

## EXPLOITABLE FOREGROUND

### Sensitivity Analysis of Growth Stages to Draught and its Implications on Sweet Sorghum Productivity

#### Explanation and Purpose

Sorghum life cycles are divided in three basic developmental stages. The growth accumulation in each is different and the effect on the final production of sorghum depends on the sensitivity of each to stress factors. Drought and high temperature are the most common stress factors in sorghum production areas in Mexico.

Pre-flowering is divided in two stages: Vegetative stage and Floral organs formation stage. Post-flowering is associated with the stage of grain formation. Pre-flowering is most important in sweet sorghum and other crops because during this phase, the plants differentiate the structure associated with the raw material related to ethanol production. The identification of sweet sorghum hybrids or varieties less affected by drought during this stage will help to increase productivity.

#### Exploitation Strategy

In México, sorghum is mostly grown under dryland conditions. During sowing of the seeds there is good moisture in the soil. However, the moisture level starts to decrease fast without rain or irrigation to supply water in the ground. Therefore, it is important to identify genetic material less affected by the stress during the pre-flowering phase.

#### Further Research

In sorghum there are several examples of compensation effects in the plant, such as seed size compensating seed number. It is important to identify compensation effects during the post-flowering phase compensating the negative effect of a stress during the pre-flowering phase, such as increasing the length of the period between flowering and physiological maturity. This will allow the plant to be active for longer time with better chances to maintain productivity levels.

#### Impact of Exploitation

Genotypes with better adaptation to early draught stress, will help to reduce the negative effects under dryland conditions in some parts of México.

## SWEETFUEL

### Sweet Sorghum: an alternative energy crop



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SWEETFUEL is co-funded by the European Commission in the 7<sup>th</sup> Framework Programme (Project No. FP7-227422)