

Title:

Structural genomic variation and the evolution of sugar accumulation in sweet sorghum

Abstract:

The process of crop domestication by humans often consists of two stages: 1) initial domestication, where the wild, ancestral species is first cultivated, and traits that allow easier propagation are strongly selected for, and 2) diversification, where domesticated species are adapted to multiple, more specialized uses, and many different types of traits may be selected on. Selective pressure to increase sugar accumulation in certain varieties of the cereal crop *Sorghum bicolor* is an excellent example of the latter; this has resulted in pronounced phenotypic divergence between sweet and grain-type sorghums, but the genetic mechanisms underlying these differences remain poorly understood. Using a *de novo* assembled genome from a representative sweet sorghum genotype, we uncovered a handful of structural genomic changes and loss of function mutations that may be related to differences in sugar accumulation and could represent new targets for crop improvement.