

EXPLOITABLE FOREGROUND

Sugar and grain production can be combined in multi-purpose (food/feed/fuel) sorghum varieties

Explanation and Purpose

A set of experiments in subtropical field conditions (Mali) and in a greenhouse in Montpellier (France) on a panel of 14 genotypes expressing diversity in terms of photoperiod sensitivity, juiciness and sweetness, could point out that sugar and grain production were not in competition for carbohydrates along grain filling phase whatever the genotype and the sowing date. Early sowing enabled to increase sugar production for photoperiodic sorghum while it did not affect grain yield.

Combining high sugar and grain productions is physiologically and genetically possible.

Exploitation Strategy

This result provides further insight on the role sweet sorghum can play for reducing the competition for land and resource use for food, feed and fuel productions. This will be valorised in a companion project of Sweetfuel by exploring the genetic diversity of photoperiod sensitive sorghum for traits related to biomass composition (including sucrose and ligno-cellulosic components) and production, panicle size and grain quality: French-Italian project Biosorg (2014-2016).

Further Research

Further research is needed to understand to which extent a post flowering drought can amplify the level of competition between grain and sugar yield elaborations. A PhD is on-going with this respect in collaboration between CIRAD and CERAAS (Senegal).

Genetic bases will be further explored in the abovementioned Biosorg project.

Impact of Exploitation

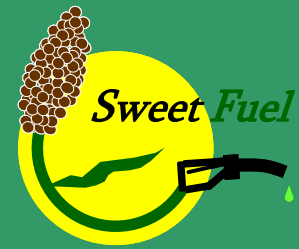
Accepted projects: BioSorg (Franco-Italian project)

Publication: **S. Gutjahr, M. Vaksman, M. Dingkuhn, K. Thera, G. Trouche, S. Braconnier, D. Luquet**, Grain, sugar and biomass accumulation in tropical sorghums. I. Trade-offs and effects of phenological plasticity, *Functional Plant Biology*, 40 (2013) 342–354.

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SWEETFUEL

Sweet Sorghum: an alternative energy crop



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