series of MET for genotypic value estimation of genotypes evaluated over several years, harvest and locations



# Material and Methods

- We considered 23 experiments located in different sites in Brazil (planting date from 1995 to 2009)
- Design: RCBD, with 3-4 repetitions and 2-5 harvests
- Genotypes: 262 genotypes was considered and evaluated for cane yield per hectare (TCH) and sugar content (SC)
- Statistical analysis was performed using the mixed model approach

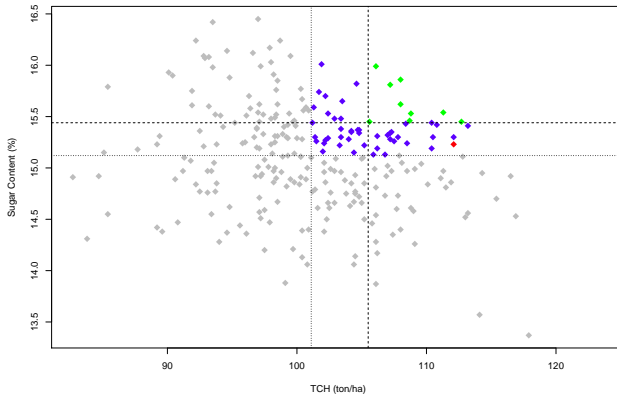


# Results

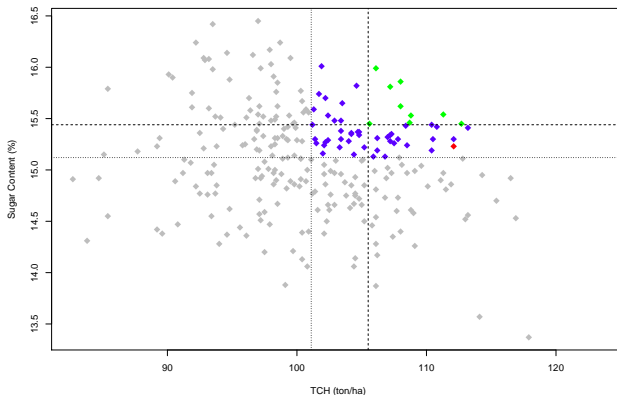
- Analyses provided similar results for both traits
- Still, estimation for trials effect was similar to the empirical environmental classification, specially for cane yield
- The correlation between these traits was  $-0.17$ , however 56 transgressive genotypes were detected
- Finally, interaction between genotypes and harvest (for cane yield) were also noted, i.e., some genotypes have lower yield reduction over harvest than others



# Results



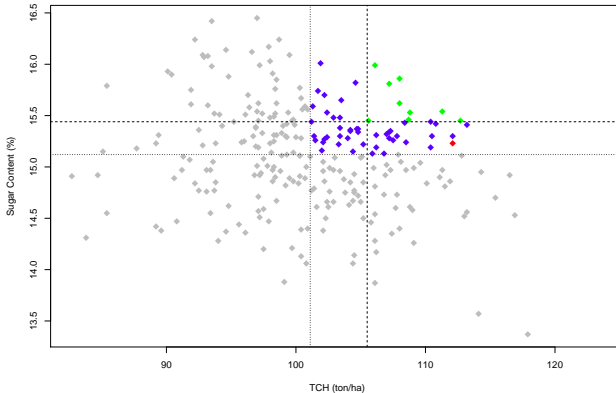
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- We highlight that RB867515 (in red), the most cultivated genotype in Brazil, is in this group



# Acknowledgments

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